



RESEARCH CENTER

FIELD

Digital Health, Biology and Earth

Activity Report 2018

Section Dissemination

Edition: 2019-03-07

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ABS Project-Team

7. Dissemination

7.1. Promoting Scientific Activities

7.1.1. Scientific Events Organisation

7.1.1.1. Member of the Organizing Committees

- Frédéric Cazals was member of the advisory board of:
 - *Algorithms in Structural Bio-informatics*. The 2018/2019 edition (January 2019, CIRM, Marseille) focuses on RNA bioinformatics. See <https://algosb2019.sciencesconf.org/>.

7.1.2. Scientific Events Selection

7.1.2.1. Member of the Conference Program Committees

- Frédéric Cazals was member of the following program committees:
 - Symposium On Geometry Processing
 - Symposium on Solid and Physical Modeling
 - Intelligent Systems for Molecular Biology (ISMB) / Protein Interactions & Molecular Networks
 - IEEE International Conference on BioInformatics and BioEngineering

7.1.3. Journal

7.1.3.1. Reviewer - Reviewing Activities

- Frédéric Cazals reviewed for the following journals:
 - Journal of computational geometry
 - PLOS Computational Biology
- Dorian Mazaauric reviewed for the following journal and conference:
 - Theoretical Computer Science
 - 16th Workshop on Approximation and Online Algorithms (WAOA 2018)

7.1.4. Invited Talks

- Frédéric Cazals gave the following invited talks:
 - *Energy landscapes: sampling, analysis, comparison*, RNA Kinetics days, Ecole polytechnique, October 2018.
 - *Randomized algorithms for volume/density of states calculations in high-dimensional spaces*: Energy landscapes, Kalamata, Greece, September 2018;
 - *Randomized algorithms for volume/density of states calculations in high-dimensional spaces*: Advances in Computational Statistical Physics, CIRM, France, September 2018.
 - *Understanding scoring/energy landscapes: a tale of local minima and density of states*, Meet-U: when proteins meet each other, January 2018, Paris.

7.1.5. Leadership within the Scientific Community

- Frédéric Cazals:
 - 2010-.... Member of the steering committee of the *GDR Bioinformatique Moléculaire*, for the *Structure and macro-molecular interactions* theme.
 - 2017-.... Co-chair, with Yann Ponty, of the working group / groupe de travail (*GT MASIM - Méthodes Algorithmiques pour les Structures et Interactions Macromoléculaires*, within the *GDR de Bioinformatique Moléculaire* (GDR BIM, <http://www.gdr-bim.cnrs.fr/>).

7.1.6. Research Administration

– Frédéric Cazals:

- 2017-.... President of the *Comité de suivi doctoral* (CSD), Inria Sophia Antipolis - Méditerranée. The CSD supervises all aspects of PhD student's life within Inria Sophia Antipolis - Méditerranée.
- 2018-.... Member of the *bureau du comité des équipes projets*.

– Dorian Mazauric:

- 2016-2019. Member of the *Comité de Centre*, Inria Sophia Antipolis - Méditerranée.
- 2018-.... Member of the *Commission de Développement Technologique*, Inria Sophia Antipolis - Méditerranée.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

- Master: Frédéric Cazals (Inria ABS) and Frédéric Chazal (Inria Saclay), *Foundations of Geometric Methods in Data Analysis*, Data Sciences Program, Department of Applied Mathematics, Ecole Centrale Paris. (<http://www-sop.inria.fr/abs/teaching/centrale-FGMDA/centrale-FGMDA.html>)
- Master : Dorian Mazauric, Algorithmique et Complexité, 36 h TD, niveau M1, École Polytechnique de l'Université Nice Sophia Antipolis, filière Sciences Informatiques, France.

7.2.2. Supervision

- **PhD:** Romain Tetley, *Mixed sequence-structure based analysis of proteins, with applications to functional annotations*, defended on the 21/11/2018. Université Côte d'Azur.
- **PhD in progress, 4th year:** Augustin Chevallier, *Random walks for estimating the volume of convex bodies and densities of states in high dimensional spaces*, defense scheduled in February 2019. Université Côte d'Azur.
- **PhD in progress, 2nd year:** Denys Bulavka, *Modeling macro-molecular motions*. Université Côte d'Azur. Under the supervision of Frédéric Cazals.
- **PhD in progress, 2nd year:** Méliné Simsir, *Modeling drug efflux by Patched*. Université Côte d'Azur. Thesis co-supervised by Frédéric Cazals and Isabelle Mus-Veteau, IPMC/CNRS.
- **PhD in progress, 1st year:** Timothée O'Donnel, *Modeling the influenza polymerase*. Université Côte d'Azur. Thesis co-supervised by Frédéric Cazals and Bernard Delmas, INRA Jouy-en-Josas.
- **PhD in progress, 1st year :** Thi Viet Ha Nguyen, Graph Algorithms techniques for (low and high) resolution models of large protein assemblies, Frédéric Havet (Inria/I3S project-team Coati) and Dorian Mazauric.

7.2.3. Juries

– Frédéric Cazals:

- Hugo Schweke, Paris-Saclay University, December 2018. Rapporteur on the PhD thesis *Développement d'une méthode in silico pour caractériser le potentiel d'interaction des surfaces protéiques dans un environnement encombré*. Advisors: Marie-Hélène Mucchielli-Giorgi and Anne Lopes.
- Julien Ogor, ENSTA Bretagne, May 2018. Rapporteur on the PhD thesis *Design of algorithms for the automatic characterization of marine dune morphology and dynamics*. Advisor: B. Zerr.
- Rodrigo Dorantes-Gilardi, University of Lyon, April 2018. Rapporteur on the PhD thesis *Bio-Mathematical aspects of the plasticity of proteins*. Advisors: L. Vuillon and C. Lesieur.

– Dorian Mazauric:

- Romain Tetley, Université Côte d'Azur, Novembre 2018. PhD thesis *Mixed sequence-structure based analysis of proteins, with applications to functional annotations*. Advisor: Frédéric Cazals.

7.3. Popularization

This part mainly concerns Dorian Mazaauric.

7.3.1. Internal or external Inria responsibilities

- Member of Mastic Commission (Médiation et Animation scientifiques Inria Sophia Antipolis - Méditerranée).
- Coordinator of the popularization project GALEJADE (Graphes et ALgorithmes : Ensemble de Jeux À Destination des Écoliers (mais pas que)) founded by Inria, Fondation Blaise Pascal, and Université Côte d'Azur. See <https://galejade.inria.fr>.
- Coordinator of the internships for undergraduates of middle school (niveau collège, troisième) at Inria Sophia Antipolis - Méditerranée (12 interns during one week).

7.3.2. Articles and contents

Frédéric Cazals published the following opinion article:

- *Recherche et développement : les entreprises françaises n'ont pas de vision*, Le Monde, April 2018. See https://www.lemonde.fr/sciences/article/2018/04/20/r-d-les-entreprises-francaises-n-ont-pas-de-vision_5288104_1650684.html.

Dorian Mazaauric published online contents and posters. See <https://galejade.inria.fr>.

7.3.3. Education

- Trainings for 100 future teachers at ESPÉ (École Supérieure du Professorat et de l'Éducation) of Académie de Nice.
- Two trainings for 60 teachers of Cycle 3 (Le Cannet).
- Trainings for 20 teachers at numeric culture week-end organised by Class'Code MED.

7.3.4. Interventions

- National events:
 - Fête de la Science : Village des Sciences de Vinon-sur-Verdon, Juan-les-Pins, Villeneuve-Loubet et Mouans Sartoux : *La magie des graphes et du binaire, Algorithmes grandeur nature et jeux combinatoires*.
 - Semaine des maths : Conferences and activities at Centre International de Valbonne. With Christophe Godin. *Réfléchir pour Calculer ou Calculer pour Réfléchir*.
 - Conferences and activities at salon Code & Play 2018. *Graphes et algorithmes ? Jeux grandeur nature : algorithme de plus court chemin, algorithme de tri avec des cerceaux et des lattes en plastique – La magie des graphes et du binaire : tours de magie*.
- In educational institutions:
 - Two trainings for 60 teachers of Cycle 3 (Le Cannet).
 - Trainings for 100 future teachers at ESPÉ (École Supérieure du Professorat et de l'Éducation) of Académie de Nice.
 - High school: Conferences at Centre International de Valbonne. *Pas besoin de réfléchir, les ordinateurs calculent tellement vite ? Théorie des graphes et algorithmique*.
 - Middle school: Conferences at collège Alphonse Daudet of Nice and conferences at collège Jules Verne of Cagnes-sur-Mer. *La magie des graphes et du binaire*.
 - Primary: Conferences at École élémentaire of Tourrettes-sur-Loup. With Florence Barbara.
- Welcoming of schoolchildren or the general public in an Inria center:
 - MathC2+ internship: Activity for 40 students (high school). With Maria Guramare. *Algorithmes grandeur nature pour le calcul du plus court chemin et pour trier*.

- Open days of Inria Sophia Antipolis - Méditerranée: *La magie des graphes, des algorithmes et du binaire*.
- Presentation for twelve interns of middle school (niveau collège, troisième) by Frédéric Cazals.

7.3.5. Creation of media or tools for science outreach

- Creation of the website of the popularization project GALEJADE (Graphes et ALgorithmes : Ensemble de Jeux À Destination des Écoliers (mais pas que)) founded by Inria, Fondation Blaise Pascal, and Université Côte d'Azur. See <https://galejade.inria.fr>.
- Development of wooden objects for the dissemination of the scientific culture: wooden plateau for graph algorithms and convex hull, chocolate bar game made by 3D printers, kakemonos... See <https://galejade.inria.fr/francais-pret-de-materiel/>.

BEAGLE Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

- Guillaume Beslon co-organized a symposium on “in vivo, in vitro, in silico experimental evolution” during the World Evolution conference. Montpellier, August 2018.

9.1.1.2. Member of the Organizing Committees

- Hugues Berry was a member of the Local Organizing committee of MedInfo2019 (<https://medinfo-lyon.org/>)
- Eric Tannier was a member of the local Organizing committee of ICGT 2018 (<https://projet.liris.cnrs.fr/~icgt2018/>)
- Eric Tannier was a member of the local Organizing committee of RECOMB 2018 (<http://recomb2018.fr/>)
- Anton Crombach is a member of the organizing and scientific committee of the "Advanced Lecture Course on Computational Systems Biology", in Aussois, March 2019. Also,
- Anton Crombach is a member of the organizing committee of "Mathematical Models in Ecology and Evolution", that will take place in Lyon, July 2019.
- Guillaume Beslon served as a member of the Organizing Committee of ICSB (International Conference on Systems Biology), Lyon, October 2018.

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program Committees

- Christophe Rigotti was a member of the program committee of the 34rd ACM Symposium On Applied Computing.
- Eric Tannier was a member of the program committee of RECOMB Comparative Genomics
- Eric Tannier was a member of the program committee of ISMB

9.1.2.2. Reviewer

- Eric Tannier reviewed 3 conference articles for Recomb-CG, 3 conference articles for ISMB

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- H. Berry: Associate Editor for PLoS Computational Biology
- Eric Tannier : Recommender for Peer Community in Evolutionary Biology
- Eric Tannier : guest editor for a special issue of Discrete Mathematics and Theoretical Computer Science
- Carole Knibbe and Guillaume Beslon are guest editors for a special issue of the Artificial Life journal, in preparation.

9.1.3.2. Reviewer - Reviewing Activities

- Anton Crombach has reviewed two articles for Nature Communications and a book proposal for Springer-Verlag.

- Eric Tannier has reviewed articles for Bioinformatics, Bulletin of mathematical biology, PeerJ, Genome biology and evolution, a book chapter for a book on genome evolution,

9.1.4. Invited Talks

- H. Berry - May 2018: Stochastic simulations of calcium signaling in fine astrocytic processes: spatial properties, invited talk at the workshop "Modélisation Stochastique en Biologie", Tours
- H. Berry - Nov 2018: "Modelling the signaling pathways of neuronal plasticity", invited talk at the 10^{ème} journée ITMO Technologies pour la Santé, Strasbourg.
- E Tannier, December 2018: "Gene transfers can date the tree of life" Lille
- Eric Tannier, August 2018: "Treerecs: a fast and easy to use phylogenetic reconciliation software", for the "Software in phylogenomics" workshop, satellite of Evolution 2018, in Montpellier.
- Eric Tannier, February 2018: "Comparative Genomics on artificial life", ALPHY 2018, Montpellier
- Guillaume Beslon gave an invited Keynote at the 10th Symposium on Search-Based Software Engineering (Montpellier, September 2018)
- Guillaume Beslon gave an invited Keynote at the First International TRANSIT workshop on Cross-disciplinary Research (TWCR 2018). York (UK), April 2018.
- Guillaume Beslon gave an invited conference for the Systems Biology research group, Université Pierre et Marie Curie, Paris, May 2018.

9.1.5. Scientific Expertise

- Guillaume Beslon was a member of the ANR CES45 panel (Mathématique, informatique, automatique, traitement du signal pour répondre aux défis de la biologie et de la santé)

9.1.6. Research and Teaching Administration

- Hugues Berry is Inria's Deputy Scientific Director for the field "Digital Health, Biology and Earth" and has been:
 - Inria's representative on the board of Aviesan
 - Conseiller Scientifique, ITMO Technologies pour la santé
 - Member of the Working Group for the prefiguration of the French Health Data Hub
 - Member of the Comité d'Orientation Scientifique et Stratégique, Institut Français de Bioinformatique (IFB)
 - Member of the Comité Directeur of GIS IBISA
 - Member of the Comité des Tutelles for INBS France Life Imaging, FranceBioImaging
 - Member of the steering committee for the Action de Recherche Prospective "Biologie Predictive" of INRA
 - Member of the "Commission des thèses" of the Doctoral School "Info-Maths" (ED 512)
 - Member of the Steering Committee of GdR IMaBIO (Imagerie et Microscopie pour la BIOlogie, <http://imabio-cnrs.fr>)
- Eric Tannier is
 - Member of the committee for Open Science, Ministry of Research
 - Member of the Administration Council of Inria
 - Member of the scientific Committee of the Ethics Platform of Université de Lyon
 - Member and founder of the scientific committee of the GTGC (National Working group on Comparative Genomics)
- Guillaume Beslon is a member of the IRD Commission Scientifique Sectorielle 5 (CSS5, Science des données et des modèles). He served as a president of the hiring committee for a position of Chargé de Recherche number 12.

- Christophe Rigotti is an elected member of Insa Scientific board (Conseil Scientifique)
- Carole Knibbe is
 - Member of the Doctoral Studies Committee of Inria Grenoble-Rhone Alpes
 - Head of the Bioinformatics and Modeling master program of INSA-Lyon Since Sept 2017

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master : Audrey Denizot, enzymology and cellular biology, 64h, INSA Lyon

Licence: Christophe Rigotti, Object-Oriented Programming and Graphical User Interfaces, 86h, L2, Department 1er cycle of INSA-Lyon.

Licence: Christophe Rigotti, Simulation of Chemical Reactions, 26h, L2, Department 1er cycle of INSA-Lyon.

Licence: Christophe Rigotti, Numerical Modelling for Engineering, 60h, L2, Department 1er cycle of INSA-Lyon.

Master: Christophe Rigotti, Data Mining, 25h, M1, Bioinformatics and Modeling Department of INSA-Lyon.

Master: Eric Tannier, Bioinformatics, 12h INSA Lyon

Master: Eric Tannier, Bioinformatics, 12h M2 UCBL Lyon

Master: Eric Tannier, Ethique de la recherche, 2h, Lille

Licence: C. Knibbe, Fundamentals of algorithmics and programming, 80 heqTD, L3, Bioinformatics and Modelling program of INSA-Lyon

Licence: C. Knibbe, Architecture of computer systems, 19 heqTD, L3, Bioinformatics and Modelling program of INSA-Lyon

Licence: C. Knibbe, Software development, 32 heqTD, L3, Bioinformatics and Modelling program of INSA-Lyon

Licence: C. Knibbe, HTML/CSS, 4 heqTD, L3, Bioinformatics and Modelling program of INSA-Lyon

Master: C. Knibbe, Careers in bioinformatics and modelling, 20 heqTD, M1, Bioinformatics and Modelling program of INSA-Lyon

License: Jonathan Rouzaud-Cornabas, Object-Oriented Programming, 64h, L3, Computer Science Department, INSA de Lyon

Master: Jonathan Rouzaud-Cornabas, Advanced Operating System Programming, 64h, M1, Computer Science Department, INSA de Lyon

Master: Jonathan Rouzaud-Cornabas, Graphical User Interfaces, 64h, M1, Computer Science Department, INSA de Lyon

Master: Jonathan Rouzaud-Cornabas, High Performance Computing, 84h, M2, Computer Science Department, INSA de Lyon

Master: Jonathan Rouzaud-Cornabas, High Performance Computing, 84h, M2, Bioinformatics and Modeling Department, INSA de Lyon

CNRS GDR Calcul: Jonathan Rouzaud-Cornabas, High Performance Computing, 6h, CNRS

E-learning

Eric Tannier was in the pedagogical team of a Mooc "Ethique de la Recherche", for Ph-D students in France. 4000 participants. He participated to 2 introductory videos (7min).

9.2.2. Supervision

PhD in progress : Vincent Liard, Towards a quantitative digital genetics platform, INSA-Lyon, started Oct 2016, co-supervision: G Beslon, J Rouzaud-Cornabas, C Ofria (Michigan State University, BEACON Center)

PhD : Tuan Nguyen, Handling data quality in extraction and selection of evolutions from displacement field time series obtained by satellite imagery, at LISTIC laboratory of University Grenoble Alpes co-supervised by C. Rigotti, defended 10 October 2018.

PhD in progress : Audrey Denizot Simulating calcium signaling in fine astrocytic processes, september 2016, Hugues Berry

PhD in progress : Theo Tricou, Lateral Gene Transfer as a document from extinct and unknown species, 2018-2020 Eric Tannier (50%)

PhD in progress : Alexandre Laverré, cross-influence between gene regulatory landscape and 1D-3D genome organization 2018-2020, Eric Tannier (40%)

M2 student Alexandre Laverré (Eric Tannier)

M1 student Adrien Stadler (Hugues Berry)

M2 student Elisa Denier (Eric Tannier)

M1 student Yvan Cluet (Anton Crombach)

M1 student Damien Agopian (Carole Knibbe)

9.2.3. Juries

- Hugues Berry- HDR: Samuel Bottani, Univ Denis Diderot, Paris, Nov 2018 (reviewer)
- Hugues Berry- PhD: Yi Cui, Univ Descartes, Paris, Dec 2018 (reviewer)
- Hugues Berry- PhD: Franziska Oschmann, TU Berlin, Oct 2018 (reviewer)
- Hugues Berry- search pannel: two assistant professor positions (Univ. Pierre et Marie Curie, INSA Lyon)
- Anton Crombach - tutor on the thesis committee of Elise Parey, IBENS, ENS Paris.
- Guillaume Beslon served as a member of the defence committee for the HDR of Alexandre Muzy. Nice, October 2018.
- Jonathan Rouzaud-Cornabas - Associate Professor Recruitment - Université de Toulouse

9.3. Popularization

9.3.1. Interventions

- Eric Tannier gave a series of four lectures at the Université Populaire de Lyon, on "science and democracy".
- Eric Tannier participated to a round table on scientific communication for the BMIC days, november 2018.
- Audrey Denizot has participated in the organization and animation of activities for children about research during the event "Dans la blouse d'un chercheur" in ENS de Lyon. More specifically, she worked on a project aiming at explaining to children what microbes are, where they are and if/when you should worry about them and what is immunodeficiency. She made a small movie about it.
- Audrey Denizot is a member of a public outreach association : DéMesures. She is in charge of collaborations with external entities, including laboratories, museums and artists collectives. Website: <https://demesures.jimdo.com/> Facebook: <https://www.facebook.com/DMesures/> Twitter: <https://twitter.com/DMesures> Radio podcasts: <https://demesures.jimdo.com/radio-1/radio-brume/> Interviews are available on our YouTube channel: <https://www.youtube.com/channel/UCIn3CucWk1mLgbzE0noO2Iw>

- National events: Audrey Denizot organized several events including Fête de la Science 2017 and 2018 and A Nous de Voir 2018, as well as conducted projects such as radio podcasts on science/society topics, interviews of researchers, projects mixing Science and Art.

9.3.2. Creation of media or tools for science outreach

- In collaboration with Sylvain Charlat (LBBE, Lyon), we developed game to present the effect of random mutations on evolution to young children. The “GreenMice” game has been presented to the general public in the “Maison des Mathématiques et de l’Informatique” during the exhibition “Comme par hasard”.

BIGS Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

A. Gégout-Petit is ETC program coordinator of the European Meeting of Statisticians, Palermo, July 2019.

9.1.1.2. Reviewer - Reviewing Activities

All BIGS members are regular reviewers for journals in probability, statistics and machine learning as: Bernoulli, Scandinavian Journal of statistics, Stochastics, Journal of Statistical Planning Inference, Journal of theoretical Biology, IEEE Trans. Biomedical Eng., Theoretical Biology and Medical Modelling, Royal Society of Chemistry, Signal Processing: Image Communication, Mathematical Biosciences, LIDA, Annals of Applied Probability, Annals of Operations Research and Journal of Machine Learning Research, as well as conferences such as ICML, World IFAC Congress, FOSBE, ALCOSP...

9.1.2. Leadership within the Scientific Community

Anne Gégout-Petit is member of the board of the European Regional Council of the Bernoulli society.

9.1.3. Research Administration

Anne Gégout-Petit is member of "Bureau du comité des projets", centre Inria Nancy Grand-Est.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

R. Azaïs and B. Scherrer excepted, BIGS members have teaching obligations at "Université Lorraine" and are teaching at least 192 hours each year. They teach probability and statistics at different level (Licence, Master, Engineering school). Many of them have pedagogical responsibilities.

9.2.2. Supervision

- PhD : Clémence Karmann, "Network inference for zero-inflated models", Grant : Inria-Cordis. Advisors: A. Gégout-Petit, A. Muller-Gueudin.
- PhD : Florine Greciet, "Modèles markoviens déterministes par morceaux cachés pour la propagation de fissures", grant CIFRE SAFRAN AIRCRAFT ENGINES, Advisors : R. Azaïs, A. Gégout-Petit.
- PhD : Kévin Duarte, "Aide à la décision médicale et télémédecine dans le suivi de l'insuffisance cardiaque", Advisors : J.-M. Monnez and E. Albuissou.
- PhD : Pauline Guyot, "Modélisation et Simulation de l'Electrocardiogramme d'un Patient Numérique", Grant : CIFRE-Cybernano. Advisors: T. Bastogne, E. H. Djermoune.
- PhD: Nassim Shaki, "Détection de rupture dans des signaux multivariés pour la prédiction d'événement redouté à partir de paramètres physiologiques recueillis par capteurs connectés après greffe pulmonaire", grant Inria-Cordis. Advisors: A. Gégout-Petit, S. Mézières, M. d'Ortho.
- Benoît Lalloué, contract research engineer for two years, RHU Fight RF, supervised by Jean-Marie Monnez.
- Postdoc: Lionel Lenôtre, Telomer Modelling, grant LUE GEENAGE. Advisors: A. Gégout-Petit, D. Villemonais.
- Since October 15, 2018, Jean-Marie Monnez supervises the work in RHU Fight.

- Master: all BIGS members regularly supervise project and internship of master IMOI students.
- Engineering school: all BIGS members regularly supervise project of "Ecole des Mines ", ENSEM or EEIGM students.

9.2.3. *Juries*

- T. Bastogne participated to the jury of the Phd defense of Julie Kabil, Université Lorraine, January 2018.
- A. Gégout-Petit participated to the jury of the Phd defense of Neska El Haouij, Université de Paris-Saclay, July 2018.
- A. Gégout-Petit participated to the jury of the Phd defense of Lucien Bacharach, Université de Paris-Saclay, September 2018.
- A. Gégout-Petit was reviewer and participated to the jury of the Phd defense of Maxime Redondin, Université Paris-Est, December 2018.
- A. Gégout-Petit participated to the jury of the Phd defense of Aurélie Marton, Université Lorraine, December 2018.
- A. Gégout-Petit was reviewer and participated to the jury of the HDR defense of Frédéric Bertrand, Université de Strasbourg, December 2018.
- JM Monnez was advisor and participated to the jury of the PhD defense of Kévin Duarte, December 2018.
- Bruno Scherrer was reviewer and participated to the jury of the Phd defense of Anna Harutyunyan, at Vrije Universiteit, Bruxelles, March 2018.

9.3. Popularization

- S. Ferrigno: Advisor of a group of students (EEIGM), "La main à la Pâte" project, elementary schools, Nancy, January-June 2018
- S. Ferrigno: Advisor of a group of students (EEIGM), "La main à la Pâte" project, Institut médico-éducatif (IME), Commercy, September-December 2018
- S. Ferrigno: Advisor of a group of students (EEIGM), "Utilisation de la technologie dans la médecine" Cgénial project, Collège Paul Verlaine, Malzéville, December 2018-February 2019.
- S. Ferrigno: Advisor of a group of students (EEIGM), "Le cartable connecté" Cgénial project, Collège de la Craffe, Nancy, December 2018-February 2019.

BONSAI Project-Team

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Organisation

8.1.1.1. General Chair, Scientific Chair

- H. Touzet was the general chair for the satellites of RECOMB 2018 (Paris, April 2018)

8.1.2. Scientific Events Selection

8.1.2.1. Chair of Conference Program Committees

- RECOMB-Seq 2018 (R. Chikhi)

8.1.2.2. Member of the Conference Program Committees

- RECOMB-CG 2018 (J.-S. Varré)
- WABI 2018 (H. Touzet, M. Salson)
- ACM-BCB 2018 (R. Chikhi)
- HiCOMB 2018 (R. Chikhi)

8.1.2.3. Reviewer

- WABI 2018 (L. Noé, J.-S. Varré, R. Chikhi)
- ECCB 2018 (R. Chikhi)

8.1.3. Journal

8.1.3.1. Member of the Editorial Boards

- Review Editor in Frontiers in Genetics - Bioinformatics and Computational Biology (J.-S. Varré)

8.1.3.2. Reviewer - Reviewing Activities

- Algorithms (L. Noé)
- Bioinformatics (L. Noé, M. Salson, R. Chikhi)
- Frontiers in Immunology (M. Salson)
- Nucleic Acids Research (R. Chikhi)
- GigaScience (R. Chikhi)
- ACM Computing Surveys (R. Chikhi)
- Genome Biology (R. Chikhi)
- Journal of Discrete Algorithms (R. Chikhi)

8.1.4. Scientific Expertise

- Scientific consulting for Clarity Genomics start-up – Belgium (R. Chikhi)

8.1.5. Research Administration

- Member of the national scientific committee of INS2I–CNRS (H. Touzet)
- Member of the scientific committee of MBIA – INRA (H. Touzet)
- Head of the national CNRS network GDR Bioinformatique moléculaire (<http://www.gdr-bim.cnrs.fr>, H. Touzet)
- Co-head of the Lille Bioinformatics core facility, bilille (H. Touzet)

- Member of the CRISAL Laboratory council (H. Touzet)

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Teaching in computer science:

- License: J.-S. Varré, *Programming and algorithms*, 36h, L2 Computer Science, Univ. Lille.
- License: J.-S. Varré, *Object oriented programming*, 36h, L2 Computer Science, Univ. Lille.
- License: J.-S. Varré, *Algorithms and data structures*, 50h, L2 Computer science, Univ. Lille.
- License: J.-S. Varré, *System*, 84h, L3 Computer science, Univ. Lille.
- License: P. Marijon *Databases*, 36h, L3 Computer science, Univ. Lille.
- License: Q. Bonenfant *Databases*, 36h, L3 Computer science, Univ. Lille.
- Licence: M. Pupin, *Programming (Python)*, 78h, L1 Sciences, Univ. Lille.
- Licence: M. Pupin, *occupational integration*, 30h, L3 computer science, Univ. Lille.
- Master: : M. Pupin, *Programming (JAVA)*, 24h, M1 “Mathématiques et finance”, Univ. Lille.
- License: M. Salson, *Programming (Python)*, 42h, L1 Sciences, Univ. Lille.
- License: M. Salson, *Coding and information theory*, 63h, L2 Computer science, Univ. Lille.
- Master: M. Salson, *Software project*, 40h, M1 Computer science, Univ. Lille.

Teaching in bioinformatics:

- Master: M. Pupin, M. Salson *Bioinformatics*, 34h, M1 ”Biologie-Santé“, Univ. Lille.
- Master: M. Salson, *Algorithms for life sciences*, 20h, M2 Complex models, algorithms and data, Univ. Lille.
- Master: R. Chikhi, *Bioinformatics*, 20h, M1 Computer Science, Univ. Lille.

Teaching in skeptical thinking:

- Master: M. Salson, *Skeptical thinking*, 27h, M2 Journalist and Scientist, ESJ, Univ. Lille.

Formation for academics:

- Bilille permanent training: C. Saad (*Variants*, 13h), R. Chikhi (*De novo assembly* and *Metagenomics de novo assembly*, 8h), H. Touzet (*DNA analysis* and *Metagenomics*, 8h), M. Salson (*RNA-seq analysis*, 1h).
- (JC)2BIM summer school: H. Touzet organized a national summer school in bioinformatics (5-8 June, Frejus), that gathered 30 participants and 12 trainers (among them, R. Chikhi and M. Salson): http://www.gdr-bim.cnrs.fr/?page_id=560.
- Workshop on Genomics: R. Chikhi (*de novo assembly & k-mers*, 8h), Czech Republic, 2 weeks, 80 participants: <http://evomics.org/workshops/workshop-on-genomics/2018-workshop-on-genomics-cesky-krumlov/>.
- CGSI summer school: R. Chikhi (*de novo assembly*, *metagenomics*, two keynote lectures), Los Angeles, 4 weeks, 100 participants: <http://computationalgenomics.bioinformatics.ucla.edu>.

8.2.2. Teaching administration

Head of the licence semester “Computer Science – S3 Harmonisation (S3H)”, Univ. Lille (L. Noé).

Member of faculty council (M. Pupin, J.-S. Varré).

Head of the 3rd year of licence of computer science, Univ. Lille (J.-S. Varré).

Head of the GIS department (Software Engineering and Statistics) of Polytech’Lille (S. Janot).

Head of the computer science modules in the 1st year of Licence, Univ. Lille (M. Pupin).

Head of the *Informatique au féminin*, Univ. Lille (M. Pupin).

8.2.3. Supervision

PhD: T. Rocher, Indexing VDJ recombinations in lymphocytes for leukemia follow-up, February 2018, M. Giraud, M. Salson.

PhD: C. Saad, Caractérisation des erreurs de séquençage non aléatoires, application aux mosaïques et tumeurs hétérogènes, September 2018, M.-P. Buisine, H. Touzet, J. Leclerc, L. Noé, M. Figeac.

PhD in progress: P. Marijon, Analyse de graphes d’assemblage issus du séquençage ADN troisième génération, 2016, R. Chikhi, J-S. Varré.

PhD in progress: Q. Bonenfant, Algorithmes pour l’analyse de séquençage ARN troisième génération, 2017/11/15, L. Noé, H. Touzet.

8.2.4. Juries

- H. Touzet was member of the PhD juries of Camille Marchet (University of Rennes 1), Magali Dancette (University of Lyon 1), Aurélien Quillet (University of Rouen).
- H. Touzet was member of hiring committees (professors) at University of Lille and University of Caen.
- J.-S. Varré was member of a hiring committee (professors) at University of Lille.
- L. Noé was member of a hiring committee (associate professor) at University of Lille.
- R. Chikhi was member of the PhD juries of Florian Plaza Onate (INRA MetaGenoPolis), Sorina Maciuca (Wellcome Trust, UK).
- R. Chikhi was member of a hiring committee (research engineer) at Institut Pasteur, Paris.

8.3. Popularization

8.3.1. Internal or external Inria responsibilities

- Member of the CDT for Inria Lille (M. Pupin).
- Member of an Inria hiring committee (young researcher), Inria LNE (M. Pupin)

8.3.2. Education

- M. Pupin is the new leader of the collective *Informatique au féminin* from University of Lille, which was launched four years ago and whose goal is to organise computer science initiatives that reach teenage girls and female students. Among other actions, she is fully involved in the event *L codent, L créent* (she codes, she creates). This action aims to teach code to schoolgirls (13-15 years old), before they amass prejudices against computer science. 50 teenage girls were supervised by 11 female graduate computer science students, to create a proximity link between the young women. To emphasize the fact that coding is a creative and innovative pursuit, we chose to teach *Processing*, a programming language built for visual arts. After eight sessions of creative coding, a public exhibition was organized at the University with inspirational testimonies of women working in the field of computer science.
- The team participates to dissemination actions for high school students and high school teachers on a regular basis: multiple presentations on bioinformatics and research in bioinformatics with our dedicated “genome puzzles”, visit of high school students in the team (M. Salson).

CAPSID Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

Marie-Dominique Devignes is a member of the Steering Committee for the European Conference on Computational Biology (ECCB; <http://eccb.iscb.org/>). She was co-organizer of the national Workshop on AI and Health in the frame of PFIA 2018 (<https://pfia2018.loria.fr/journeeiasante/>), and she co-organized the Journée Entreprises (Atelier Santé) of the Fédération Charles Hermite (<http://www.loria.fr/wp-content/uploads/2017/12/Programme-Forum-FCH-Entreprises.pdf>).

Malika Smaïl-Tabbone is a member of the steering committee of the Conférence Francophone sur la Recherche d'Information et ses Applications (CORIA).

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program Committees

Malika Smaïl-Tabbone is a member of the organizing committee for Inforsid 2018 and EGC 2018, and is in charge of the é-EGC winter school in Metz.

9.1.2.2. Reviewer

Marie-Dominique Devignes was a reviewer for IWBBIO and BIBM.

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

David Ritchie is a member of the editorial board of Scientific Reports.

Sabeur Aridhi is a member of the editorial board of Intelligent Data Analysis.

9.1.3.2. Reviewer - Reviewing Activities

The members of the team have reviewed manuscripts for *Bioinformatics*, *BMC Bioinformatics*, *Computational and Structural Biotechnology Journal*, *Computational Biology and Chemistry*, *Evolutionary Bioinformatics*, *Journal of Computational Chemistry*, *Journal of Chemical Information and Modeling*, *Journal of Molecular Graphics and Modeling*, *Nucleic Acids Research*, *PLoS One*, *Proteins: Structure, Function & Bioinformatics*, and *Structure*.

9.1.4. Invited Talks

Marie-Dominique Devignes gave a presentation on accelerating precision medicine to the OLINK proteomics society in Uppsala, Sweden.

Malika Smaïl-Tabbone gave a talk on “Integrative Machine Learning Applied on Drug Side Effect Profiles” at WCP2018 (18th World Congress of Basic and Clinical Pharmacology) in Kyoto, Japan.

Isaure Chauvot de Beauchêne gave a presentation on docking by combinatorial assembly of fragments to the Centre de mathématiques et de leurs applications (CMLA) at ENS Cachan.

9.1.5. Scientific Expertise

Marie-Dominique Devignes reviewed grant applications for the ANR programme “Appel générique-JCJC”.

Malika Smaïl-Tabbone reviewed grant applications for the ANR and for the Indo-French Centre for the Promotion of Advanced Research.

Sabeur Aridhi reviewed grant applications for the French Committee for the Evaluation of Academic and Scientific Cooperation with Brazil (COFECUB).

David Ritchie is a member of the Bureau of the GGMM (Groupe de Graphisme et Modélisation Moléculaire).

Isaure Chauvot de Beauchêne is the team's representative to the ELIXIR 3D-Bioinfo working group, which is an essential link between the national IFB and the European ELIXIR projects that aim to make bioinformatics software and platforms available to non-expert biologists.

9.1.6. Research Administration

Marie-Dominique Devignes is Chargée de Mission for the CyberBioHealth research axis at the LORIA and is a member of the "Comipers" recruitment committee for Inria Nancy – Grand Est.

David Ritchie is a member of the Commission de Mention Informatique (CMI) of the University of Lorraine's IAEM doctoral school. Until November 2018 he was a member of the Bureau of the Project Committee for Inria Nancy – Grand Est.

Sabeur Aridhi is responsible for the major in IAMD (Ingénierie et Applications des Masses de Données) at TELECOM Nancy (Univ. Lorraine), and a member of the "Commission du Développement Technologique" recruitment committee at Inria Nancy – Grand Est.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: Sabeur Aridhi, *Programming Techniques and Tools*, 24 hours, L1, Univ Lorraine.

Licence: Sabeur Aridhi, *Databases*, 82 hours, L1, Univ Lorraine.

Licence: Sabeur Aridhi, *Massive Data Management*, 68 hours, L2, Univ Lorraine.

Licence: Sabeur Aridhi, *NoSQL Databases*, 44 hours, L2, Univ Lorraine.

Licence: Sabeur Aridhi, *Big Data Hackathon*, 8 hours, L3, Univ Lorraine.

Licence: Marie-Dominique Devignes, *Relational Database Design and SQL*, 30 hours, L3, Univ Lorraine.

Licence: Isaure Chauvot de Beauchêne, *TD Bioinformatique et Modelisation*, 10 hours, L3, Univ Lorraine.

Licence: Malika Smaïl-Tabbone, *Relational Databases*, 90 hours, L2, L3, Univ Lorraine.

Licence: Malika Smaïl-Tabbone, *NoSQL Databases*, 30 hours, M1, Univ Lorraine.

Licence: Malika Smaïl-Tabbone, *Programming Techniques*, 30 hours, L2, Univ Lorraine.

Master: Malika Smaïl-Tabbone, *KDD and Data Mining Algorithms*, 90 hours, M2, Univ Lorraine.

Master: Malika Smaïl-Tabbone, *Databases : Concepts and Techniques*, 30 hours, M2, Univ Lorraine.

Master: Malika Smaïl-Tabbone, *Ontology Management and Semantic Web Technologies*, 30 hours, M2, Univ Lorraine.

Master: Sabeur Aridhi, *Knowledge Discovery and Data Engineering*, 10 hours, M2, Univ Lorraine.

9.2.2. Supervision

PhD in progress: Maria Elisa Ruiz Echartea, *Multi-component protein assembly using distance constraints*, 01/11/2016, David Ritchie, Isaure Chauvot de Beauchêne.

PhD in progress: Kévin Dalleau, *Complex graph analysis for classification: application to disease nosography*, 01/12/2016, Malika Smaïl-Tabbone, Miguel Couerceiro.

PhD in progress: Bishnu Sarker, *Developing distributed graph-based approaches for large-scale protein function annotation and knowledge discovery*, 01/11/2017, David Ritchie, Sabeur Aridhi.

PhD in progress: Antoine Moniot, *Modeling protein / nucleic acid complexes by combinatorial structural fragment assembly*, 01/11/2017, David Ritchie, Isaure Chauvot de Beauchêne.

PhD in progress: Athénais Vaginay, *Model selection and analysis for biological networks: use of domain knowledge and application to networks disturbed in diseases*,

01/11/2017, Taha Boukhobza, Malika Smaïl-Tabbone.

DYLISS Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

- Workshop on Systems Biology Chile-France, Co-organization (A. Siegel) [\[More details\]](#)

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

- SWAT4HCLS (2018) Semantic Web and Tools for Health Care and Life Sciences (O. Dameron)
- BBCC (2018): Bioinformatica e Biologia Computazionale in Campania (O. Dameron)
- JFO (2018): Journées Francophones sur les Ontologies (O. Dameron)
- Journée IA et santé, organized by AFIA and AIM (O. Dameron)
- JOBIM (2018): French conference of Bioinformatics (A. Siegel)
- ISCB (2018) International Conference on Systems Biology (A. Siegel)
- WCB (2018) Workshop on Constraint-based methods in Bioinformatics (A. Siegel)
- BIOINFORMATICS (2018) (A. Siegel)
- ICGI 2016: The 13th International Conference on Grammatical Inference [F. Coste]

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- O. Dameron is an associate editor of the Journal of Biomedical Semantics
- A. Siegel is an academic editor of Genes (MDPI)

10.1.3.2. Reviewer - Reviewing Activities

- Artificial Intelligence in Medicine
- Briefings in Bioinformatics
- Journal of Biomedical Semantics
- Journal on Data Semantics
- Journal of Theoretical Biology
- Natural Computing
- PLOS One

10.1.4. Invited Talks

- Meziane Aite. Workshop France-Chile on Systems Biology. *Tools for metabolic network comparison at genome- scale: application on algae*, Valparaiso, Chile.
- Maxime Folschette. 4th Annual Meeting of the Bioss Workgroup (Journées annuelles du GT Bioss). *GULA: Semantics-Free Learning of a Biological Regulatory Networks from a Synchronous, Asynchronous or Generalized State Graph*. Marseille.
- Clémence Frioux. Invited speaker of weekly seminar: Bioinformatics group at Laboratoire de Recherche en Informatique (LRI). *Investigating host-microbiota cooperation with gap-filling optimization problems*. Orsay.

- Clémence Frioux. Invited speaker at UMR NUtriomics, Institute of Cardiometabolism and Nutrition (ICAN). *Scalable and exhaustive screening of metabolic functions in microbiotas*. Paris.
- Clémence Frioux. Seminar in the Ecology group led by Pr. Pablo Marquet Universida Catolica de Chile. *Scalable and exhaustive screening of metabolic functions in microbiotas*. Santiago, Chile.
- Clémence Frioux. Workshop France-Chile on Systems Biology. *Scalable and exhaustive screening of metabolic functions in microbiotas*. Valparaiso, Chile.
- Clémence Frioux. Journées Scientifiques de Nantes. *Scalable and exhaustive screening of metabolic functions in carried out by microbial consortia*. Nantes.
- Marine Louarn. Workshop France-Chile on Systems Biology. *Integration of omics data for the specification of regulation networks in health; identification of regulatory mechanisms*. Valparaiso, Chile.
- Anne Siegel. National meeting of the French Society of Microbiology. *Several aspects of artificial intelligence : which perspectives for microbiology?*. Paris.
- Anne Siegel. Century Seminar. *Reasoning over biological systems with large-scale and incomplete data*. Marseille.
- Anne Siegel. Journées annuelles du GT Bioss. *Learning boolean rules for the regulatory control of metabolism : a case study*. Marseille.
- Anne Siegel. Séminaire INRA-CATI. *Metabolic network reconstruction for non-model organisms*. INRA.
- Anne Siegel. ECCB workshop Logical modeling of cellular networks. *Learning boolean rules for the regulatory control of metabolism : a case study*. Athens, Greece.
- Anne Siegel. Workshop France-Chile on Systems Biology. *Integrating and querying data with AskOmics*. Valparaiso, Chile.
- Nathalie Théret. *Causality analysis of TGF- β -dependent signaling pathways*. Workshop "Computational System Biology for Cancer", Paris.
- Nathalie Théret. *Computational modeling to identify biomarkers and targets* Workshop DHU2020, Nantes, France

10.1.5. Leadership within the Scientific Community

- Member of the steering committee of the International Conference on Grammatical Inference [F. Coste]
- The team was involved in the foundation of a national working group on the symbolic study of dynamical systems named bioss [[web access](#)]. The group gathers more than 170 scientists, from computer science to biology. Three meetings were organized this year (Rennes, Marseille, Paris). The group is supported by two French National Research Networks: bioinformatics (GDR BIM : bioinformatique moléculaire) and informatics-mathematics (GDR IM : Informatique Mathématique).

10.1.6. Scientific Expertise

10.1.6.1. International expertise

- Luxembourg, FNR. Core program [A. Siegel]
- Senegal, CEA-MITIC (Centre d'Excellence Africain en Mathématiques, Informatique et TIC [O. Dameron, reviewed 1 project]

10.1.6.2. National responsibilities

- **Scientific program committee** National Research Agency, CES 45 [A. Siegel]
- **Institutional boards for the recruitment and evaluation of researchers.**
 - National Council of Universities, section 65 [O. Dameron, nominated member].
- **Recruitment committees.**

- Inria Senior Researchers [national committee, A. Siegel]
- Inria Junior Researchers [Saclay, A. Siegel]
- Assistant Professor [Univ. Marseille, A. Siegel]

10.1.6.3. National scientific boards

- Animation of the Systems Biology working group of national infrastructure GDR IM and GDR BIM (Bioss, details above) [A. Siegel].
- Board of directors of the French Society for biology of the extracellular matrix [N. Théret].

10.1.6.4. Local responsibilities

- Scientific Advisory Board of Biogenouest [N. Théret]
- IRISA laboratory (computer science department of Univ. Rennes 1) council [A. Siegel]
- Responsibility of the IRISA laboratory "Health-biology" cross-cutting axis [O. Dameron] [\[More details\]](#)
- Elected member of the social action services (ASUR) of Univ. Rennes 1 [C. Belleannée]
- Scientific committee of Univ. Rennes 1 school of medicine [O. Dameron, A. Siegel].

10.1.7. Research Administration

10.1.7.1. Inria Instances

- Inria National evaluation board [A. Siegel, nominated member].
- Equality and diversity Committee, Inria - Responsible of the working group focusing on recruitment procedures [A. Siegel].

10.1.7.2. Prospective working groups

- "Big & Open Data en recherche à l'horizon 2040" foresight working group of PROSPER network [F. Coste].

10.1.7.3. Inria local instances

- Gender equality commission, IRISA & Inria Rennes [A. Siegel, coordinator]
- Inria-Rennes Computer science infrastructure users commission - CUMI-R commission [F. Coste]
- Inria Rennes PHD recruitment (CORDIs) [C. Belleannée]

10.2. Teaching - Supervision - Juries

10.2.1. Teaching track responsibilities

- Coordination of the doctoral school "Biology and Health" of University of Bretagne Loire, Rennes Site 1 [N. Théret]
- Coordination of the master degree "Bioinformatics and genomics", Univ. Rennes1 [O. Dameron]

10.2.2. Course responsibilities

- "Internship", Master 1 in Computer Sciences, Univ. Rennes 1 [C. Belleannée]
- "Supervised machine learning", Master 2 in Computer Sciences, Univ Rennes 1 [F. Coste]
- "Atelier bioinformatique", Licence 2 informatique, Univ. Rennes 1 [O. Dameron]
- "Bioinformatique pour la génomique", 2nd year school of medicine, Univ. Rennes 1 [O. Dameron]
- "Bases de mathématiques et probabilité" and "Méthodes en informatique", Master1 in public health, Univ. Rennes 1 [O. Dameron]
- "Intégration: Remise à niveau en informatique", Master 1 in bioinformatics, Univ. Rennes 1 [O. Dameron]
- "Programmation en Python", Master 1 in Public Health, Univ. Rennes 1 [O. Dameron]

- "Programmation impérative en Python", Master 1 in bioinformatics, Univ. Rennes 1 [O. Dameron]
- "Système informatique GNU/Linux", Master 1 in bioinformatics, Univ. Rennes 1 [O. Dameron]
- "Semantic Web and bio-ontologies", Master 2 in bioinformatics, Univ. Rennes 1 [O. Dameron]
- "Internship", Master 2 in bioinformatics, Univ. Rennes 1 [O. Dameron]
- Master: A. Siegel, Integrative and Systems biology, Master 2 in bioinformatics, Univ. Rennes 1 [A. Siegel]
- Micro-environnement Cellulaire normal & pathologique, Master 2 in Biologie cellulaire et Moléculaire, Univ. Rennes 1 [N. Théret]

10.2.3. Teaching

Licence: C. Belleannée, Langages formels, 20h, L3 informatique, Univ. Rennes1, France.

Licence: C. Belleannée, Projet professionnel et communication, 16h, L1 informatique, Univ. Rennes1, France.

Licence: C. Belleannée, Enseignant référent, 20h, L1 informatique, Univ. Rennes1, France.

Licence: C. Belleannée, Spécialité informatique : Functional and immutable programming , 42h, L1 informatique, Univ. Rennes1, France

Licence: O. Dameron, Biostatistiques, 12h, 1st year school of medicine, Univ. Rennes 1, France

Licence: O. Dameron, Bioinformatique pour la génomique, 2h, 2nd year school of medicine, Univ. Rennes 1, France

Licence: O. Dameron, "Atelier bioinformatique", 8h, Licence 2 informatique, Univ. Rennes 1, France

Master: O. Dameron, "Intégration: Remise à niveau en informatique", 14h Master 1 in bioinformatics, Univ. Rennes 1, France

Licence: C. Frioux, Projet Python, 18h, L3 ENSAI, France.

Licence: C. Frioux, Techniques d'optimisation, 12h, L3 ENSAI, France.

Licence: M. Louarn, Introduction à la BioInformatique, 2h, L2 Informatique, Univ. Rennes 1, France.

Licence: M. Louarn, TPs Python, 8h, L1 Biologie, Univ. Rennes 1, France.

Licence: H. Talibart, Programmation scientifique Python, 24h, L1, Rennes1, France.

Licence: M. Wery, TPs Python, 36h, L1 Biologie, Univ. Rennes 1, France

Master: O. Dameron, "Programmation impérative en Python", 82.25h Master 1 in bioinformatics, Univ. Rennes 1, France

Master: C. Belleannée, Programmation logique avec contraintes et algorithmes génétiques, 40h, M1 informatique, Univ. Rennes1, France.

Master: C. Belleannée, Algorithmique du texte et bioinformatique, 10h, M1 informatique, Univ. Rennes1, France

Master: L. Bourneuf, Projet, 20h, M1 Santé Publique, France.

Master: F. Coste, Supervised machine learning, 15h, M2 Computer Sciences, Univ Rennes 1, France

Master: O. Dameron, "Object-oriented programming", 20h Master 1 in bioinformatics, Univ. Rennes 1, France

Master: O. Dameron, "Système informatique GNU/Linux", 20h, Master 1 in bioinformatics, Univ. Rennes 1, France

Master: O. Dameron, 8h, "Internship", Master 1 in bioinformatics, Univ. Rennes 1

Master: O. Dameron, "Bases de mathématiques et probabilité", 18.75h, Master1 in public health, Univ. Rennes 1

Master: O. Dameron, "Programmation impérative en Python", 3h Master 1 in public health, Univ. Rennes 1, France

Master: O. Dameron, 21h, "Semantic Web and bio-ontologies", Master 2 in bioinformatics, Univ. Rennes 1

Master: O. Dameron, 10h, "Internship", Master 2 in bioinformatics, Univ. Rennes 1

Master: C. Belleannée, 20h, "Internship", Master 1 Computer Sciences, Univ. Rennes 1, France

Master: M. Louarn, Informatique Médicale Avancée, 2h, M1 Médecine, Univ. Rennes 1, France.

Master: M. Louarn, Object-oriented programming, 25h, M2 bioinformatique et génomique, Univ. Rennes 1, France.

Master: A. Siegel, Integrative and Systems biology, 25h, M2, Univ. Rennes 1, France.

Doctorat: A. Siegel, Reasoning over biological systems with large-scale and incomplete data, 3h, Thematic Research School on "advances in Systems & Synthetic Biology", Evry'18.

10.2.4. Supervision

PhD : Clémence Frioux, *Investigating host-microbiota cooperation with gap-filling optimization problems.*, started in Oct. 2015, defended on Nov. 19 2018, supervised by A. Siegel [11].

PhD in progress : Yann Rivault, *Analyse de trajectoires de soins à partir de bases de données médico-administratives : apport d'un enrichissement pas des connaissances biomédicales issues du Web des Données*, started in Oct. 2015, defense expected 28th January 2019, supervised by O. Dameron and N. Lemeur.

PhD in progress : Lucas Bourneuf, *Justifiable graph decomposition to assist biological network understanding*, started in Oct. 2016, supervised by J. Nicolas.

PhD in progress : Hugo Talibart, *Learning grammars with long-distance correlations on proteins*, started in Nov. 2017, supervised by F. Coste and J. Nicolas.

PhD in progress : Mael Conan, *Predictive approach to assess the genotoxicity of environmental contaminants during liver fibrosis*, started in Oct. 2017, supervised by S. Langouet and A. Siegel.

PhD in progress: Marine Louarn, *Intégration de données génomiques massives et hétérogènes, application aux mutations non-codantes dans le lymphome folliculaire*, started in Oct. 2017, supervised by A. Siegel, T. Fest (CHU) and O. Dameron.

PhD in progress : Méline Wery, *Methodology development in disease treatment projects.* , started in Oct. 2017, supervised by O. Dameron, C. Bettembourg (Sanofi) and A. Siegel.

PhD in progress : Nicolas Guillaudeux, *Comparer des structures de gènes pour la prédiction de transcrits isoformes codants et non-codants*, started in Oct. 2018, supervised by O. Dameron, C. Belleannée and S. Blanquart.

PhD in progress : Pierre Vignet, *Identification et conception expérimentale de nouveaux agents thérapeutiques à partir d'un modèle informatique des réseaux d'influence du TGF- β dans les pathologies hépatiques chroniques* , started in Dec. 2018, supervised by N. Théret and A. Siegel.

10.2.5. Juries

- *Referee of Ph-D thesis.* C. Biane, Univ Paris Saclay [A. Siegel]. A. Bonnafoux, ENS Lyon [A. Siegel]. B. Miraglio, Univ Nice [A. Siegel]. G Personeni, Univ. Lorraine [O. Dameron].
- *Member of Ph-D thesis juries.* C. Marchet, Univ Rennes [A. Siegel]. M. Pichene, Univ. Rennes [A. Siegel].
- *Refererr of habilitation thesis juries.* A. Baudot, Univ. Marseille.
- *Member of medicine doctorate juries* A. El Matoutat [O. Dameron].

10.2.6. Interns

- Internship, from Jan 2018 until Jun 2018. Supervised by I. Vigalatti and O. Dameron. Student: Guillaume Alviset. Subject: Selecting SPARQL endpoints for faster processing of federated queries.
- Internship, from Jan 2018 until Jun 2018. Supervised by A. Siegel. Student: Aurelien Cornet. Subject: Inférence de réseaux biologiques multi-échelles.
- Internship, from Apr 2018 until Jul 2018. Supervised by A. Siegel, F. Legeai and J. Bobe. Student: Clara Delahaye. Subject: Intégration des réseaux géniques de *Oryzias latipes* impliqués dans la fécondité et régulés par le microARN-202-5p.
- Internship, from Apr 2018 until Jul 2018. Supervised by A. Siegel and R. Munoz. Student: Emile Dumont. Subject: Reconstruction du réseau métabolique de bactéries cellulolytiques du rumen : exploration des voies de dégradation de la cellulose et de l'hémicellulose.
- Internship, from Jan 2018 until Jun 2018. Supervised by C. Frioux. Student: Enora Fremy. Subject: Etude du potentiel de coopération métabolique entre hôte et microbiote à l'échelle fonctionnelle.
- Internship, from Jan 2018 until Jun 2018. Supervised by C. Belleannée and S. Blanquart. Student: Nicolas Guillaudeux. Subject: Prédiction de transcriptome : analyse comparative multi-gènes, orthologues.
- Internship, from Apr 2018 until Jul 2018. Supervised by J. Got. Student: Teo Lemane. Subject: Curation du réseau métabolique de *T. Lutea* via des méthodes hétérogènes.
- Internship, from Jan 2018 until Jul 2018. Supervised by N. Théret, J. Nicolas and L. Bourneuf. Student: Linh Chi Nguyen. Subject: Compression of large interaction graphs for the identification of protein modules in the extracellular matrix.

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Science en Cour[t]s (<http://sciences-en-courts.fr/>) Many of our on-going and former Ph-D students (M. Wery, L. Bourneuf, A. Antoine-Lorquin, C. Bettembourg, J. Coquet, V. Delannée, G. Garet, S. Prigent) have been heavily involved in the organization of a local Popularization Festival where Ph.D. students explain their thesis via short movies. The movies are presented to a professional jury composed of artists and scientists, and of high-school students. Previous years films can be viewed on the festival web-site [\[More details\]](#)

10.3.2. Interventions

- "J'peux pas j'ai informatique", Welcoming of high-school students to leverage stereotypes about computer sciences, Apr. 2018 [A. Siegel]
- Atelier Google Numerics, Rennes, table ronde *Enseigner le code dès le plus jeune âge*, Oct. 2018 [A. Siegel]
- "Rencontre des jeunes mathématiciennes", ENS Rennes, 2-days workshop for high-school girl students in mathematics. Introduction to gender stereotypes in mathematics, Nov. 2018 [A. Siegel]

10.3.3. Creation of media or tools for science outreach

- Le Language comme inspiration [\[youtube link\]](#) [H. Talibart]
- Les aventuriers du remède perdu [\[youtube link\]](#) [M. Louarn and M. Wery]

ERABLE Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

- Giuseppe Italiano is member of the Steering Committee of the *Workshop on Algorithm Engineering and Experimentation (ALENEX)*, of the *International Colloquium on Automata, Languages and Programming (ICALP)*, and the *Workshop/Symposium on Experimental Algorithms (SEA)*.
- Alberto Marchetti-Spaccamela is a member of the Steering committee of *Workshop on Graph Theoretic Concepts in Computer Science (WG)*, and of *Workshop on Algorithmic Approaches for Transportation Modeling, Optimization, and Systems (ATMOS)*.
- Arnaud Mary is member of the Steering Committee of *Workshop on Enumeration Problems and Applications (WEPA)*.
- Marie-France Sagot is member of the Steering Committee of *European Conference on Computational Biology (ECCB)*, *International Symposium on Bioinformatics Research and Applications (ISBRA)*, and *Workshop on Enumeration Problems and Applications (WEPA)*.
- Alexander Schönhuth is member of the Steering committee of the *Research in Computational Molecular Biology, satellite conference on massively parallel sequencing (RECOMB-seq)*.

9.1.1.2. Member of the Organizing Committees

- Marie-France Sagot was co-organiser of the Dagstuhl Seminar on “Algorithmic Enumeration: Output-sensitive, Input-Sensitive, Parameterized, Approximative”, Dagstuhl Schloss, Oct 14 to 19, 2018.
- Alexander Schönhuth was main organiser of main organizer of the Lorentz workshop on “Single Cell Data Science”, Lorentz center, Leiden, June 4-8, 2018.
- Leen Stougie was member of the Organizing Committee of the *3rd Highlights of Algorithms (HALG 2018) conference* in the Free University of Amsterdam, June 4-6, 2018.

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program Committees

- Giuseppe Italiano was a member of the Program Committee of *ISAAC, STOC, ICALP, and WALCOM* in 2018.
- Arnaud Mary was a member of the Program Committee of *CIAC* in 2018.
- Nadia Pisanti was a member of the Program Committee of *BIOINFORMATICS, FUN, ISBRA, BIOKDD, CIBB, Hi BI BI* in 2018.
- Marie-France Sagot was a member of the Program Committee of *SEA, CIAC, WABI, WEPA*, in 2018.
- Alexander Schönhuth was a member of the Program Committee of *RECOMB, ISMB, GCB* (German bioinformatics conference), and *ISMCO* (International Symposium on Mathematical and Computational Oncology) in 2018.

9.1.2.2. Reviewer

Members of ERABLE have reviewed papers for a number of workshops and conferences including: *CPM, ISMB, RECOMB, WEPA, WABI*.

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- Pierluigi Crescenzi is member of the Editorial Board of *Journal of Computer and Systems Science and Electronic Notes on Theoretical Computer Science*.
- Roberto Grossi is member of the Editorial Board of *Theory of Computing Systems (TOCS)* and pf *RAIRO – Theoretical Informatics and Applications*.
- Giuseppe Italiano is member of the Editorial Board of *Algorithmica* and *Theoretical Computer Science*.
- Alberto Marchetti-Spaccamela is member of the Editorial Board of *Theoretical Computer Science*.
- Arnaud Mary is Editor-in-Chief of a special issue of *Discrete Applied Mathematics* dedicated to WEPA 2016.
- Nadia Pisanti is since 2012 member of Editorial Board of *International Journal of Computer Science and Application (IJCSA)* and since 2017 of *Network Modeling Analysis in Health Informatics and Bioinformatics*.
- Marie-France Sagot is member of the Editorial Board of *BMC Bioinformatics*, *Algorithms for Molecular Biology*, and *Lecture Notes in Bioinformatics*.
- Leen Stougie is member of the Editorial Board of *AIMS Journal of Industrial and Management Optimization*.
- Cristina Vieira is Executive Editor of *Gene*, and since 2014 member of the Editorial Board of *Mobile DNA*.

9.1.3.2. Reviewer - Reviewing Activities

Members of ERABLE have reviewed papers for a number of journals including: *Theoretical Computer Science*, *Algorithmica*, *Algorithms for Molecular Biology*, *Bioinformatics*, *BMC Bioinformatics*, *Genome Biology*, *Genome Research*, *IEEE/ACM Transactions in Computational Biology and Bioinformatics (TCBB)*, *Molecular Biology and Evolution*, *Nucleic Acid Research*.

9.1.4. Invited Talks

Giuseppe Italiano gave an Invited Talk on “2-Connectivity in Directed Graphs” at the *17th International Symposium on Experimental Algorithms (SEA 2018)* (<http://cs.gssi.it/sea2018/>), in L’Aquila, Italy, June 27–29, 2018.

Vincent Lacroix gave an Invited Presentation on “Traitement des données -omics” at the “9ème réunion annuelle Institut Thématique Multi-Organismes Technologies pour la Santé”, <https://its.aviesan.fr/index.php?pagendx=1046>.

Alexander Schönhuth gave Invited Talks at the CONTRA workshop, Warsaw (organisers: Jens Lagergren, Ewa Szczurek, Niko Beerenwinkel), in September and at Harvard Medical School, Boston, in October.

Leen Stougie gave an Invited Talk on “A decomposition theory for vertex enumeration of convex polyhedra” at the *Martin Dyer Day and Queen Mary Algorithms Day*, Queen Mary University, London, UK, July 16-17, 2018. He gave Invited Lectures on “Full-length de novo viral quasispecies assembly through variation graph construction” at the *4th Dutch Bioinformatics & Systems Biology Conference*, De Werelt, Lunteren, Netherlands, May 15; on “Polynomial time vertex enumeration of convex polytopes of bounded branch-width” at the Department of Mathematics, University of Bremen, Germany, Sept 11; and on “Algorithmic Problems in Biological Networks” at the *9th Networks Day*, Hortus Botanicus, Leiden, Netherlands, Sept 19, 2018.

Fabrice Vavre gave Invited Talks on “Impact du microbiote sur l’évolution et la diversité des insectes” at the *Colloque de la Société Francophone de Microbiologie*, Paris, Oct 1-3, 2018; and on “Evolution of host-microbiota interactions: what insects tell us about selection levels?” at the *Journées de l’IXXI*, Lyon, Oct 16, 2018.

9.1.5. Scientific Expertise

Giuseppe F. Italiano is member of the Council of the European Association for Theoretical Computer Science. Leen Stougie is member of the General Board of the Dutch Network on the Mathematics of Operations Research (Landelijk Netwerk Mathematische Besliskunde (LNMB)).

9.1.6. Research Administration

Hubert Charles is director of the Biosciences Department of the Insa-Lyon and co-director of studies of the “Bioinformatique et Modélisation (BIM)” track.

Giuseppe Italiano is member of the Advisory Board of MADALGO - Center for MAssive Data ALGORithmics, Aarhus, Denmark.

Alberto Marchetti-Spaccamela was Director of the Department of Computer Engineering and Management Antonio Ruberti at Sapienza University from 2013 until end of May 2018.

Nadia Pisanti is since November 1st 2017 member of the Board of the PhD School in Data Science (University of Pisa jointly with Scuola Normale Superiore Pisa, Scuola S. Anna Pisa, IMT Lucca).

Marie-France Sagot is member of the Advisory Board of CWI, Amsterdam, the Netherlands, and chair of the CSS for MBIO at Inra.

Alexander Schönhuth is member of the Scientific Board of BioSB (the Dutch organisation for bioinformatics) since May 2017.

Leen Stougie is since April 2017 Leader of the Life Science Group at CWI.

Alain Viari was until Feb 2018 Deputy Scientific Director at Inria responsible for the ICST for Life and Environmental Sciences. He thus represented Inria at several national instances related to Life Sciences and Health (Allenvi, Aviesan, Ibisa, etc.). He is member of a number of scientific advisory boards (IRT (Institut de Recherche Technologique) BioAster; Centre Léon Bérard). He also coordinates together with J.-F. Deleuze (CNRGH-Evry) the Research & Development part (CRefIX) of the “Plan France Médecine Génomique 2025”.

Fabrice Vavre is President of the Section 29 of the CoNRS and participated to the HCERES Evaluation Committee of the IAME Laboratory (UMR1137, Dir. E. Denamur), Paris, Mar 1-2, 2018.

Cristina Vieira is member of the “Conseil National des Universités” (CNU) 67 (“Biologie des Populations et Écologie”), and since 2017 member of the “Conseil de la Faculté des Sciences et Technologies (FST)” of the University Lyon 1.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

9.2.1.1. France

The members of ERABLE teach both at the Department of Biology of the University of Lyon (in particular within the BISM (BioInformatics, Statistics and Modelling) specialty, and at the department of Bioinformatics of the Insa (National Institute of Applied Sciences). Cristina Vieira is responsible for the Master Biodiversity, Ecology and Evolution (<https://www.bee-lyon-univ.fr/>). She teaches genetics 192 hours per year at the University and at the ENS-Lyon. Hubert Charles is responsible for the Master of Modelling and Bioinformatics (BIM) at the Insa of Lyon (<http://biosciences.insa-lyon.fr/>). He teaches 192 hours per year in statistics and biology. Vincent Lacroix is responsible for several courses of the Master in Bioinformatics (<https://www.bioinfo-lyon.fr/>) (L3: Advanced Bioinformatics, M1: Methods for Data Analysis in Genomics, M1: Methods for Data Analysis in Transcriptomics, M1: Bioinformatics Project, M2: Ethics). He teaches 192 hours per year in bioinformatics. Arnaud Mary is responsible for two courses of the Bioinformatics Curriculum at the University (L2: Introduction to Bioinformatics and Biostatistics, M1: Object Oriented Programming) and one at Insa (Discrete Mathematics). He taught 198 hours in 2018. Blerina Sinimeri taught 36 hours in 2018 on graph algorithms for the M1 students of the Master in Bioinformatics, and on Discrete Mathematics at Insa. Fabrice Vavre taught 20h at the Master level.

The ERABLE team regularly welcomes M1 and M2 interns from the bioinformatics Master.

Vincent Lacroix was an instructor in NGS data analysis training for the CNRS Formation in the last 4 years since 2015, a course coordinated by Eric Rivals from the LIRMM, Montpellier (<https://www.france-bioinformatique.fr/fr/formations/bioinformatique-pour-traitement-donn%C3%A9es-s%C3%A9quen%C3%A7age-ngs>).

All French members of the ERABLE team are affiliated to the doctoral school E2M2 (Ecology-Evolution-Microbiology-Modelling, <http://e2m2.universite-lyon.fr/>).

9.2.1.2. Italy & The Netherlands

Italian researchers teach between 90 and 140 hours per year, at both the undergraduate and at the Master levels. The teaching involves pure computer science courses (such as Programming foundations, Programming in C or in Java, Computing Models, Distributed Algorithms) and computational biology (such as Algorithms for Bioinformatics).

Dutch researchers teach between 40 and 270 hours per year, again at the undergraduate and Master levels, in pure computer science (*e.g.* Algorithm Engineering, Randomised Algorithms), applied mathematics (*e.g.* Operational Research, Advanced Linear Programming) and computational biology (*e.g.* Biological Network Analysis).

9.2.2. Supervision

The following PhDs were defended in ERABLE in 2018:

- Damiano di Francesco Maesa, University of Pisa, co-supervisors: Laura Ricci and Andrea Marino, Oct 2018.
- Mattia Gastaldello, Sapienza University of Rome and University of Lyon 1 (funded by “Vinci Program-Université Franco-Italienne”, co-supervisors: Tiziana Calamoneri, Sapienza University of Rome; Marie-France Sagot), Feb 2018.
- Scheila Gabriele Mucha, Federal University of Rio Grande do Sul, Brazil (PhD scholarship from Brazil with one year spent as "sandwich PhD" in France funded by Capes, and 6 more months funded by a grant from ERABLE, co-supervisors: Arnaldo Zaha, Federal University of Rio Grande do Sul; Marie-France Sagot), Sept 2018.

The following are the PhDs in progress:

- Marianne Borderes, University Lyon 1 (funded by ANR Technology Spock, co-supervisors: Susana Vinga – Instituto Superior Técnico at Lisbon; Marie-France Sagot)
- Audric Cologne, University of Lyon 1 (funded by Inserm and Inria, co-supervisors: Patrick Edery – Federation of Health Research of Lyon-Est, Vincent Lacroix)
- Leandro Ishi Soares de Lima, University of Lyon 1 (funded by the Brazilian “Science without Borders” program, co-supervisors: Giuseppe Italiano, Vincent Lacroix, Marie-France Sagot)
- Carol Moraga Quinteros, University of Lyon 1 (funded by Conicyt Chile, co-supervisors: Rodrigo Gutierrez – Catholic University of Chile, Marie-France Sagot)
- Henri Taneli Pusa, University of Lyon 1 (funded by H2020-MSCA-ETN-2014 project MicroWine, co-supervisors: Alberto Marchetti-Spaccamela, Arnaud Mary, Marie-France Sagot)
- Camille Sessegolo, University of Lyon 1 (funded by ANR Aster; co-supervisors: Vincent Lacroix, Arnaud Mary)
- Yishu Wang, University Lyon 1 (funded by Ministère de l’Enseignement supérieur, de la Recherche et de l’Innovation, co-supervisors: Mário Figueiredo – Instituto Superior Técnico at Lisbon; Marie-France Sagot; Blerina Sinimeri)
- Irene Ziska, University Lyon 1 (funded by Inria Cordi-S, co-supervisors: Susana Vinga – Instituto Superior Técnico at Lisbon; Marie-France Sagot)

Besides the PhD students indicated above, who are physically located within one of the premises of ERABLE, the project-team has PhD students in co-supervision who spend the majority or the whole of their time in the premises of other teams. These include: Rita Ramos (funded by Portuguese FCT, co-supervisors: Claudia Nunes dos Santos – ITQB Lisbon, Marie-France Sagot), and André Veríssimo (funded by Portuguese FCT, co-supervisors: Susana Vinga – Instituto Superior Técnico in Lisbon, Marie-France Sagot).

9.2.3. Juries

The following are the PhD or HDR juries to which members of ERABLE participated in 2018.

- Giuseppe Italiano: External Examiner of the PhD of Daniel Wolleb-Graf, ETH, Zurich, Switzerland, Dec 3, 2018.
- Marie-France Sagot: External Reviewer of the PhD of Clémence Frioux, University of Rennes 1, France, Nov 19, 2018.
- Leen Stougie: Member of the Committee of the PhD of Bart Kamphorst, Technical University Eindhoven, Netherlands, May 2018; Member of the Committee of Gregorios Koumoutsos, Technical University Eindhoven, Netherlands, Sept 2018.
- Fabrice Vavre: External Reviewer of the HDR Committee of Thierry Lefevre, Univ of Montpellier, France, March 3, 2018.

9.3. Popularization

9.3.1. Interventions

Blerina Sinimeri and Ricardo Andrade participated to the Inria Fête de la Science in October 2018. Blerina Sinimeri and Mariana G. Ferrarini presented the research topics of the team in an event for welcoming international scientists at the Espace Ulys of the University of Lyon. The presentation was entitled “ERABLE : A bio-info symbiosis” and discussed mainly about the multidisciplinary of the ERABLE Team. Finally, Mariana Galvao Ferrarini participated in the Fête de la Science INRA at the Mediathèque de Bron in October 2018.

Fabrice Vavre participated to the Forum des métiers, Collège Clément Marot, on “La recherche au CNRS”.

GENSCALE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Selection

10.1.1.1. Member of the Conference Program Committees

- JOBIM 2018: French symposium of Bioinformatics [P. Peterlongo]
- 2018 IEEE International Conference on Bioinformatics and Biomedicine [D. Lavenier]
- 9th International Workshop on Biological Knowledge Discovery from Big Data [D. Lavenier]
- International Work-Conference on Bioinformatics and Biomedical Engineering [D. Lavenier]
- 11th International Conference on Bioinformatics and Computational Biology (BICOB-2019) [R. Andonov]

10.1.1.2. Reviewer

- RECOMB 2018 [P. Peterlongo]
- SEQBIO 2018 [P. Peterlongo]
- RCAM 2018 [P. Peterlongo]
- ECCB 2018 [P. Peterlongo]

10.1.2. Journal

10.1.2.1. Reviewer - Reviewing Activities

- Bioinformatics [P. Peterlongo, D. Lavenier]
- BMC Bioinformatics [D. Lavenier]
- BMC Genomics [D. Lavenier, F. Legeai]
- Briefing in Bioinformatics [D. Lavenier]
- Current Bioinformatics [D. Lavenier]
- IEEE/ACM Transactions on Computational Biology and Bioinformatics [D. Lavenier]
- Nature Scientific Reports [F. Legeai]

10.1.3. Invited Talks

- C. Marchet, *A highly scalable data structure for read similarity computation and its application to marine holobionts*, EEB group meeting, Brussels (Belgium), July 8th 2018
- C. Marchet, *CARNAC-LR: clustering genes expressed variants from long read RNA sequencing*, team TIBS seminar, Rouen (France), February 27 2018
- P. Peterlongo, *DiscoSnp++*, *de novo Variant predictions*, Tara Oceans Polar Circle Consortium, Paris (France), January 2018
- P. Peterlongo, *Extract information from short metagenomic reads*, Workshop GDR GE Rennes, 4e colloque Génomique environnementale, October 2018.
- D. Lavenier, *GenScale and its life science interactions*, bioinformatics workshop, IFREMER, June 2018

10.1.4. Leadership within the Scientific Community

- P. Peterlongo. member of the Scientific Advisory Board of the GDR BIM (National Research Group in Biology, Informatic and Mathematic)

- C. Lemaitre. Animator of the Sequence Algorithms axis (seqBIM GT) of the GDR BIM (National Research Group in Biology, Informatics and Mathematics)
- F. Legeai. Animator of the INRA Center for Computerized Information Treatment "BBRIC".

10.1.5. Scientific Expertise

- Expert for the MEI (International Expertise Mission), French Research Ministry [D. Lavenier]
- Member of the Scientific Council of BioGenOuest [D. Lavenier]
- Member of the Scientific Council of the Computational Biology Institute of Montpellier [D. Lavenier]
- Member of the Scientific Council of Agrocampus Ouest (Institute for life, food and horticultural sciences and landscaping) [J. Nicolas]
- Chapter "Artificial Intelligence and Bioinformatics" to appear in 2019 in the 3-volume book "A Guided Tour of Artificial Intelligence Research", H. Prade, P. Marquis and O. Papini eds, Elsevier. [35]

10.1.6. Research Administration

- Member of the CoNRS, section 06, [D. Lavenier]
- Member of the CoNRS, section 51, [D. Lavenier]
- Corresponding member of COERLE (Inria Operational Committee for the assesment of Legal and Ethical risks) [J. Nicolas]
- Member of the steering committee of the INRA BIPAA Platform (BioInformatics Platform for Agroecosystems Arthropods) [D. Lavenier]
- Member of the steering committee of The GenOuest Platform (Bioinformatics Resource Center BioGenOuest) [D. Lavenier]
- Scientific Advisor of The GenOuest Platform (Bioinformatics Resource Center BioGenOuest) [J. Nicolas]
- Representative of the environnemental axis of UMR IRISA [C. Lemaitre]
- AGOS first secretary [P. Peterlongo]
- Organisation of the weekly seminar "Symbiose" [P. Peterlongo]
- In charge of the bachelor's degree in the computer science department of University of Rennes 1 (90 students) [R. Andonov]
- Member of the Council of Administration of ISTIC [R. Andonov]
- Representative of non-permanent members in the Inria Rennes center committee [S. Letort]

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence : R. Andonov, Graph Algorithms, 60h, L3, Univ. Rennes 1, France.

Licence : W. Delage, J. Gautier, Biostatistic, 60 h, L2, Univ. Rennes 1, France.

Licence : W. Delage, Bioinformatics, 8 h , L2, Univ. Rennes 1, France.

Licence : K. Da Silva, Algorithms and Complexity, 36 h, L3, ENSAI, Rennes, France.

Master : R. Andonov, S. Francois, Operational research, 82h, M1 Miage, Univ. Rennes 1, France.

Master : L. Lecompte, Python for ecologists, 24h, M1, Univ. Rennes 1, France.

Master : L. Lecompte, P. Peterlongo, Algorithms on Sequences, 52h, M2, Univ. Rennes 1, France.

Master : C. Guyomar, statistical learning, 32h, M1, Univ. Rennes, France.

Master : P. Peterlongo, Experimental Bioinformatics, 24h, M1, ENS Rennes, France.

Master : F. Legeai, RNA-Seq, Metagenomics and Variant discovery, 12h, M2, AgroCampusOuest, National Superior School Of Agronomy, Rennes, France.

Master : R. Andonov, Advanced Algorithmics, 25h, Univ. Rennes 1, France.

Master : D. Lavenier, Memory Efficient Algorithms for Big Data, Engineering School, ESIR, Rennes

Training : C. Lemaitre, P. Peterlongo, GATB Programming Day, 8h (April 18), Paris, France.

10.2.2. Supervision

PhD : C. Guyomar, Bioinformatic tools and applications for metagenomics of bacterial communities associated to insects, Univ Rennes, 07/12/2018, J.C. Simon, C. Mougel, C. Lemaitre. [8]

PhD : C. Marchet, Nouvelles méthodologies pour l'assemblage de données de séquençage polymorphes, Univ Rennes, 20/09/2018, P. Peterlongo. [9]

PhD in progress : S. François, Combinatorial Optimization Approaches for Bioinformatics, 01/10/2016, R. Andonov.

PhD in progress : L. Lecompte, Structural Variant detection in long-read sequencing data, 01/09/2017, D. Lavenier and C. Lemaitre.

PhD in progress : W. Delage, De novo local assembly approaches for the detection of complex genomic variations in rare diseases, 01/10/2017, J. Thévenon and C. Lemaitre.

PhD in progress: K. da Silva, METACATALOGUE: un nouveau cadre pour l'exploration de données de séquençage du microbiote intestinal, 01/10/2018, M. Berland, N. Pons and P. Peterlongo.

PhD in progress: R. Kar, Assembly and annotation of heterozygous insect genomes, 15/08/2018, F. Legeai, D. Tagu and P. Peterlongo.

PhD in progress: G. Siekaniec, Caractérisation différentielle de souches d'espèces bactériennes, 01/10/2018, E. Roux and J. Nicolas.

10.2.3. Juries

- *Member of Habilitation thesis jury.* Thomas Bruls, Univ. Paris-Saclay [D. Lavenier]
- *Member of Ph-D thesis juries.* Yoann Seelheuthner, University Paris-Saclay [C. Lemaitre].
- *Referee of Ph-D thesis.* Antoine Recanati, ENS Paris [D. Lavenier], Nicolas Dierckxsens, Univ. Libre de Bruxelles [D. Lavenier], Chadi Saad, Univ. Lille [J. Nicolas], Florian Plaza Oñate, INRA MetaGenoPolis [P. Peterlongo]
- *Member of Ph-D thesis committee.* Chi Nguyen Lam, Univ. Brest [D. Lavenier], Benjamin Churcheward, Univ. Nantes [D. Lavenier], Guillaume Gautreau, CEA, Genoscope [P. Peterlongo], Victor Gaborit, Univ. Nantes [P. Peterlongo], Afaf Saaid, Univ. Paris Saclay, Ecole Polytechnique [P. Peterlongo], Magali Dancette, Univ. Claude Bernard Lyon 1 [P. Peterlongo]

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Member of the Interstice editorial board [P. Peterlongo]

10.3.2. Interventions

- In educational institutions : Participation to operation "A la découverte de la recherche" in high schools [P. Peterlongo]

10.3.3. Creation of media or tools for science outreach

- Short Movie "Les mutations génétiques, des événements spontanés à la thérapie génique", presented at Sciences en Courts, a local contest of popularization short movies made by PhD students (<http://sciences-en-courts.fr/>) [L. Lecompte, W. Delage].

IBIS Project-Team

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific events organisation

8.1.1.1. Member of organizing committees

IBIS members	Conference, workshop, school	Date
Hidde de Jong	CompSysBio: Advanced Lecture Course on Computational Systems Biology, Aussois	Apr 2019

8.1.2. Scientific events selection

8.1.2.1. Chair of conference program committees

IBIS member	Conference, workshop, school	Role
Eugenio Cinquemani	European Control Conference (ECC 2019)	Associate editor

8.1.2.2. Member of conference program committees

IBIS member	Conference, workshop, program
Eugenio Cinquemani Hidde de Jong	ECC 2019, CMSB 2018 and 2019, HSB 2019, SASB 2018 CMSB 2108 and 2019, FOSBE 2019, HSB 2019, MLCSB 2018, ISMB Network Biology 2018, WML 2018

8.1.3. Journal

8.1.3.1. Member of editorial boards

IBIS member	Journal
Johannes Geiselmann Hidde de Jong Hidde de Jong Hidde de Jong	Frontiers in Microbiology (review editor) Journal of Mathematical Biology Biosystems (reviews editor) ACM/IEEE Transactions on Computational Biology and Bioinformatics

8.1.4. Scientific evaluation and expertise

IBIS member	Organism	Role
Johannes Geiselmann	INRA	Member scientific advisory committee
Johannes Geiselmann	UMR5240 CNRS-UCBL-INSA- BayerCropScience	Microbiologie, Adaptation, Pathogénie Member scientific council
Hidde de Jong	Microbiology and Food Chain Department, Inra	Member scientific council
Hidde de Jong	Univ Grenoble Alpes	Member scientific council of Pôle MSTIC
Delphine Ropers	INRA-Inria	Member selection committee PhD grants

8.1.5. Invited talks and other presentations**Eugenio Cinquemani**

Title	Event and location	Date
Estimation du bruit extrinsèque dans l'expression génique dans des cellules individuelles	Invited talk Journées Apprentissage de modèles statistiques et stochastiques à partir de données biologiques (ASSTABIO), Rennes	Mar 2018
Real-time control of synthetic microbial communities	Presentation Journée InBio, Lyon	Apr 2018
Towards automated control of synthetic E. coli communities	Presentation Journées GDR BIOS-IA	Dec 2018

Hidde de Jong

Title	Event and location	Date
Carbon catabolite repression and diauxic growth in E. coli	Invited talk Principles of Microbial Adaptation, Lorentz Center, Leiden, the Netherlands	Mar 2018
Optimal control of bacterial growth for the maximization of metabolite production	Presentation SMAI-MODE 2018, Autrans	Mar 2018
Analysis and control of bacterial regulatory networks	Presentation Journée InBio, Lyon	Apr 2018
Global physiological effects and the analysis of gene regulatory networks	Invited talk 1st International Plant Systems Biology Meeting, Conférence Jacques Monod, Roscoff	Sep 2018
Natural and synthetic control of resource allocation in bacteria	Invited talk Molecular Logic and Computational Synthetic Biology workshop, Santiago de Chile	Dec 2018

Stephan Lacour

Title	Event and location	Date
Influence des ARNs non-codants réprimant CsgD sur la production de curli par Escherichia coli	Poster Ecole Thématique de Microbiologie Moléculaire, Carry-Le-Rouet	Oct 2018

Aline Marguet

Title	Event and location	Date
Estimation statistique dans une population structurée branchante	Seminar Institut Fourier, Grenoble	Jan 2018
Loi des grands nombres pour des processus de branchement structurés	Seminar Institut de Mathématiques de Toulouse	Mar 2018
Loi des grands nombres pour des processus de branchement structurés	Seminar Institut de Recherche Mathématique Avancée, Strasbourg	Mar 2018
Loi des grands nombres pour des processus de branchement structurés	Seminar Institut Montpelliérain Alexander Grothendieck, Montpellier	Mar 2018
Estimation statistique dans une population branchante structurée par une diffusion	Presentation journées MAS du groupe Modélisation Aléatoire et Statistique, Dijon	Aug 2018
Estimation statistique dans une population branchante structurée par une diffusion	Seminar Institut de Mathématiques de Dijon, Dijon	Aug 2018

Marco Mauri

Title	Event and location	Date
Analysis of dynamics of membrane-protein microdomains in bacteria	Poster annual Deutsche Physikalische Gesellschaft (DPG) meeting, Berlin	Mar 2018

Michel Page

Title	Event and location	Date
WellInverter: A web application for the analysis of fluorescent reporter gene data	Poster journée Institut Français de Bioinformatique (IFB), Paris	Dec 2018

Corinne Pinel

Title	Event and location	Date
Présentation des techniques de génie génétique utilisées au sein du LIPhy	Presentation at the kick-off meeting of the network Ingénierie des Génomes des Micro-organismes (IGM), Paris	Sep 2018

Delphine Ropers

Title	Event and location	Date
Quantitative modelling of metabolism, gene expression and growth	Presentation Journée InBio, Lyon	Apr 2018

Etienne Thibault

Title	Event and location	Date
Coordination de la stabilité des ARNms et la physiologie cellulaire durant des transitions de taux de croissance	Presentation working group BIOSS of GDR IM/BIM, Marseille	Jul 2018
Coordination de la stabilité des ARNms et la physiologie cellulaire durant des transitions de taux de croissance	Poster at ICSB 2018, Lyon	Oct 2018
Coordination de la stabilité des ARNms et la physiologie cellulaire durant des transitions de taux de croissance	Seminar LISBP, INRA-INSA, Toulouse	Dec 2018

8.1.6. Research administration

IBIS member	Committee	Role
Eugenio Cinquemani	Inria Grenoble - Rhône-Alpes	Member Comité des Emplois Scientifiques (CES)
Eugenio Cinquemani	Inria Grenoble - Rhône-Alpes	Member Comité des Utilisateurs des Moyens Informatiques (CUMI)
Eugenio Cinquemani	Inria	Member Comité Administrative Paritaire (CAP)
Eugenio Cinquemani	Inria Grenoble - Rhône-Alpes	Member Comité Développement Technologique (CDT)
Hidde de Jong	Inria Grenoble - Rhône-Alpes	Member scientific council (COS)
Hidde de Jong	Inria	Member working group on International Relations of Conseil d'Orientation Scientifique et Technique (COST)
Delphine Ropers	Inria	Member of Commission d'évaluation d'Inria
Delphine Ropers	Inria	Member of Groupe de travail plan stratégique
Delphine Ropers	Inria Grenoble - Rhône-Alpes	Référente chercheurs
Delphine Ropers	Inria Grenoble - Rhône-Alpes	Member of Comité des études doctorales (CED)

8.1.7. Recruitment committees

IBIS member	Organism	Recruitment
Johannes Geiselmann	Inria	Chargés de recherche (jury d'admissibilité)
Delphine Ropers		
Delphine Ropers	Inria Grenoble - Rhône-Alpes	Chargés de recherche (jury d'admissibilité)
Delphine Ropers	INSA de Lyon	Assistant professor

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Four members of the IBIS team are either full professor or associate professor at Univ Grenoble Alpes. They therefore have a full teaching service (at least 192 hours per year) and administrative duties related to the organization and evaluation of the university course programs on all levels (from BSc to PhD). Besides the full-time academic staff in IBIS, the following people have contributed to courses last year.

Eugenio Cinquemani

Course: Stochastic modelling of gene regulatory networks, M2, BIM, INSA de Lyon (6 h)

Course: Statistics for systems biology, M1, Master Approches Interdisciplinaires du Vivant, CRI/Univ Paris Descartes (20 h, also in charge of 20 h of practicals)

Course: Modelling and identification of metabolic networks, M1, Phelma, INP Grenoble (4 h)

Hidde de Jong

Course and practicals: Modeling and simulation of gene regulatory networks, M2, BIM, INSA de Lyon (20 h)

Delphine Ropers

Course and practicals: Modelling in systems biology, M1, Phelma, INP Grenoble (16 h)

Course and practicals: Cell systems biology and modelling cell functions, M1, Master ingénierie de la santé, Univ Grenoble Alpes (14 h)

Course: Modeling and simulation of genetic regulatory networks, M2, INSA de Toulouse (4 h)

Thibault Etienne

Practicals: Mathématiques et statistique appliquées aux sciences humaines et sociales (practicals), L1 and L3, Univ Grenoble Alpes (56 h)

Course and practicals: Construction et analyse de plasmides in silico, M1, Master ingénierie de la santé, Univ Grenoble Alpes (10 h)

8.2.2. Supervision

PhD in progress: **Thibault Etienne**, Analyse intégrative de la coordination entre stabilité des ARNm et physiologie cellulaire chez *Escherichia coli*. Supervisors: Delphine Ropers and Muriel Coccagn-Bousquet (INRA Toulouse)

PhD in progress: **Joël Espel**, RNA engineering: Design of the dynamical folding of RNA and of RNA switches. Supervisors: Alexandre Dawid (Univ Grenoble Alpes) and Johannes Geiselmann

PhD in progress: **Antrea Pavlou**, Experimental and computational analysis of bacterial self-replicators. Supervisors: Hidde de Jong and Johannes Geiselmann

8.2.3. Juries**PhD thesis committees**

IBIS member	Role	PhD student	University	Date
Johannes Geiselmann	Rapporteur	Clea Lachaux	Univ Paul Sabatier Toulouse	Sep 2018
Johannes Geiselmann	Président	Tomas Andersen	Univ Grenoble Alpes	Oct 2018
Hidde de Jong	Président	Alexandre Rocca	Univ Grenoble Alpes	May 2018
Hidde de Jong	Rapporteur	Jonathan Behaegel	Univ Côte d'Azur	Oct 2018

Habilitation (HDR) committees

IBIS member	Role	PhD student	University	Date
Johannes Geiselmann	Rapporteur	Fabien Letisse	Univ Paul Sabatier Toulouse	Oct 2018

PhD advisory committees

IBIS member	PhD student	University
Johannes Geiselmann	Alain Lombard	Univ Grenoble Alpes
Johannes Geiselmann	Shiny Martis	INSA de Lyon
Hidde de Jong	Céline Hernandez	ENS Paris
Hidde de Jong	Charlotte Coton	INRA Moulon
Stephan Lacour	Julien Trouillon	CEA Grenoble
Delphine Ropers	Manon Barthe	Univ de Toulouse
Delphine Ropers	Irene Ziska	Univ de Lyon

8.2.4. Teaching administration

Yves Markowicz is director of the BSc department at Univ Grenoble Alpes.

Michel Page is coordinator of the master Systèmes d'information et d'organisation at the Institut d'Administration des Entreprises (IAE), Univ Grenoble Alpes.

Eugenio Cinquemani organizes a module on statistics in systems biology at CRI/Univ Paris Descartes.

Delphine Ropers organizes a module on the mathematical modeling of biological systems at PHELMA, INP Grenoble.

Hidde de Jong organizes with Daniel Kahn a module on the modeling of genetic and metabolic networks at INSA de Lyon.

8.3. Popularization

8.3.1. Creation of media or tools for science outreach

Hidde de Jong presented the work of IBIS in the framework of the communication action "Mon équipe en 180 secondes". The video is on-line at the following address: <https://videotheque.inria.fr/videotheque/media/47816;jsessionid=D615F60B85E6C88DEDD129AD56E4431E>

LIFEWARE Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. Member of the Organizing Committees

Philippe Dague and François Fages were co-organizers of the Workshop on Computational Systems Biology for Cancer **CSBC**, Institut des Systèmes Complexes, Paris, France, 24-26 jan. 2018.

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program Committees

- Gregory Batt was member of the scientific program committee of
 - the 19th International Conference on Systems Biology (ICSB 2018), Oct 28 - Nov 1, Lyon, France
- François Fages was member of the program committee of
 - **VEMDP'18** Verification of Engineered Molecular Devices and Programs. July 19, 2018, Oxford, United Kingdom. An affiliated workshop of **CAV 2018**.
 - **CMSB'18** 16th International Conference on Computational Methods in Systems Biology. 12th-14th September 2018, Faculty of Informatics, Masaryk University, Brno, CZ.
 - **MCU'18** 8th International Conference on Machines, Computations and Universality, June 28-30, 2018, Fontainebleau, France.
 - **IJCAR'18** 9th International Joint Conference on Automated Reasoning, part of the Federated Logic Conference **FLOC'18**, July 14-17, 2018, Oxford, UK.
 - **DataMod'18** 7th International Symposium “From Data to Models and Back”, 25-26 June 2018, Toulouse, France
 - **WCB'18** 13th International Workshop on Constraint-based Methods for Bioinformatics, Oxford co-located with **FLOC'18**, July 2018.

9.1.2.2. Reviewer

- Jakob Ruess has reviewed scientific articles for
 - the 57th IEEE Conference on Decision and Control (CDC 2018), Dec. 17-19, Miami, USA;
 - the 17th European Control Conference (ECC 2019), June 25-28, Naples, Italy;
 - the Bioinformatics conference, Feb 22-24 2019, Prague, Czech Republic.
- Sylvain Soliman reviewed papers for
 - IJCAR and CMSB.

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- François Fages is member of
 - the Editorial Board of the Computer Science area of the Royal Society Open Science journal, since 2014;
 - the Editorial Board of the journal RAIRO OR Operations Research, since 2004.

9.1.3.2. Reviewer - Reviewing Activities

In addition to their Editorial Board and Program Committee duties,

- Grégory Batt reviewed journal articles for *ACS Synthetic Biology*, *Cell Systems*, *Nature Communications*, and *Current Opinion in Systems Biology*;
- François Fages reviewed journal articles for *PLOS Computational Biology*, *Interface Focus*, *Natural Computing*, *BMC Systems Biology* and the book *Automated Reasoning for Systems Biology and Medicine*;
- Jakob Ruess reviewed journal articles for *PLOS Computational Biology*, *Journal of Mathematical Biology*, *Journal of Computational Physics*, *Processes*, and *Entropy*;
- Sylvain Soliman reviewed journal articles for *Journal of Theoretical Biology* and *Transactions in Computational Biology and Bioinformatics*.

9.1.4. Invited Talks

- Virgile Andreani gave an invited talk on *Modèles de résistance bactérienne aux antibiotiques* to *Journée apprentissage de modèles statistiques et stochastiques à partir de données biologiques*, Mar 2018, Rennes, France;
- Grégory Batt gave invited talks on
 - *Balancing a genetic toggle switch by real-time control and periodic stimulations*, IEEE Conference on Control Technology and Applications (CCTA 2018), Aug 21-24 2018, Copenhagen, Denmark
 - *Impact of phenotypic variability on commitment to apoptosis*, *Computational Systems Biology of Cancer*, Sept 2018, Paris
 - *Balancing a genetic toggle switch by real-time control and periodic stimulations*, iSSB / Genoscope seminar, Dec 2018, Evry, France
- François Fages gave invited talks on
 - *Vers une informatique de la cellule: programmes biochimiques naturels et synthétiques*, Conférence de rentrée de l'ENS Paris-Saclay (3h), Sep. 2018;
 - *Modeling and Design of Biological Systems*, Discrete Models and Formal Verification in Biology, Cambridge, UK, août 2018;
 - *Modeling and Design of Biological Systems*, Summer school on New strategies in medical diagnosis and personalized medicine, Ninh Binh, Vietnam, Jul. 2018;
 - *Computer-Aided Biochemical Programming of Synthetic Micro-reactors as Diagnostic Devices*, Groupe de Travail sur la biologie systémique symbolique, GT BIOSS, Marseille, Jul. 2018;
 - *Turing Completeness of Continuous Chemical Reaction Networks, an Informatic Perspective to Systems Biology and Synthetic Biology*, MODELIFE days, Université Provence Alpes Côte d'Azur, Nice, June 2018;
 - *A Constraint-based Implementation of Tropical Equilibrations in BIOCHAM towards integrating Stability Conditions for Computing Correct Model Reductions*, Scientific Meeting, Bonn, Allemagne, March 2018;
 - *From Turing Completeness of Continuous CRN to Abstract CRN Synthesis Workflow*, Formal Methods for the Synthesis of Biomolecular Circuits, Dagstuhl, Allemagne, Feb. 2018;
 - *Coupled Models of the Cell Cycle and Circadian Clock for Chronotherapy Optimization*, Computational Systems Biology for Cancer, Paris, Jan. 2018.

Jakob Ruess gave invited talks on

- *Virtual reality for bacteria*, C3BI Seminar, Feb 2018, Paris, France.

- *Shaping bacterial population behavior through computer-interfaced control of individual cells*, Symposium on "Cybergenetics-at the interface between living and non-living regulatory systems" at the Annual Meeting of the German Association for General and Applied Microbiology (VAAM), Apr 2018, Wolfsburg, Germany.

9.1.5. Leadership within the Scientific Community

- Grégory Batt is
 - co-responsible of the working group on Symbolic Systems Biology (GT Bioss), gathering >150 researchers in 25 research teams; and member of
 - the Technical Committee on Systems Biology of IEEE and CSS societies;
 - the scientific board of the French research network on Systems and Synthetic Biology (GdR BioSynSys), gathering 40 labs and 300 researchers;
 - the scientific board of the French research network on Bioinformatics (GdR BIM), gathering 56 labs and several hundreds of researchers;
 - the scientific committee of the Advanced Course on Computational Systems Biology summer school, Aussois, 2019;
 - the scientific committee of the Curie International Course on Systems Biology of Cancer, Paris, 2018.
- François Fages is member of
 - the Steering Committee of the International Conference on Computational Methods in Systems Biology, CMSB, since 2008.
 - the **Think Tank of the structuring program MODELIFE** “Modélisation physique et Mathématique du vivant”, Université Provence Alpes Côte d’Azur.

9.1.6. Scientific Expertise

- Grégory Batt
 - was responsible for the Predictive Systems Biology chapter of the 2018-2022 strategic plan of Inria;
 - was reviewer and panel member of the ITMO Cancer/Inserm call on single-cell approaches to cancer;
 - and reviewer for the MIT International Science & Technology Initiatives (MISTI) Global Seed Funds and for the Leverhulme Trust.
- François Fages
 - was member of the Comité de sélection Maître de Conférence, ENS Paris-Saclay;
 - of the thesis advisory committee of one PhD student;
 - and evaluator of one European Research Council ERC Consolidator Grant;
 - one European Research Council ERC Starting Grant;
 - and one DigiCosme, Univ. Paris-Saclay project.
- Jakob Ruess has been a member of thesis advisory committee for two PhD students.

9.1.7. Research Administration

- François Fages is member of the “Comité des Projets du centre” Inria Saclay-IdF
- Sylvain Soliman is member of the “Commission Scientifique” of Inria Saclay-IdF

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master: Grégory Batt (coordinator and teacher: 35h) and Jakob Ruess (25h), *Computational Biology*, M1, Master Approches Interdisciplinaires du Vivant (AIV).

Master: Grégory Batt (3h) *Synthetic Biology and Control course in Molecular and Cellular Biology* Sorbonne Université, Paris.

Master: François Fages (coordinator module 24h and teacher 12h) *C2-19 Biochemical Programming*, Master Parisien de Recherche en Informatique (MPRI), Paris.

Master: François Fages (co-coordinator module 36h and teacher 18h) and Sylvain Soliman (co-coordinator, teacher 18h) *INF555 - Constraint-based Modeling and Algorithms for Decision Making Problems* Master Artificial Intelligence, Ecole Polytechnique.

Master Modélisation en Pharmacologie Clinique et Epidémiologie Villejuif. François Fages (3h) *Méthodes de modélisation informatique des processus cellulaires: cycle cellulaire et horloge circadienne*,

Bachelor 2: Eléonore Bellot (teacher 64h) *CSE201 Object-oriented Programming in C++* TD and project supervision

Thematic Research School: Advances in systems and synthetic biology, Evry. François Fages and Sylvain Soliman (3h) *BIOCHAM Workshop*

9.2.2. Supervision

PhD in progress: Virgile Andreani, Calibration efficace de modèles de résistance bactérienne aux antibiotiques à l'aide d'un plan d'expériences optimal, ED STIC, Ecole Polytechnique, Sept. 2016, Gregory Batt

PhD in progress: Sebastian Sosa, "Understanding cost of protein production in yeast", ED FdV, Université Sorbonne Paris Cité, Feb. 2018, Gregory Batt

PhD in progress: Chetan Aditya, "Control of heterogenous synthetic microbial systems", ED FdV, Université Sorbonne Paris Cité, Feb. 2018, Gregory Batt

PhD in progress: Elise Weill, "Optimal control of partial differential equation systems: Application to heterogeneous cell populations", ED STIC, Ecole Polytechnique, Oct. 2018, Frédéric Bonnans and Gregory Batt

PhD in progress: Arthur Carcano, "Iterative design of single-cell experiments to learn single-cell models of biological systems", ED FdV, Université Sorbonne Paris Cité, Oct. 2018, Jakob Ruess and Gregory Batt

PhD in progress : Eléonore Bellot, "Réduction de modèles différentiels par résolution de contraintes d'algèbre tropicale (min,+)", ED STIC, Ecole Polytechnique, Sept. 2018, F. Fages & S. Soliman (50-50%)

PhD in progress : Jérémy Grignard, "Apprentissage de modèles à partir de données pour la conception d'expériences de criblage et la recherche de médicaments", ED STIC, Ecole Polytechnique, dec. 2018, F. Fages & T. Dorval, Servier (50-50%)

PhD in progress : Julien Martinelli, "Apprentissage de modèles mécanistes à partir de données temporelles, application à la personnalisation de la chronothérapie des cancers", ED STIC, Ecole Polytechnique, oct. 2018, F. Fages & A. Ballesta, Inserm (50-50%)

Master's Thesis in progress : Elisabeth Degrand, "Evolving Chemical Reaction Networks", KTH Stockholm, Sweden, F. Fages & M. Hemery (50-50%)

9.2.3. Juries

- Grégory Batt participated in the juries of
 - HdR of Benjamin Pfeuty, Université de Lille, *Rapporteur*, 23/11/2018
 - PhD of Arnaud Bonnaffoux, ENS de Lyon, *Président du Jury*, 12/10/2018
 - PhD of Alexandre Deloupy, Sorbonne Université, *Rapporteur*, 14/12/2018

- François Fages participated in the jurys of
 - HDR Thi Bich Han Dao, Université d’Orléans, *Président du jury*, 14 mars 2018.
 - PhD Alexandre Rocca, Université Grenoble, *Rapporteur*, 7 mai 2018.
 - PhD Benjamin Miraglio, Université de Nice, *Rapporteur*, 16 février 2018.
- Jakob Ruess was member of the jury of the PhD thesis of Mathieu Pichené, 25/06/2018.

9.3. Popularization

9.3.1. Articles and contents

Our publication on distinguishing resistance from resilience to antibiotic treatments [6] has been the object of a press release, institutional communications (at [Inria](#) and at [Institut Pasteur](#)), and some press attention, including notably by the UK daily mail journal.

9.3.2. Interventions

- Eléonore Bellot and Elise Weill participated at Fête de la Science in October 2018 at Inria Saclay île-de-France.
- Eléonore Bellot has received college school students for a visit to our research team on the design of logical gates in synthetic biology and their simulation in BIOCHAM.
- François Fages has received college school students for a visit to our research team with the question “Can we program any function ?”, answered negatively by proving Cantor’s theorem.

9.3.3. Creation of media or tools for science outreach

- François Fages has created several [BIOCHAM notebooks associated to his course at MPRI](#) and available online.
- François Fages and Sylvain Soliman have created one [BIOCHAM tutorial notebook presented at ASSB 2018](#) and available online.

MORPHEME Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Selection

9.1.1.1. Member of the Conference Program Committees

Eric Debreuve was a member of the Program Committee of ACIVS 2018 (Advanced Concepts for Intelligent Vision Systems) and Reconnaissance des Formes, Image, Apprentissage (RFIAP).

9.1.1.2. Reviewer

Laure Blanc-Féraud was a reviewer for the conferences IEEE ICIP and ICASSP.

Eric Debreuve was a reviewer for the conferences IEEE International Symposium on Biomedical Imaging (ISBI) and IEEE International Conference on Image Processing (ICIP).

Xavier Descombes was a reviewer for ISBI18, ICASSP18 and ICIP18.

Grégoire Malandain was a reviewer for the conferences EMBS, ISBI and MICCAI.

9.1.2. Journal

9.1.2.1. Member of the Editorial Boards

Laure Blanc-Féraud was Associated Editor for the journals SIAM Imaging Sciences. She was also responsible of the editorial field "Image" of the SCIENCES new editorial project of ISTE/WILEY Group which concerns the publication of collections of multi-authored titles in the fields of pure and applied sciences, health and humanities.

Xavier Descombes is Associated Editor for the journal Digital Signal Processing.

9.1.2.2. Reviewer - Reviewing Activities

Laure Blanc-Féraud was a reviewer for the Journal of Optimization Theory and Applications.

Eric Debreuve was a reviewer for the journals Digital Signal Processing (Elsevier) and Pattern Recognition (Elsevier).

Xavier Descombes was reviewer for the journals IEEE TMI and Digital Signal Processing.

Grégoire Malandain was reviewer for the journal IEEE TMI.

9.1.3. Invited Talks

Florence Besse gave a talk "Modeling Cell fate" at the Jacques Monod Conférence, November 2018.

Laure Blanc-Féraud was invited to the Workshop on Computational Methods for Inverse Problems in Imaging, Como Italy, 16-18 July 2018, and to the OSA Imaging and Applied Optics Congress, Orlando, USA, 25-28 June 2018.

Xavier Descombes was invited to give a talk at Tlemcen Univeristy during the Biomedical Doctoral School day. He was invited to give a talk at the SIAM conference on Imaging Science in Bologna. He was also a speaker during the C@UCA days in Fréjus and during Modelife days in Nice, workshops organized within the UCA Jedi Idex.

9.1.4. Leadership within the Scientific Community

Laure Blanc-Féraud is the directrice of the GdR 720 ISIS of CNRS (see website gdrisis.fr).

Xavier Descombes is member of IEEE BISP (Biomedical Imaging Signal Processing) Technical Committee.

Grégoire Malandain is member of the IEEE/EMB Technical Committee on Biomedical Imaging and Image Processing (BIIP). He is an member of the Scientific Committee of the MIA department of INRA.

9.1.5. Scientific Expertise

Laure Blanc-Féraud was president of the HCERES expert committee visit of the LTCI Lab (4-6 Dec.). She is a member of the ANR scientific evaluation committee ASTRID. She was part of the selection committee of section 61 of CNU for a professor position in Paris-Est University. She was expert for the CPER Numeric of Poitiers. She was member of the Commission d'admission CRCN of CNRS INS2I. Laure Blanc-Féraud was expert for the Italian Ministry of Research (MUIR) and for the FNRS (Belgium).

Xavier Descombes is an expert for the DRRT (Paca, Ile de France, Bretagne). He is member of the committee "Mathématiques et Sciences du Numérique pour la santé et la biologie" of ANR. He was in the HCERES committee to evaluate MAP5 laboratory.

9.1.6. Research Administration

Xavier Descombes is member of the "comité des projets" of Inria CRISAM. He is a member of the Comité Permanent des Ressources Humaines (CPRH), UNS, section 61.

Eric Debreuve is a member of the Comité Permanent des Ressources Humaines (CPRH), UNS, section 61.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: Arne Bechensteen, Outils pour la physique, 42h, L1, Polytech Nice Sophia, France

Licence: Arne Bechensteen, Programmation impérative PeiP1, 12h, L1, Polytech Nice Sophia, France

Master: Arne Bechensteen, Traitement Numérique des Images, 10h, M2, Polytech Nice Sophia, France

Master: Florence Besse, genetic tools for the study of neuronal networks, 4h, Université Côte d'Azur, France.

Master: Florence Besse, RNA localization and neuronal morphology, 4h, Université Côte d'Azur, France.

Master: Laure Blanc-Féraud, management of the module Traitements numériques des images (24h), teaching 5h CM.

Master : Eric Debreuve, scientific image processing, 9h EqTD, master SVS, Université Côte d'Azur, France

Master/Engineer : Debreuve, data mining, 27h EqTD, M2/Engineer 5, Université Côte d'Azur, France

Master: Xavier Descombes, Traitement d'images, Analyse de données, Techniques avancées de traitement d'images, 10h Eq. TD, Niveau M2, ISAE, France.

Master: Xavier Descombes, Traitement d'images, master VIM, 12h Eq. TD, Niveau M2, Université Côte d'Azur, France.

Master: Xavier Descombes, Bio-imagerie, master IRIV, 6h Eq. TD, Niveau M2, Université de Strasbourg, France

Master: Xavier Descombes, Analyse d'images, master GBM, 9h Eq. TD, Niveau M2, Université Côte d'Azur, France.

Master: Xavier Descombes, Traitement d'images scientifiques, master SVS, 6h Eq. TD Niveau M2, Université Côte d'Azur.

Master : Anca Grapa, Traitement d'images, master GBM, 12h Eq. TD, Niveau M1, Université Côte d'Azur, France.

Master : Anca Grapa, Compression, Analysis and Visualization of Multimedia Content, master SSTIM (GMD), Niveau M2, 14h Eq. TD, PolyTech Nice Sophia, France.

9.2.2. Supervision

PhD in progress: Arne Bechensteen, TIRF-MA and super-resolution by sparse estimation method, 2 October 2017, Laure Blanc-Féraud, Gilles Aubert, Sébastien Schaub.

PhD in progress: Anca-Ioana Grapa, Characterization of the organization of the Extracellular Matrix (ECM) by Image Processing , 19 September 2016, Laure Blanc-Féraud, Xavier Descombes, E. van Obberghen, (iBV).

PhD in progress: Sarah Laroui, Classification and modelling of botrytis cinerea fungi growth from microscope images: toward the establishment of links between phenotypes and antifongic molecules, 1st August 2018, Eric Debreuve, Xavier Descombes

PhD in progress: Emmanuelle Poulain, Fluoroscopy/CTA dynamic registration, 1st february 2016, Grégoire Malandain.

9.2.3. Internships

Baptiste Pouthier, Hierarchical deep learning for zooplankton image classification, Polytech Nice-Sophia Antipolis, UNS/UCA - MAM4, Eric Debreuve (sup.).

Simon Bahadoran, Deep learning for PALM superresolution in fluorescence microscopy. Supervisors: Laure Blanc-Féraud, Eric Debreuve.

Cédric Girard Riboulleau, Morphological tracking of organoids for the prostate cancer, Master BIM, Université Côte D'Azur, Xavier Descombes (sup.).

Guillaume Lavis, Detection, classification and characterization of mitochondrial networks: application to Alzheimer disease and cancer, Master BIM, Université Côte D'Azur, Xavier Descombes (sup.).

Raphael Pages, Quantitative analyse of vesicles transport within the Left/Right organizer in the zebrafish, Master MAPI3, Université Paul Sabatier Toulouse, Xavier Descombes (sup.).

9.2.4. Juries

Laure Blanc-Féraud participated to the PhD thesis committees of Clara Barbanson (Télécom Paris-Tech & ONERA) as member, Quentin Denoyelle (Ceremade, Dauphine University) as president, William Meiniel (Pasteur Institute) as president, and to the HDR jury of Nabil El Korso (Paris Nanterre university) as member.

Xavier Descombes participated to the PhD committees of Agustina Razetti (MorpHEME) as supervisor, Tran Thi Nhu Hoa (IPAL, Singapore and Sorbonne University), Amine Benomar (Tlemcen University, Algeria) and Jessica Sodjo (Bordeaux University) as a reviewer and Jean-Dominique Favreau (Titane, Inria) as an examiner. He was reviewer in the HDR juries of Sylvain Faisan (Strasbourg University) and Adel Hafiane (Orléans University).

Grégoire Malandain participated as reviewer to the PhD thesis committee of Ketan Bacchuwar (Paris Est univ.), Marc Filippi (Grenoble Alpes univ.), Julie Robic (Paris Est univ.), as member to the PhD thesis committee of Bertha Mayela Toledo Acosta (Rennes I univ.), and as reviewer to the HDR thesis committee of Antoine Vacavant (Clermont Auvergne univ.).

9.3. Popularization

9.3.1. Interventions

The MorpHEME team took part in "La fête de la Science" both at Inria and during the "Village de la Science" in Juan-Les-Pins. Sarah Laroui, Somia Rahnmoun and Arne Bechensteen were holding a stand in these events.

MOSAIC Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. Member of the Organizing Committees

- Romain Azaïs is a member of the organizing committee of the *Journées de Statistique 2019* in Nancy.

9.1.2. Journal

9.1.2.1. Member of the Editorial Boards

- C. Godin is:
 - Associate Editor of the journal *Frontiers in Plant Sciences*, section *Plant Biophysics and Modeling*.
 - Review Editor of the journal *Frontiers in Plant Sciences*, section *Plant Systems and Synthetic Biology*.
 - Member of the Editorial Advisory Board of the new journal *in silico Plants*.
 - Associate Editor of a special issue of the *Bulletin of Mathematical Biology* on *Multi-scale modelling of Tissue Growth and Shape*.
- Olivier Ali: Review Editor in *Plant Biophysics & Modeling for Frontiers* since January 2018

9.1.2.2. Reviewer - Reviewing Activities

All team members are regularly involved in reviewer activities for academic journals from different scientific fields: *Current Biology*, *Annals of Applied Probability*, *Journal of Theoretical Biology*, *Physical Review Letters*, *Journal of BioPhysics*, *Physical Review A*, etc.

9.1.3. Invited Talks

- Romain Azaïs:
 - *Arbres de Galton-Watson conditionnés par la taille ou la hauteur : estimation via les modèles limites*. Journée de rencontres scientifiques autour de la statistique pour la biologie et la médecine, Poitiers, February 2018.
 - *Quelques pistes pour l'analyse de données arborescentes*. Rencontres Statistiques Lyonnaises, March 2018 (I/II) and May 2018 (II/II).
 - *Un nouvel éclairage sur le subtree kernel pour données arborescentes*. Séminaire de Probabilités et Statistiques de l'Université de Montpellier, September 2018.
 - *Average number of crossings and rupture detection for piecewise-deterministic processes*. International conference STODEP, Rouen, October 2018.
- Christophe Godin:
 - *Can we manipulate tree forms like numbers?*, co-authored with Romain Azaïs. Workshop on Mathematics for Developmental Biology, BIRS Center for Mathematics in Banff, Canada, Dec. 2017.
 - *Functional-Structural modeling of plants*, co-authored with Arezki Boudaoud. Phytobiom days in Lyon. France, April 2018.

- *Phyllotaxis at the era of molecular and computational biology: the revival of an old enigma*, co-authored with Teva Vernoux. Jacques Monod series of international conferences in Roscoff, France, Sept 2018.
- *Coupling mechanical and hydraulic processes in multicellular models of plant development*, co-authored with Ibrahim Cheddadi. Workshop on the Contribution of cell mechanics to cell fate determination and tissue integrity: from an interdisciplinary point of view. Fondation des Treilles, France, Oct. 2018.
- Bruno Leggio (with J. Laussu, E. Faure, C. Godin and P. Lemaire): *Reproducible epidermal morphogenesis in ascidians: an active-reactive mechanical model*. Cell Cycle Day 2018, Montpellier, September 2018.

9.1.4. Scientific Expertise

- C. Godin
 - is a member of the International Scientific Advisory Committee of the Plant Phenotyping and Imaging Research Centre (P2IRC), Saskatchewan, Canada.
 - is a member of the Scientific Board of the Plant Biology and Breeding Department of INRA (BAP).
 - has reviewed a project for the Strategic Basic Research programme of the Flanders foundation for research (FWO), Belgium.

9.1.5. Research Administration

- C. Godin
 - is a member of the Project Committee at Grenoble Rhone-Alpes Research Center.
 - is a member of the Steering Committee of the RDP Lab., Lyon.
 - is a member of the Scientific board of the modeling axis of Labex NUMEV and a member of the direction board of the institut de biologie computationnelle (IBC) in Montpellier.
 - has been President of the 2018 CRCN Selection Jury at Inria Sophia Antipolis-Méditerranée

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Romain Azaïs:
 - *Colles de Mathématiques*, CPGE PCSI, Lycée Jean Perrin, Lyon.
 - One-day course on *Statistical learning*, Bioinformatics Summer School, Angers, July 2018.
- Guillaume Cerutti: *Practicals in modeling for Biosciences*, M2 ENS de Lyon (20h TP)
Coordinator: Arezki Boudaoud, RDP, ENS de Lyon.
- Christophe Godin:
 - Co-organized with Patrick Lemaire the International Spring School on *Animal and Plant Morphogenesis*, one week in March, Paris ENS Master, Montpellier, France.
 - *Introduction to Microscopy image analysis*. Master Biology ENS de Lyon (2h).
- Bruno Leggio:
 - Conception and supervision of practicals for masters and PhD students during the 2018 *Interdisciplinary spring school on animal and plant morphogenesis*, Hameau de l'Etoile, Montpellier, France, March 2018.
 - One-day class for biophysics students at the University of Montpellier on the *modeling of morphogenesis*, December 2018.

9.2.2. Supervision

- PhD (2015 – 2018): Sarah Bertrand (LIRIS, Université Lumière Lyon 2). *Analyse d'images pour l'identification multi-organes d'espèces végétales*. Guillaume Cerutti. Supervisors: Laure Tougne (LIRIS, Université Lumière Lyon 2) and Guillaume Cerutti.
- PhD in progress (2015 – 2019): Florine Greciet (IECL, Université de Lorraine and Safran). *Modèles markoviens déterministes par morceaux cachés pour la caractérisation de contrainte admissible en fatigue des matériaux*. Supervisors: Anne Gégout-Petit (Inria team BIGS, IECL, Université de Lorraine) and Romain Azaïs.
- Master 1 (3 months in 2018): Florian Ingels. *Méthodes à noyau pour données arborescentes*. Supervisor: Romain Azaïs.
- Licence 3 (2 months in 2018): Clément Legrand. *A COMPLETER*. Supervisor: Christophe Godin.
- Niveau à compléter (durée à compléter): Tony Vincent Ang. *A COMPLETER*. Supervisors: Christophe Godin and Frédéric Boudon.
- Niveau à compléter (durée à compléter): Renan Berruex. *A COMPLETER*. Supervisors: Christophe Godin and Frédéric Boudon.
- Penser à Hadrien Oliveri, Katia Mirande, Anne Schneider

9.3. Popularization

9.3.1. Articles and contents

- Christophe Godin
 - made a presentation at *My team in 180 seconds*, June 2018 (in French).
 - wrote a paper *Pourquoi les Plantes font des maths* co-authored with Fabrice Besnard and Teva Vernoux, that was published in *Pour La Science* (Aug 2018) and in the hors-série issue on *La révolution végétale* (Nov 2018). (Nov 2018)

9.3.2. Interventions

- O. Ali has been an invited speaker for an art/science conference and debate organized by the modern art museum of Lyon, October 2018.
- Romain Azaïs won a special mention in the comics contest *Maths et Polar* organized by the website *Image des Mathématiques* of the CNRS, April 2018.
- Guillaume Cerutti, Christophe Godin and Jonathan Legrand have been involved in Déclics initiatives (presentation and discussion with high school students in order to promote science and research careers), October and December 2018.
- Christophe Godin gave an invited 2 hours seminar to 4 classes of high-school students for the Math week (March) at the Lycée International de Valbonne, France.
- H. Oliveri took part in the Class'Code Initiative, a Mooc produced by Inria and OpenClassRoom providing supports and guidelines for people wanting to teach computer science to young childrens.

PLEIADE Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Selection

9.1.1.1. Member of the Conference Program Committees

Alain Franc co-organized with IRSTEA Bordeaux, IFREMER Nantes and INRA Toulouse the biannual meeting of the Mexico Network at Inria, Ada Lovelace room, in November 2018 (see <https://mexico2018.sciencesconf.org/>) and s a member of the Scientific Committee. The theme of the meeting was “Optimization, Sensitivity Analysis, and Exploration of Model Outputs.” Mexico is a methodological network dedicated to methods of computer exploration of complex models. ⁰

9.1.2. Journal

9.1.2.1. Member of the Editorial Boards

Alain Franc is member of the editorial board of BMC Evolutionary Biology.

Pascal Durrens is a member of the editorial board of the journal ISRN Computational Biology.

9.1.3. Research Administration

David Sherman is a co-president of the INRA Commission for the Evaluation of Engineers (CEI IMP6) ⁰. Every INRA staff engineer is evaluated by this commission every four years.

Alain Franc has been appointed "chargé de mission calcul" at INRA by INRA Delegate for Digital Transition. As such, his mission is to propose animations and solutions for the development of scientific computing at INRA, whatever the Research Department.

9.2. Popularization

9.2.1. Internal or external Inria responsibilities

David Sherman is president of the Commission for Technology Development (CDT) of the Inria Bordeaux Sud-Ouest research center. The CDT has two roles. First, it evaluates funding requests for Technology Development and Technology Transfer projects, which typically involve hiring technical staff. Second, the CDT is responsible for validating and overseeing contract engineers hired by Inria project-teams.

9.2.2. Interventions

The “Family-3D” activity (see below) was presented on three occasions:

- During the 10 year celebration on the evening of September 27
- During the Open House all day October 13
- During the Fête de la Science, to 8 groups of 12 students

9.2.3. Creation of media or tools for science outreach

Pleiaide created an interactive activity “Family-3D” to explain the methods and uses of pattern classification of protein families. Using new software developed by the team we laid out 30 families in 3D space and converting those shapes to 3D volumes. The selected families had been previously grouped into biologically pertinent classes by human curators. Each shape was printed with an embedded unique RFID tag. We also designed and printed five interactive terminals, containing a microcontroller, an RFID reader with a custom-designed inductive coil as input, and an LED ring as output. Participants would propose groups of shapes that they believed belonged to the same class, and the terminal would evaluate the group.

⁰<http://reseau-mexico.fr>

⁰INRA UAR0837 DEV Délégation à l’Evaluation

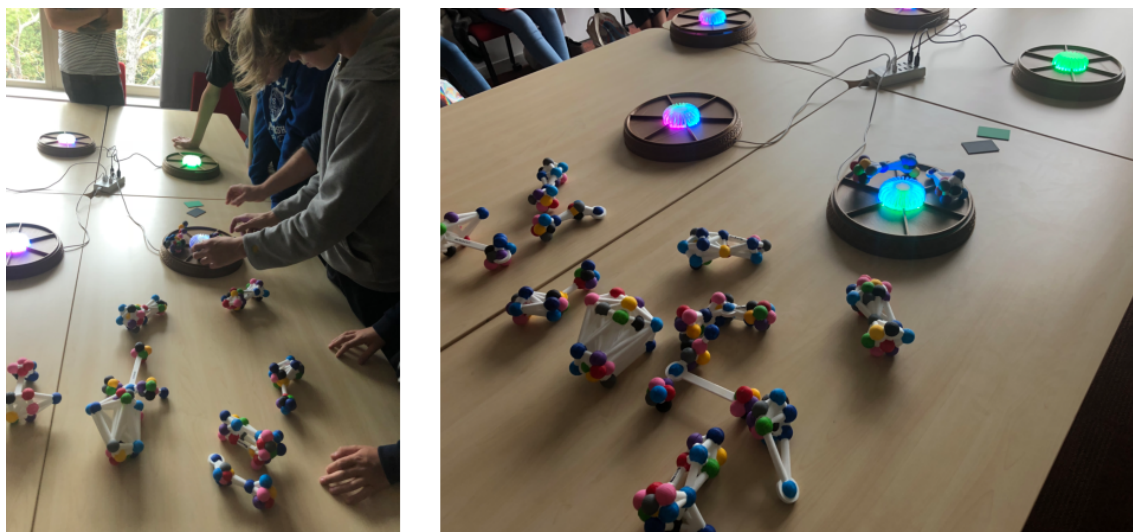


Figure 6. Family-3D activity during the Circuit Scientifique of the Fête de la Science, 2018

David Sherman contributes open-source software development to the Aseba platform for educational robotics⁰, deployed in Thymio II robots used by children as well as in the simulator used by Class'Code⁰ to train teachers.

David Sherman and Louise-Amélie Schmitt developed AsebaHub, a specialized WiFi hub for connecting Thymio-II robots into a local-area network. AsebaHub acts as either a wireless Access Point to which users may connect, or as a Bridge to an existing local-area network. Robots can be discovered using mDNS-sd (Zeroconf/Bonjour). AsebaHub works out of the box with the Aseba Studio and VPL programming environments, and can also provide an HTTP service that is compatible with Scratch, Snap!, or other environments.

⁰<http://aseba.io/>

⁰<https://pixees.fr/classcode-la-formation-associee-a-pixees/>

SERPICO Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organization

10.1.1.1. General Chair, Scientific Chair

- Charles Kervrann is co-General Chair (with R. Ober, Texas A&M), and head of the organizing committee of the “Quantitative BioImaging” (QBI’2019) conference (350 attendees, Rennes, January 2019).

10.1.1.2. Member of the Organizing Committees

- Charles Kervrann was the organizer of a mini-symposium at the SIAM Image Science conference (June, Bologna, Italy).

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

- Charles Kervrann: Associated Editor for the ISBI’2018 conference, member of the scientific committee of the JIONC workshop (GdR Ondes, since 2014).
- Patrick Bouthemy: Associate Editor for the ISBI’2019 conference.

10.1.2.2. Reviewer

- Charles Kervrann: reviewer for ISBI’2018 and ISBI’2019.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Charles Kervrann is Associate Editor of the IEEE Signal Processing Letters journal.
- Patrick Bouthemy is co-editor in chief of the open access journal Frontiers in ICT, specialty Computer Image Analysis.

10.1.3.2. Reviewer - Reviewing Activities

- Charles Kervrann: IEEE Signal Processing Letters, Bioinformatics, J. Mathematical Imaging and Vision, Nature Communications.
- Patrick Bouthemy: IEEE Signal Processing Letters, Computer Vision and Image Understanding, IEEE Transactions on Circuits and Systems for Video Technology.

10.1.4. Invited Talks

- Charles Kervrann: Invited talk at the "Reverse Problems in Reconstructing Single Cell Molecular Dynamics" workshop (October, Pisa, Italy), at the GdR ImaBio-MIV Days (November, IGBMC Strasbourg), at the BioGenOuest General Meeting (December, La Gacilly); Invited seminars at Institut Pasteur (February, Paris), Institut Curie CNRS-UMR 144 (June, Paris), European Molecular Biology Laboratory - EMBL (November, Heidelberg, Germany).

10.1.5. Leadership within the Scientific Community

- Charles Kervrann is member of the executive board of the GdR MIV/ImaBio (2588 - Microscopie Fonctionnelle du Vivant) CNRS.
- Patrick Bouthemy is member of the board of AFRIF (Association Française pour la Reconnaissance et l’Interprétation des Formes).

10.1.6. Scientific Expertise

- Charles Kervrann was expert for the national project evaluation in the framework of DIM ELICIT Institut Pasteur - Région Ile-de-France in 2018.

10.1.7. Research Administration

- Charles Kervrann is member of the executive board of the project committee of the Inria Rennes - Bretagne Atlantique centre since 2010. He is Co-head of the “BioImage Informatics” node (ANR France-BioImaging project <http://france-bioimaging.org/>), National Research Infrastructure for Biology and Health since 2011.
- Patrick Boutheymy has been head of Excellence Lab (Labex) CominLabs (<http://www.cominlabs.ueb.eu>) since April 2014. He is deputy member of the board of directors and member of the selection and validation committee of the Images & Réseaux competitiveness cluster (<http://images-et-reseaux.com/>). He is the Inria representative in the steering committee of the DGA-Inria collaboration. He is member of the board of AFRIF (Association Française pour la Reconnaissance et l’Interprétation des Formes), and member of the Research Committee of IMT Atlantique.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Charles Kervrann:

- Engineer Degree: Genomics and Informatics, 4.5 hours, Ecole Nationale Supérieure des Mines de Paris.
- Master: From Bioimage Processing to BioImage Informatics, 5 hours, coordinator of the module (30 hours), Master 2 Research IRIV, Telecom-Physique Strasbourg and University of Strasbourg.
- Master: Geometric Modeling for Shapes and Images, 6 hours, Master 2 Research SISEA, University of Rennes 1.
- Engineer Degree and Master 2 Statistics and Mathematics: Statistical Models and Image Analysis, 37 hours + 15 hours (TP, Emmanuel Moebel), 3rd year, Ecole Nationale de la Statistique et de l’Analyse de l’Information (ENSAI), Rennes.

Patrick Boutheymy:

- Master: Analysis of Image Sequences, 18 hours, Master 2 Research SISEA, ISTIC & University of Rennes 1.
- Master: Video Indexing, 3 hours, Master 2 Research Computer Science, ISTIC & University of Rennes 1.
- Engineer Degree and Master 2 Research IRIV: Motion Analysis, 12 hours, Telecom-Physique Strasbourg & University of Strasbourg.

10.2.2. Supervision

- Emmanuel Moebel, new strategies for the nonambiguous identification and enumeration of macromolecules in cryo-electron tomograms, started in November 2015, supervised by Charles Kervrann.
- Ancageorgiana Caranfil, data assimilation methods for cell division mechanisms and molecule trafficking analysis, started in December 2016, supervised by Charles Kervrann and Yann Le Cunff.
- Sandeep Manandhar, optical flow methods for 3D fluorescence imaging, started in October 2016, supervised by Patrick Boutheymy and Charles Kervrann.
- Yunjiao Lu, intracellular dynamics and super-resolution imaging: analysis of bacteria wall at the molecular scale, started in October 2017, supervised by Charles Kervrann and Rut Carballido-Lopez.

- Antoine Salomon, statistical aggregation for image analysis in fluorescence microscopy and super-resolution, started in November 2017, supervised by Charles Kervrann.
- Léo Maczyta, motion saliency in video sequences, started in October 2017, supervised by Patrick Bouthemy and Olivier Lemeur.

10.2.3. Juries

Referee/Reviewer of HdR thesis: Michèle Gouiffès (University of Paris-Sud)[P. Bouthemy]

Referee/Reviewer of PhD thesis: Yves Michels (University of Strasbourg, supervised by M. Tajine) [C. Kervrann], Anne-Sophie Macé (University of Paris Descartes, supervised by L. Moisan) [C. Kervrann].

President of PhD thesis jury: F. Deslandes (INRA, supervised by B. Laroche)[P. Bouthemy].

External examiner in international labs: Felix Zhou (PhD thesis, University of Oxford, supervised by Prof. X. Lu and J. Rittscher)[P. Bouthemy]

ARAMIS Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

- S. Durrleman served as Program Chair for the eight International Workshop on Biomedical Image Registration (WBIR'18, Leiden, The Netherlands)
- F. De Vico Fallani served as Program Chair for the Network Neuroscience Satellite (NETSCI'18, Paris, France)
- F. De Vico Fallani served as Program Chair for the Brainhack Networks workshop (ICM, Paris, France)

10.1.1.2. Member of the Organizing Committees

N. Burgos co-organized the international workshop on Simulation and Synthesis in Medical Imaging (SASHIMI) 2018, a satellite workshop of MICCAI 2018.

S. Epelbaum was session co-chair at the Alzheimer Association International Conference in Chicago 14-18th July 2018

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

- O. Colliot served as Program Committee member for the international conference SPIE Medical Imaging (Houston, USA, 2018) and for the international workshop PatchMI (Granada, Spain, 2018).
- F. De Vico Fallani served as Program Committee member for the following international conferences: NETSCI (Paris, 2018), Complex Networks (Cambridge, UK, 2018), ComplNet (Zaragoza, Spain, 2018)

10.1.2.2. Reviewer

- N. Burgos acted as a reviewer for the international workshops on Deep Learning in Medical Image Analysis (DLMIA) and on Simulation and Synthesis in Medical Imaging (SASHIMI).
- O. Colliot acted as a reviewer for the international conferences SPIE Medical Imaging, Annual meeting of the Organization for Human Brain Mapping (OHBM) and the international workshop PatchMI.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- S. Durrleman is associate editor of the journals: IEEE Transactions on Medical Imaging, and Neurons, Behavior, Data analysis, and Theory (NBDT)
- F. De Vico Fallani is associate editor of the journal PLoS One
- O. Colliot is a member of the Editorial Board of the journal Medical Image Analysis (Elsevier).
- S. Epelbaum is member of the editorial board for the "Médecine, Cognition et Vieillessement" Scientific Journal.

10.1.3.2. Reviewer - Reviewing Activities

- N. Burgos acted as a reviewer for IEEE Transactions on Medical Imaging; NeuroImage; Medical Image Analysis; Journal of Nuclear Medicine; IEEE Transactions on Radiation and Plasma Medical Sciences; IEEE Journal of Biomedical and Health Informatics; EJNMMI Physics; International Journal of Radiation Oncology, Biology, Physics; Sensors.
- Olivier Colliot acted as a reviewer for Medical Image Analysis, NeuroImage, NeuroImage: Clinical, IEEE Transactions on Medical Imaging.
- F. De Vico Fallani acted as a reviewer for IEEE TNRS, Neuroimage, PLoS Comp Biol, PLoS One, Cereb Cortex.
- S. Epelbaum acted as a reviewer for Alzheimer's & Dementia, the Journal of Alzheimer's disease, Brain and BMJ Neurology.

10.1.4. Invited Talks

N. Burgos gave an invited lecture at the workshop on Machine Learning in Radiology in Lausanne, Switzerland, November 2018.

N. Burgos gave an invited presentation at the course "Pattern Recognition for Neuroimaging" at the Annual Meeting of the Organization for Human Brain Mapping, Singapore, June 2018.

O. Colliot gave an invited presentation at the Singapore-France Artificial Intelligence Workshop, Singapore, June 2018.

O. Colliot gave an invited presentation at the Netherlands-France "Erasmus-Descartes" Artificial Intelligence Workshop, Paris, France, November 2018.

S. Durrleman gave an keynote presentation at the MICCAI workshop ShapeMI (Shape in medical imaging), Granada, Septembre 2018, and an invited presentation at the Symposium on Multivariate analyses, Modelling and Machine Learning in Neuroimaging Research, University Paul Sabatier of Toulouse.

S. Epelbaum and S. Durrleman gave a plenary lecture at College de France for the colloquium "Imagerie médicale et apprentissage automatique : vers une intelligence artificielle ?"

F. De Vico Fallani gave invited lectures at CuttingEEG International conference (ICM, Paris, 2018)

F. De Vico Fallani gave a plenary lectures at Neurospin CEA Institute (Saclay, France)

10.1.5. Scientific Expertise

- Olivier Colliot is a member of the "Commission des emplois scientifiques" of the Inria Paris Center, in charge of evaluating applications for PhD fellowships, postdoc fellowships and secondments.
- Olivier Colliot acts as an expert for GENCI (the national facility for high-performance computing).

10.1.6. Research Administration

- S. Durrleman serves as the coordinator of the ICM Center for Neuroinformatics, and the scientific director of the iCONICS core facility on data management and analytics.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master: Olivier Colliot coordinates the course "Méthodes d'imagerie médicale" of the Master 2 in Computer Science of Sorbonne University.

Master: Olivier Colliot, Master in Computer Science, 4.5 hours (eqTD), Sorbonne University

Engineering school: Olivier Colliot, 3 hours (eqTD), Mines ParisTech

Medical school: Didier Dormont is the Director of the University Diploma (DIU) "Diagnostic and Therapeutic Neuroradiology", Université Pierre et Marie Curie

Medical school: Didier Dormont, Courses for Medical Students, Université Pierre et Marie Curie

Medical school: Didier Dormont organizes and participates in the practical teaching of Neuroradiology for Medical Students in the Department of Diagnostic Neuroradiology of Pitié Salpêtrière University Hospital

Medical school: Didier Dormont organizes and participates in the practical teaching of Neuroradiology for Radiology Specializing Residents in the Department of Diagnostic Neuroradiology of Pitié Salpêtrière University Hospital

S. Durrleman, Geometrical approaches in Statistical Learning, 21 hours, Master 2 "Mathématiques, Vision, Apprentissage", ENS Paris Saclay, France.

Master: Stéphane Epelbaum, Master in Neuroscience, 4 hours (eqTD), Université Pierre et Marie Curie

Medical school: Stéphane Epelbaum gives lectures in Neurology on the topic of degenerative diseases for medical students of the UPMC (10 hours/year) and is regional supervisor of the national Inter University Diploma on Alzheimer's disease and Related disorders for Paris since 2015.

10.2.2. Supervision

PhD in progress : Giulia Bassignana, "Identification of driver nodes in biological networks", Inserm, started in 2017, advisors: Fabrizio De Vico Fallani, Olivier Colliot, Violetta Zujovic

PhD in progress : Tiziana Cattai, "Leveraging brain connectivity networks to detect mental states in brain-computer interfaces", Inria, started in 2017, advisor: Fabrizio De Vico Fallani

PhD in progress : Catalina Obando-Forero, "Graph models of cortical plasticity in temporal brain networks", Inria, started in 2015, advisor: Fabrizio De Vico Fallani

PhD in progress : Jeremy Guillon, "Méthode d'analyse multimodale de connectivités neuronales basée sur la théorie des réseaux complexes multicouches", Université Pierre et Marie Curie, started in 2015, advisors: Fabrizio De Vico Fallani and Mario Chavez

PhD Cifre in progress : Fanny Grosselin, "Fouille des données EEG et suivi longitudinal grande échelle pour le diagnostic et la prédiction du niveau de stress chez l'homme", EDITE Université Pierre et Marie Curie, started in 2016, advisors: Fabrizio De Vico Fallani and Mario Chavez,

PhD in progress : Junhao Wen, "Cortical morphometry for discovering new biomarkers of neurodegenerative diseases", Université Pierre et Marie Curie, Started in 2015, advisors: Olivier Colliot, Anne Bertrand and Stanley Durrleman

PhD in progress : Jorge Samper-Gonzalez, "Learning from heterogeneous data for prediction of Alzheimer's disease", Université Pierre et Marie Curie, Started in 2015, advisors: Olivier Colliot and Theodoros Evgeniou

PhD in progress : Alexandre Routier, "Multimodal neuroimaging for characterization of primary progressive aphasia", Université Pierre et Marie Curie, Started in 2015, advisors: Marc Teichmann, Olivier Colliot and Marie-Odile Habert

PhD in progress: Pascal Lu, "Machine learning from multimodal genetic and neuroimaging data for personalized medicine", Université Pierre et Marie Curie, Started 2016, advisor: O. Colliot

PhD in progress: Wen Wei, "Learning brain alterations in multiple sclerosis from multimodal neuroimaging data", Université de Nice Sophia-Antipolis, Started 2016, advisors: N. Ayache, O. Colliot and S. Durrleman

PhD in progress: Alexandre Bône, "Learning methods for the spatiotemporal analysis of longitudinal image data: application to the diagnosis, prognosis and monitoring of Alzheimer's disease", started 2016, advisors: O. Colliot and S. Durrleman

PhD in progress: Manon Ansart, "Automatic recommendation systems built on the statistical exploitation of longitudinal medical data sets", started 2016, advisors: D. Dormont and S. Durrleman

PhD in progress: Maxime Louis, "Learning spatiotemporal trajectories of iconic-geometric data sets", started 2016, advisors: S. Durrleman

PhD in progress: Igor Koval, “Construction of disease progression models from multimodal longitudinal data”, started 2016, advisors: S. Allassonnière and S. Durrleman

PhD in progress: Raphael Couronné, “Spatiotemporal analysis of the progression of the Parkinson’s Disease informed by multimodal longitudinal data”, advisor: S. Durrleman

PhD in progress: Thomas Lartigue, “Mixture Models in Gaussian Graphical Models”, advisors: S. Allassonnière and S. Durrleman

PhD in progress: Vianney Debavelaere, “Analysis of distribution of spatiotemporal trajectories in heterogeneous populations”, advisors: S. Allassonnière and S. Durrleman

PhD in progress: Lou Albessard, “analyse de la covariation du crâne et de l’endocrâne dans le genre *Homo*”, advisors: D. Grimaud-Hervé and S. Durrleman

PhD in progress: Johann Faouzi, “Machine learning approaches to predict impulse control disorders in Parkinson’s disease”, advisors: O. Colliot and J.-C. Corvol

PhD in progress: Simona Bottani, “Machine learning for differential diagnosis of neurodegenerative diseases from multimodal data”, advisors: O. Colliot and N. Burgos

PhD in progress: Elina Thibeu-Sutre, “Unsupervised learning from neuroimaging data to identify disease subtypes in Alzheimer’s disease and related disorders”, advisors: D. Dormont and N. Burgos

PhD in progress: Federica Cacciamani, “Awareness for cognitive decline in the earliest stages of Alzheimer’s disease”, advisor: S. Epelbaum

10.2.3. Juries

- Olivier Colliot participated, as referee, to the PhD committee of Matthieu Van Houtte (University of Lille).
- Olivier Colliot participated, as examiner, to the HDR committee of Stanley Durrleman (Sorbonne University).
- Olivier Colliot participated to the progress report PhD committee of Ekaterina Kalinicheva (ISEP).
- S. Durrleman participated, as examiner, to the PhD committee of W. Huizinga at Erasmus University Rotterdam, The Netherlands.
- S. Durrleman participated, as co-supervisor, to the PhD committee of L. Albessard at Museum National d’Histoire Naturelle, Paris, France.
- Stéphane Epelbaum participated, as examiner, to the PhD committee of Benoît Souchet (CEA).
- Stéphane Epelbaum participated, as examiner, to the PhD committee of Adrien Julian (University of Poitiers).

10.3. Popularization

10.3.1. Articles and contents

- S. Durrleman’s interviews were published in the magazines *Le Point*, *Sciences et Avenir*, *Usine Nouvelle*, *Le Temps*, *revue Pharma*, and were broadcasted on the radio *France Culture*. He published also an article in the special issue on artificial intelligence of the newspaper *Libération*.
- S. Durrleman did popularization presentations at Rotary Club Chamonix, Cercle des amis de l’ICM, and Salon de l’argus de l’assurance.
- F. De Vico Fallani did a popularization presentation at La Française - Investing group, Paris
- Olivier Colliot gave an interview for the TV channel France 5, for the program “Magazine de la Santé”.
- Stéphane Epelbaum participated to multiple events dedicated to general audience outreach including: articles in journals (*L’Express*, *Cerveau & Psycho*, *Sciences Avenir*), Radio shows and podcasts (*France inter: Grand Bien vous fasse*, *Figaro Live*) and TV shows (*Pourquoi docteur*, *Questions aux experts*).

- The team contributed to the book "Le Grand Atlas du Cerveau" (Glénat).

10.3.2. Interventions

- O. Colliot gave a presentation to members of the German Bundestag, Paris, France, December 2018.
- Stéphane Epelbaum participated to a charity event at the Foire internationale d'Art Contemporain (FIAC) 2018 on the 20th of November 2018.

10.3.3. Internal action

- O. Colliot gave a presentation for the charity event ("Evènement solidaire" of Inria, September 2018).

ATHENA Project-Team

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Organisation

8.1.1.1. Member of Organizing Committees

- M. Clerc organized the “journées C@UCA” for Université Côte d’Azur in Fréjus, June 14-15, 2018.

8.1.2. Scientific Events Selection

8.1.2.1. Member of Conference Program Committees

- T. Papadopoulo is member of the Program Committee of GRETSI 2019.

8.1.2.2. Reviewer

- M. Clerc serves several international conferences (ISBI, ICASSP, IEEE EMBS, IEEE NER).
- R. Deriche serves several international conferences (ISBI, MICCAI, ISMRM, ...) and international workshops (CD-MRI Miccai, MFCA Miccai...).
- T. Papadopoulo serves several international conferences (ICIP, ISBI, ICASSP, VISAPP).

8.1.3. Journal

8.1.3.1. Member of Editorial Boards

- M. Clerc is member of the Editorial Boards of the Journal of Neural Engineering, and of the journal Neurons, Behavior, Data and Theory.
- R. Deriche is member of the Editorial Board of the Journal of Neural Engineering, editorial board member at Springer for the book series entitled Computational Imaging and Vision and member of the Editorial Board of the Medical Image Analysis Journal

8.1.3.2. Reviewer - Reviewing Activities

- M. Clerc serves several international journals (Journal of Neural Engineering, NeuroImage, Physics in Medicine and Biology).
- R. Deriche serves several international journals (NeuroImage, IEEE Transactions on Medical Imaging, Magnetic Resonance in Medicine, Journal of Mathematical Imaging and Vision, Medical Image Analysis Journal, ...).
- T. Papadopoulo serves several international journals (IEEE access, Transactions on Pattern Analysis and Machine Intelligence, Frontiers in Neuroscience, Brain Topography, Transactions on Biomedical Engineering).

8.1.4. Invited Talks

- M. Clerc gave an invited talk at the ICM Colloquium, Paris, January 15, 2018.
- M. Clerc gave an invited talk at the ENS Data Science Colloquium, Paris, February 6, 2018.
- M. Clerc gave an invited talk at the SIAM Symposium on Imaging Sciences, Bologna, June 6, 2018.
- M. Clerc gave an invited talk at the Journées Scientifiques Inria, Bordeaux, June 27, 2018.
- M. Clerc gave an invited talk at the Colloque “Physique et Interrogations Fondamentales”, Bibliothèque Nationale de France, Paris, Nov 10, 2018.
- M. Clerc gave an invited talk at the “Journées des Jeunes Mathématiciens et Jeunes Mathématiciennes”, Orléans, Nov 29, 2018.

- R. Deriche gave an invited keynote speech at SPIE Medical Imaging, Houston, Texas United States (Feb. 12th, 2018).
- R. Deriche gave an invited keynote speech at EDITE ParisTech-Sorbonne Université, Paris (Dec. 10th, 2018).
- T. Papadopoulo gave an invited talk at “Inverse Problems: Modelling and Simulation”, Malta (May, 2018) [20].

8.1.5. Leadership within the Scientific Community

- M. Clerc is the coordinator of the Inria Project-Lab BCI-LIFT.
- M. Clerc is on the board of the CORTICO association (Collectif pour la Recherche Transdisciplinaire sur les Interfaces Cerveau Ordinateur).
- R. Deriche is the P.I. of the ERC AdG CoBCOM.

8.1.6. Scientific Expertise

- M. Clerc served Cordis-H2020 for FET-OPEN prosals evaluations.
- M. Clerc participated in an HCERES visiting committee in November 2018 (CentraleSupélec).
- R. Deriche serves several international institutions in reviewing applications : ERC Grants, Swiss National Science Foundation, the Netherlands Organisation for Scientific Research (NWO).
- T. Papadopoulo served Cordis-H2020 for FET-OPEN prosals evaluations.

8.1.7. Research Administration

- M. Clerc was adjoint deputy director for Science of Inria Sophia Antipolis (until August 2018).
- M. Clerc was member of the Evaluation Committee of Inria (until August 2018).
- M. Clerc was member of the Commission Scientifique Interne of Inria (until August 2018).
- M. Clerc was vice-president of the CRCN Selection Committee in Inria Sophia Antipolis.
- M. Clerc was a member of the CRCN Selection Committee in Inria Grenoble.
- M. Clerc is member of the Scientific Council of Academy 4 of Université Côte d’Azur.
- M. Clerc is co-animator of a structuring program on Neurosciences at Université Côte d’Azur.
- R. Deriche is member of the Academic Council of UCA (Université Côte d’Azur).
- R. Deriche is member of the Scientific Council of Academy 2 *Complex Systems*, Université Côte d’Azur and member of the Scientific Council of Olea Medical Company (<http://www.olea-medical.com/>).
- T. Papadopoulo represents Inria at the Administration Council of the **CIU Santé** (till July 2018).
- T. Papadopoulo is member of the Software Development Committee at Inria.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

Master: M. Clerc, Functional neuroimaging and data analysis, 36 ETD, MSc “Mod4NeuCog”, Université Côte d’Azur, France.

Master: R. Deriche, Variational approaches and Geometrical Flows for Computational Brain Imaging, 36 ETD, M2 "Computational Biology and Biomedicine", Université Côte d’Azur, France.

Master: R. Deriche, Advanced Image Processing Techniques, 12 ETD, M1 International CBB & Ubinet, Université Côte d’Azur, France.

Master: T. Papadopoulo, *3D Computer Vision*, 12 ETD, M1 International Ubinet, Université Côte d’Azur, France.

Master: T. Papadopoulo, *Inverse problems for brain functional imaging*, 24 ETD, M2, Mathématiques, Vision et Apprentissage, ENS Cachan, France.

8.2.2. Supervision

PhD in progress: Thinhinane Megherbi, “HARDI & High Order Tensors”, started Sept. 2011. Supervisors: Rachid Deriche & L. Boumghar (USTHB, Algiers)

PhD in progress: Abib Alimi, “Diffusion & PLI” started Nov, 1st, 2016, Université Côte d’Azur. Supervisor: Rachid Deriche.

PhD in progress: Matteo Frigo, “Structure & Function” started Nov, 1st, 2017, Université Côte d’Azur. Supervisor: Rachid Deriche.

PhD in progress: Isa Costantini, “Brain Connectomics” started Oct. 1st, 2016, Université Côte d’Azur. Supervisor: Rachid Deriche.

PhD in progress: Kostiantyn Maksymenko, “Inverse problem in EEG/MEG/SSEG: towards a better consideration of anatomo-functional constraints”, Université Côte d’Azur, started Oct. 2016. Supervisors: Théodore Papadopoulo and Maureen Clerc.

PhD defended on Dec. 21st, 2018: Guillermo Gallardo Diez, “Connectivity-Based Brain Parcellation”, started Nov. 2015, Université Côte d’Azur. Supervisors: D. Wassermann and R. Deriche

PhD defended on Dec. 11th, 2018: Nathalie Gayraud, “Structured Dictionary Learning”, Université Côte d’Azur, started November 2015. Supervisor: Maureen Clerc.

PhD in progress: Federica Turi, “User-adapted Brain Computer Interaction”, Université Côte d’Azur, started October 2016. Supervisor: Maureen Clerc.

PhD in progress: Sara Sedlar, "Reconstruction and analysis of dynamical functional networks from EEG, MEG and dMRI measurements", Université Côte d’Azur, started October 2018. Supervisors: Théodore Papadopoulo and Maureen Clerc.

PhD in progress: Ivana Kojcic, "Estimation of cortical activity and of the structure–function link using EEG and dMRI", Université Côte d’Azur, started October 2018. Supervisors: Théodore Papadopoulo and Samuel Deslauriers-Gauthier.

8.2.3. Juries

- M. Clerc participated as a reviewer in the HDR jury of Denis Schwartz at Sorbonne Université, Paris on November 7, 2018.
- M. Clerc participated as a reviewer in the PhD jury of Fardin Afdideh, Université Grenoble Alpes on October 12, 2018.
- M. Clerc participated as a reviewer in the PhD jury of Aldo Mora Sanchez at Sorbonne Université, Paris on November 19, 2018.
- M. Clerc participated in the PhD jury of Yousra Bekhti at Telecom ParisTech on March 22, 2018.
- M. Clerc participated in the PhD jury of Tom Dupré Latour at Telecom ParisTech on November 26, 2018.
- M. Clerc participated in the PhD jury of N. Gayraud at Université Côte d’Azur on December 11, 2018.
- R. Deriche participated as a reviewer in the HDR jury of G. Varoquaux at UPMC, Paris on May 23, 2018.
- R. Deriche participated in the HDR jury of D. Tschumperle at GREYC Ecole Nationale Supérieure d’Ingénieurs de Caen, Oct. 3, 2018.
- R. Deriche chaired the PhD jury of Lorenza Brusini at Università di Verona on April 19th, 2018.
- R. Deriche participated as a reviewer in the PhD jury of Chendi Wang at the University of British Columbia - Vancouver, CA on May 2018.

- R. Deriche participated in the PhD jury of G. Gallardo at Université Côte d'Azur on Dec. 21, 2018.

8.3. Popularization

8.3.1. Interventions

- M. Clerc participated in the Brain Awareness Week with a talk about Brain Computer Interfaces at CHU Nice Pasteur, March 16 2018.
- M. Clerc participated in the Brain Awareness Week with a talk about Music and the Brain at Villa Arson, Nice, March 17 2018.
- M. Clerc, T. Papadopoulo, F. Turi and R. Lacroix participated in the Fête de la Science with a BCI demo where the general public could test a P300 speller system.

BIOVISION Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. General Chair, Scientific Chair, Member of the Organizing Committees

- Bruno Cessac has co-organized the conference Inspire New Insights on Complex Neural Dynamics, Cergy-Pontoise, France, June 2018 <https://inspire2018parisseine.wordpress.com/>
- Bruno Cessac has co-organized the scientific event 2nd structuring event UCA Cognitive systems, normality and pathology of the human brain, computational neuroscience <http://univ-cotedazur.fr/events/deuxieme-rencontre-c@uca>
- Selma Souihel and Evgenia Kartsaki participated to the organizing committee of "Le MOnde des Mathématiques Industrielles (MOMI 2018)", a two-day workshop on applied and industrial mathematics. The workshop took place on the 26th and 27th of February, 2018 at the Inria Sophia Antipolis-Méditerranée research center. It was supported by Inria and financed by the Société des Mathématiques Appliquées (SMAI) as a BOUges Maths (BOUM) project, by the Agence pour les Mathématiques en Interaction avec l'Entreprise et la Société (AMIES) and by the Labex User Centric Network @ Sophia within the context of Investissement d'Avenir (IA) projects – projets "Laboratoires d'excellence", and by the Université Côte d'Azur within the context of the "Joint, Excellent and Dynamic Initiative" (JEDI) projects. In total, 3 keynote speakers, 8 industrial speakers and 80 participants (researchers, PhDs, and engineers) attended MOMI 2018.
- Pierre Kornprobst was a Technical Program Committee (TPC) member for the 25th European Signal Processing Conference (EUSIPCO 2017).

9.1.2. Reviewer

Bruno Cessac was a reviewer for the conference ICMNS, International Conference on Mathematical Neuroscience .

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

Pierre Kornprobst has been associate editor for the Computer Vision and Image Understanding Journal (CVIU) since Jul 2016.

9.1.4. Invited Talks

- B. Cessac, D. Karvouniari, L. Gil, O. Marre, S. Picaud. Multi scale dynamics in retinal waves, in: Inspire New Insights on Complex Neural Dynamics, Cergy-Pontoise, France, June 2018.
- B. Cessac, Ion channels and properties of large neuronal networks: a computational study of retinal waves during development, in: Symposium on Ion channels and Channelopathies - IPMC, Sophia Antipolis, France, November 2018.

9.1.5. Research Administration

- The PhD Seminars of Inria Sophia Antipolis - Méditerranée are organized and held by PhD candidates every two weeks and aim to share knowledge, and to promote collaborations, all in a friendly and interactive way. Selma Souihel and Evgenia Kartsaki are current members of the organizing committee have been involved in the scheduling, communication and diffusion. These tasks include calls for presentations, calendar planning and promotion of each seminar. Finally, they are also involved in the organization of the **MOMI 2018** conference.

- Bruno Cessac is a member of the scientific council of the Institut NeuroMod de "Modélisation en Neurosciences et Cognition".
- Pierre Kornprobst is an elected member of the Academic Board of UCA (since November 2015). The role of this council is to proceed with the appointment of selection committees and the recruitment of public servants. Also, it validates the global training offer of Nice area, is involved in the global policy of doctoral training, and awards research funding. The council meets one a month and each member also participate to the evaluation of research proposals submitted to UCA ^{JEDI} calls.
- Pierre Kornprobst has been a member of the Comité de Suivi Doctoral (CSD) since March 2017.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence :

- Selma Souihel "Advanced network administration and security: architecture of a company network, services installation and configuration, users management, system and network security, cryptography, virtual private networks and secured protocols, and supervision tools, Numeric transmission : data acquisition, satellite and cable transmission, numeric modulation", 1ere année de l'IUT, Département Réseaux et Télécommunications, 64h/year, 50 students.

Master 1: Bruno Cessac (with D. Karvouniari and F. Lavigne), *Introduction to Modelling in Neuroscience*, 36 hours, Master Mod4NeuCog, Université Nice Sophia Antipolis, France.

9.2.2. Supervision

- PhD defended on March 15th, 2018. Theodora Karvouniari, "Retinal waves in the retina: theory and experiments". Started in October 2014. Defense scheduled in March 2018. Supervisor, B. Cessac.
- PhD in progress: Selma Souihel, "Generic and specific computational principles for the visual anticipation of motion trajectories". Started in November 2016. Supervisor B. Cessac
- PhD in progress: Evgenia Kartsaki. "How Specific Classes of Retinal Cells Contribute to Vision: a Computational Model", Started in October 2017. Supervisor B. Cessac codirection with E. Sernagor, ION.

9.2.3. Juries

- Bruno Cessac was member of the Comité de suivi de thèse of Matthieu Sarrazin (U. Paris Sorbonne).
- Pierre Kornprobst was reviewer of the PhD of Charles Hessel, entitled "The automatic decomposition of an image in base and detail: Application to contrast enhancement", from Université de Paris-Saclay, Ecole Normale Supérieure de Paris-Saclay, France.
- Pierre Kornprobst was reviewer of the HDR of David Tschumperlé, entitled "Champs tensoriels pour la modélisation géométrique locale et non-locale des images et leurs applications", from Université de Caen, France.

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- E. Kartsaki and S. Souihel are participating to the organization of the Inria Sophia PhD seminars.

9.3.2. Interventions

- The Biovision team participated to the "fête de la science 2018".

CAMIN Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. General Chair, Scientific Chair

Christine Azevedo organized a special session "Application of FES for lower limbs movement assistance" at ICNR conference (Pisa, Italy) on October 2018.

9.1.2. Member of the Conference Program Committees

- David Guiraud was Co-editor of the theme 6 at IEEE EMBC conference
- Daniel Simon is member of the ICINCO conference program committee
- David Andreu was member of the ERTS2 conference program committee

9.1.3. Reviewer

- Christine Azevedo was reviewer for IEEE EMBC, IROS, ICNR conferences
- David Guiraud was reviewer for IEEE EMBC and IEEE NER
- François Bonnetblanc was reviewer for IEEE EMBC
- Daniel Simon was reviewer for the IFAC CAMS, IFAC ICINCO, ECC and IEEE CCTA conferences
- David Andreu was reviewer for the ERTS2 conference

9.1.4. Member of the Editorial Boards

- Christine Azevedo is member of ERCIM News' Editorial Board as Inria representant.
- David Guiraud is Associate Editor of Journal of Neural Engineering and Medical and Biological Engineering and Computing.

9.1.5. Reviewer - Reviewing Activities

- David Guiraud is reviewer of several journals among which IEEE TNSRE, IEEE ACCESS, IEEE TCST, JNE, J. Of Neuroscience Method, Computer in Biology and Medicine, Science Advances (AAAS)...
- Daniel Simon was reviewer for IEEE Control Systems Technology and Real Time Systems.
- David Andreu was reviewer for Journal of Neural Engineering.

9.1.6. Invited Talks

François Bonnetblanc: University of British Columbia and Peter Wall Institute of Advanced Studies. "Awake Brain Surgery: the naked brain", 4 octobre 2018.

François Bonnetblanc : Karolinska Institute (Programme TOR). Neurosurgery Department, "Awake Neurosurgery and electrophysiology". 5-9 novembre 2018.

Christine Azevedo was invited to give a lecture at Inria Rennes center "Pédalage assisté par stimulation électrique de muscles paralysés."

9.1.7. Leadership within the Scientific Community

Christine Azevedo is member of the board of directors of International Functional Electrical Stimulation Society (IFESS).

9.1.8. Scientific Expertise

David Guiraud was reviewer for the ERC program (Starting and Advanced) in 2018

Christine Azevedo was examiner for APHP Delegation Clinical research and Innovation call for proposals for detached positions.

9.1.9. Research Administration

Christine Azevedo is member of Inria Evaluation Committee (CE). She participated in the competitive examinations for junior researcher recruitment in Inria Lille Center (April 2018) and Inria Grenoble Center (May 2018). She was also in the examination committee of CHRC and DR0 promotions as well as detachments. Christine Azevedo is member of Inria Ethical Committee (COERLE).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Master SMH : David Guiraud, "Stimulation Electrique Fonctionnelle", 16h, M2, Université de Montpellier, France
- Master Neuroprothèses : Daniel Simon, "Control basics", 6.5h, M2, Université de Montpellier, France
- Master Neuroprothèses : Christine Azevedo, "Ethical considerations", 3h, M2, Université de Montpellier, France
- Master Neuroprothèses : François Bonnetblanc, "Motor Control", "Neuroplasticity", "Electrophysiology in Neurosurgery", 16h, M1, Université de Montpellier, France
- Master Mechanics and its Interactions : François Bonnetblanc, "Motor Control", 4,5h, M2, Université de Montpellier, Polytech, France
- DU Functional electrical stimulation : François Bonnetblanc, "Motor Control", "Neuroplasticity", "Electrophysiology in Neurosurgery", 12h, Université de Montpellier, France
- DU Functional electrical stimulation : David Andreu, "Neuroprosthesis: from functions to active medical implanted devices", 6h, Université de Montpellier, France
- DU Functional electrical stimulation : David Guiraud, "Electrophysiology", "Biophysics", "Neuroprosthesis", 6,5h, Université de Montpellier, France
- DU Functional electrical stimulation : Christine Azevedo, "Electrophysiology", "Functional Electrical Stimulation", "Clinical Applications", 7h, Université de Montpellier, France
- DU Functional electrical stimulation : Charles Fattal, "Functional Electrical Stimulation and Clinical Applications", 5h, Université de Montpellier, France

François Bonnetblanc is responsible for a DU about "Functional Electrical Stimulation"

D. Andreu teaches software engineering, real time OS, discrete event systems, control architectures, networks, neuro-prosthesis, 200 h, master and engineers degrees, Polytech Montpellier, France.

9.2.2. Supervision

- PhD: Benoît Sijobert, Assistive Control of Motion in SensoriMotor Impairments based on Functional Electrical Stimulation, Montpellier University, September 28th 2018, Christine Azevedo, David Andreu and Charles Fattal.
- PhD: Ibrahim Merzoug, Validation formelle des systèmes numériques critiques : génération d'espace d'états de réseaux de Petri exécutés en synchrone, Montpellier University, January 15th 2018, David Andreu and Karen Godary.
- PhD in progress: Antony Boyer, Neuroplasticity and recovery in remote (sub)cortical structures following wide-awake surgery of infiltrative low-grade gliomas: investigation of fMRI and EEG signals, 01/09/2016, François Bonnetblanc and Sofiane Ramdani.
- PhD in progress: Maxence Blond, Commande et modélisation d'un véhicule sous-marin, 18/01/2016, Daniel Simon, Vincent Creuze (LIRMM) and Ahmed Chemori (LIRMM).

- PhD in progress: Victor Vagne, "Couplage de la Spectroscopie en proche infrarouge et de la stimulation Transcrânienne (NIRS-tDCS) à courant continu dans l'Évaluation diagnostique de l'ischémie cérébrale lors d'un AVC", Oct. 2016, M. Hayashibe, D. Guiraud, Vincent Costalat (CHU Montpellier) and Emmanuelle Le Bars (CHU Montpellier)
- PhD in progress: XinYue Lu, Respiratory detection and monitoring Since March 2017, C. Azevedo Coste, T Similowski (Groupe Hospitalier Pitié-Salpêtrière), S Renaux (NEURORESP)
- PhD in progress (co-financing UM / Occitanie region): Vincent Iampietro, Contribution des méthodes formelles à la fiabilité des systèmes numériques complexes critiques : application aux dispositifs médicaux implantables innovants, since october 2018, D. Andreu, D. Delahaye (LIRMM).

9.2.3. *Juries*

Christine Azevedo was reviewer for the PhD thesis of Solenne Page (ISIR, UPMC University, Paris, France) "Control of a robotized walker based on postural characterization and application to obstacle avoidance." (May 2018).

Christine Azevedo was examiner in the defense committee of Mathilde Couraud (Bordeaux University, France) "Study of the sensori-motor control in a simplified artificial context with the aim to improve the control of myoelectric prostheses." (December 2018).

Christine Azevedo was examiner in the defense committee of Firas Kaddachi (Montpellier University, France) "Technological approach of early and non intrusive of health modification to better adapt services to elderly persons." (December 2018).

David Andreu was reviewer of the PhD thesis of T. Sotiropoulos (LAAS, Univ. Toulouse 3, France), "Test aléatoire de la navigation de robots dans des mondes virtuels." (May 2018).

9.3. Popularization

9.3.1. *Education*

Christine Azevedo Coste is mentor (2018-2019) for one Savanturiers project with Saussan school (CM1/CM2 level) <https://les-savanturiers.cri-paris.org/>

Christine Azevedo organized initiation sessions to informatics using Thymio robot at École Calendreta La Cardonilha (Mèze, France) in CP/CE1 level, 3 sessions of 2 hours (April 2018) .

Christine Azevedo organized initiation sessions to informatics using Thymio robot at École Valfalis (Montbazin, France) in CM1/CM2 level, 4 sessions of 2 hours (May-June 2018) .

As a COERLE member Christine Azevedo Coste was involved in one session on Ethics for phd students in Inria IRISA center (Rennes, france) (November 2018).

9.3.2. *Interventions*

- François Bonnetblanc : Pint of Science 16 mai 2018, François Bonnetblanc, Montpellier

EPIONE Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Member of the Organizing Committees

- M. Sermesant was a co-chair of the MICCAI 2018 Workshop Statistical Atlases and Computational Models of the Heart (STACOM 2018), which was held in Granada, September 16, 2018.
- H. Delingette was a member of the organizing committee of the scientific day at Inria Sophia Antipolis (September 10th) including two keynote speakers on "Digital privacy" and presenting the activities of the UCA academy on "Networks, Information and Digital Society".

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program Committees

- H. Delingette was Workshop and Tutorial co-chair for the international conference Medical Image Computing and Computer Aided Intervention (MICCAI 2018) held in Granada, Spain from Sept. 16-20.

9.1.2.2. Reviewer

- M. Lorenzi was a reviewer for the conferences Neural Information Processing Systems (NIPS 2018), International Conference on Machine Learning (ICML 2018), Medical Image Computing and Computer Aided Intervention (MICCAI 2018), International Conference on Learning Representations (ICLR 2019), IEEE International Symposium of Biomedical Imaging (ISBI 2017-19).
- X. Pennec was a reviewer for Medical Image Computing and Computer Aided Intervention (MICCAI 2018) and the MICCAI workshop on Shape in Medical Imaging (ShapeMI 2018).
- M. Sermesant was a reviewer for Medical Image Computing and Computer Aided Intervention (MICCAI 2018) and the MICCAI workshop STACOM.
- H. Delingette was a reviewer for the International Symposium on Biomedical Imaging (ISBI'18), the international conference on computer-aided interventions (IPCAI'18), the conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2018), the International Conference on Computer Vision and Pattern Recognition (CVPR 2018).

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

- N. Ayache is the co-founder and the Co-Editor in Chief with J. Duncan (Professor at Yale) of Medical Image Analysis journal. This scientific journal was created in 1996 and is published by Elsevier.
- N. Ayache is a member of the editorial board of the following journals: Medical Image Technology (Japanese journal) and Journal of Computer Assisted Surgery (Wiley).
- H. Delingette is a member of the editorial board of the journal Medical Image Analysis (Elsevier).
- I. Strobant is editorial coordinator for Medical Image Analysis, Elsevier (since october 2001).
- X. Pennec is a member of the editorial board of the journal Medical Image Analysis (Elsevier), of the International Journal of Computer Vision (Springer), of the SIAM Journal on Imaging Sciences (SIIMS), and of the Journal of Mathematical Imaging and Vision (JMIV).
- M. Lorenzi is a member of the editorial board of the journal Scientific Reports (Nature Publishing Group); he is also member of the Board of Statisticians of the Journal of Alzheimer's Disease (IOS Press).

9.1.3.2. Reviewer - Reviewing Activities

- M. Lorenzi was a reviewer for the following journals: Neurobiology of Aging, Alzheimer's and Dementia, Journal of Alzheimer's Disease, Medical Image Analysis, IEEE Transactions on Medical Imaging, NeuroImage, International Journal of Computer Vision, Journal of Mathematical Image and Vision, Scientific Reports.
- Xavier Pennec was a reviewer for IEEE Transactions on Information Theory, The Annals of Applied Statistics, Linear Algebra and its Applications.
- M. Sermesant was a reviewer for the following journals: Nature Cardiology Reviews, Journal of the American College of Cardiology, IEEE Transactions on Medical Imaging, IEEE Transactions on Biomedical Engineering, Medical Image Analysis and Computers in Biology and Medicine.
- H. Delingette was a reviewer for the following journals: Medical Image Analysis (Elsevier), IEEE Transactions in Medical Imaging, IEEE Transactions in Biomedical Engineering.

9.1.4. Invited Talks

- **N. Ayache** gave the following plenary invited talks:
 - AI for Digital Patients, Int Conf on Image Comput. and Digital Medicine, Chengdu, China, 2018,
 - IA & Healthcare, IA Summit, Sophia Antipolis, 2018,
 - Patient numérique: images, apprentissage, intelligence artificielle, Collège de France 2018,
 - L'intelligence artificielle au coeur de la médecine de précision, Mediceen, Paris, 2018.
- **M. Lorenzi** was a speaker for the panel IA & Santé of the SophIA Summit 2018, Sophia Antipolis, November 7th, 2018. He was also invited to give a lecture to the Armour College of Engineering of the Illinois Institute of Technology, Chicago, July 25th 2018, to the General Assembly of the European Clinical Project AMYPAD, Berlin, October 9th 2018, and to the Disease Progression Modeling Workshop of the European project EUROPOND, Geneva, February 19th, 2018.
- **X. Pennec** was invited speaker at the Mathematics and Image Analysis Conference (MIA 2018), 15-17 January 2018, Berlin (DE), at the MFO workshop on Nonlinear Data: Theory and Algorithms, Oberwolfach (DE), 22-28 April 2018, at the MFO workshop on Statistics for Data with Geometric Structure, Oberwolfach (DE), 21-27 January 2018.
- **M. Sermesant** was an invited speaker at the Fields Institute (Toronto) "Mathematics for Medicine" workshop, at the "Myocardial Function" workshop in Leuven, at the CardioFunxion Winter School in Lyon, at the "New Horizons in Heart Failure" conference in Paris, at the "Computing in Cardiology" conference in Maastricht, at the French Radiology Days meeting of Cardiac Imaging in Paris, at the PIC Marie Curie ITN meeting in Bordeaux.
- **H. Delingette** was a keynote speaker at the NAFEMS conference in Paris November 20th 2018, and an invited speaker at the SOFA workshop in Strasburg in November 2018, at the Data Science structuring program evaluation day in Sept. 2018.
- **N. Miolane** was invited speaker at the MFO workshop on Statistics for Data with Geometric Structure, Oberwolfach (DE), 21-27 January 2018, at the Workshop on Geometry in Machine Learning (GiMLi), July 15, 2018, Stockholm, Sweden and at the Seminar of John Hopkins University, Center of Imaging Science, May 19, 2018, Baltimore, USA.

9.1.5. Leadership within the Scientific Community

- **H. Delingette** is a member of the MICCAI Society Board of Directors.

9.1.6. Scientific Expertise

- **N. Ayache** is a member of the following scientific committees:
 - 2016 -: Scientific advisory committee for Région Ile de France (20 members),

- 2015 -: Research Committee of Fondation pour la Recherche Médicale (18 members),
- 2010 -: Scientific Advisory Boards in London (ICL,KCL,UCL), Oxford & Nottingham,
- 2009 - 2019: Advisory Committee, Japan Initiative in Computational Anatomy, MEXT.
- **M. Lorenzi** was reviewer of the funding agencies ANR (Agence Nationale de la Recherche, France) and an expert panel member for the evaluation of the projects submitted to the Flanders Research Foundation, Belgium. He is providing scientific consulting for the company MyDataModels through an Inria Tech research contract.
- **X. Pennec** was a member of the Junior researcher (CR) recruiting committee for Inria-Sophia Antipolis, for the Inria International Chairs Selection Committee, and an evaluator for the Netherlands Organisation for Scientific Research (NWO).
- **M. Sermesant** was an evaluator for the Wellcome Trust (UK) and the NSF (USA).
- **H. Delingette** was an evaluator for the Dutch research council NWO, and or the Research Council of KU Leuven.

9.1.7. Research Administration

- **Xavier Pennec** is co-director and at the board of the Ecole doctorale STIC of Université Côte d'Azur. He is a member of the Doctoral follow-up Committee (CSD) at Inria Sophia Antipolis, of the the "Comité de la Recherche Biomédicale en Santé Publique (CRBSP)" of the Nice hospitals and in charge of the relationships of Inria-Sophia with the Nice University Hospital (CHU). At University Côte d'Azur, he is a member of the executive committee of the Academy 4 (Living systems Complexity and diversity), of the Scientific committee of the Academy 2 (Complex Systems), and of the Advanced Research Program Committee.
- **Marco Lorenzi** is is a member of the local steering committee of the technological platforms (Comités Scientifiques de Pilotage des Plateformes) in charge of Cluster, Grid, Cloud, and HPC technologies. He is also member of the Scientific Board of the UCA NeuroMod Institute.
- **Hervé Delingette** is a member of the local committee in charge of the scientific selection of visiting scientists (Comité NICE) and the local committee on the immersive platform. He is the coordinator of the Academy of excellence on "Networks, Information and Digital Society" at the Université Côte d'Azur. He is member of the executive committee of the "Ecole Universitaire de recherche" entitled *Digital Systems for Humans* at Université Côte d'Azur. He is a representative of Inria at the Federation Hospitalo-Universitaire Oncoage led by the CHU Nice.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Master: H. Delingette and X. Pennec, Introduction to Medical Image Analysis, 21h course (28.5 ETD), Master 2 MVA, ENS Cachan, France.

Master: X. Pennec and H. Delingette, Advanced Medical Imaging, 21h course (28.5 ETD), Master 2 MVA and École Centrale de Paris, France.

9.2.2. Theses Defended

- Pamela Mocerì, From normal right ventricle to pathology: shape and function analysis with different loading conditions using imaging and modelling. Started in 2015. Directed by M. Sermesant. Defended on January 25 2018.

9.2.3. PhD in progress

- Raphaël Sivera, Analyse statistique de l'évolution de structures morphologiques partir de séquences temporelles d'IRM, Université Côte d'Azur. Started in October 2015. Co-directed by N. Ayache and H. Delingette and co-supervised by M. Lorenzi and X. Pennec.

- Pawel Mlynarski, Tumor segmentation based on Random Forests and Convolutional Neural Networks trained on partially annotated data, Université Côte d'Azur. Started in December 2015. Co-directed by N. Ayache and H. Delingette.
- Qiao Zheng, Deep learning for cardiac image analysis, Université Côte d'Azur. Started in January 2016. Co-directed by N. Ayache and H. Delingette.
- Shuman Jia, Population-based Model of Atrial Fibrillation: from Shape Statistics to Group-wise Physiology, Université Côte d'Azur. Started in 2016. Co-directed by M. Sermesant and X. Pennec.
- Wen Wei, Learning Brain Alterations in Multiple Sclerosis from Multimodal Neuroimaging Data, Université Côte d'Azur. Started in 2016. Co-directed by N. Ayache and O. Colliot.
- Julian Krebs, Robust image registration based on machine learning, Université Côte d'Azur. Started in 2016. Co-directed by H. Delingette and N. Ayache.
- Luigi Antelmi, Statistical learning on large databases of heterogeneous imaging, cognitive and behavioural data, Université Côte d'Azur. Started in 2017. Co-directed by P. Robert and N. Ayache and supervised by M. Lorenzi.
- Clément Abi-Nader, Statistical Learning of Heterogeneous Data in Large-Scale Clinical Databases, Université Côte d'Azur. Started in 2017. Co-directed by P. Robert and N. Ayache and supervised by M. Lorenzi.
- Jaume Banús Cobo, Heart & Brain: discovering the link between cardiovascular pathologies and neurodegeneration through biophysical and statistical models of cardiac and brain images, Université Côte d'Azur. Started in 2017. Directed by M. Sermesant and co-supervised by Marco Lorenzi.
- Tania-Marina Bacoyannis, Cardiac Imaging and Machine Learning for Electrostructural Tomography, Université Côte d'Azur. Started in 2017. Co-directed by M. Sermesant and H. Cochet.
- Nicolas Cedilnik, Personalised Modeling for Ventricular Tachycardia Ablation Planning, Université Côte d'Azur. Started in 2017. Co-directed by M. Sermesant and H. Cochet.
- Nicolas Guigui, Statistical estimation on Riemannian and affine symmetric spaces with applications to the statistical survey of the brain anatomy, Université Côte d'Azur. Started in 2018. Directed by X. Pennec.
- Benoît Audelan, Joint biological and imaging markers for the diagnosis of severe lung diseases. Started in 2018. Co-directed by H. Delingette and N. Ayache.
- Zihao WANG, Cochlear Implantation Modeling, Planning & Evaluation. Started in 2018. Directed by H. Delingette.

9.2.4. *Juries*

- Marco Lorenzi was a jury member for the PhD probation exam of Kurt Kutajar and Remi Domingues (EURECOM), Isa Costantini (Athena, Inria), and Radia Zeghari (CoBTeK, Inria, CHU Nice).
- Xavier Pennec was co-supervisor of the PhD thesis of Pauline Bezivin Frere (U. Orsay) defended in July 2018, reviewer for the PhD of Maël Dugast, INSA Lyon, FR, Dec. 2018 and for the PhD of Baptiste Moreau, University of Montpellier II, FR, March 2018. He was the president of the jury of the HDR of Laurent Risser (HDR), U. Toulouse, FR, November 2018.
- Hervé Delingette was a reviewer in the PhD thesis committee of C. Jaquet (ESIEE- Univ. of Paris-Est).
- Maxime Sermesant was a reviewer and a member of the PhD jury of Josselin Duchateau, Bordeaux University (Dec 20), a reviewer for the PhD of Sergio Sanchez, UPF Barcelona (Sep 21) and a member of the PhD jury of Ketan Bacchuwar, ESIEE (Jun 5).

9.3. Popularization

9.3.1. *Interventions*

- Nicolas Cedilnik, Pierre Tramaloni, Thomas Demarcy, Hervé Delingette and Maxime Sermesant organised a cardiac intervention simulator demo and a cochlear implant demo for the Science Festival at Inria (Dec 7).
- On April the 10th, during the "mathematics week", 2 PhD students (Nicolas Cedilnik and Raphael Sivera) met young pupils (age 8-10) at the ESPE (école supérieure du professorat et de l'éducation) Nice. The pupils were introduced to mathematical concepts in a practical way through the use of toys.

GALEN-POST Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. Member of the Organizing Committees

R. Güler organized the Workshop “COCO + Mapillary Joint Recognition Challenge” at ECCV 2018, September 2018, Munich, Germany.

R. Güler organized the Workshop “Posetrack Challenge Articulated People Tracking in the Wild”, at ECCV 2018, September 2018, Munich, Germany.

F. Malliaros was a member of the organizing committee of the 3rd International Workshop on Learning Representations for Big Networks (BigNet), The Web Conference (WWW), Lyon, France, 2018.

10.1.2. Scientific Events Selection

10.1.2.1. Chair of Conference Program Committees

H. Talbot chaired the 2nd Workshop on Reproducible Research in Pattern Recognition organized at ICPR 2018, Beijing, China.

10.1.2.2. Member of the Conference Program Committees

H. Talbot. Member of the board and program committee for the International Symposium in Mathematical Morphology, to take place in Saarbrücken, Germany, May 2019.

E. Chouzenoux. Member of the technical committees “Signal Processing Theory and Methods” of the IEEE Signal Processing Society and “SAT Signal and Data Analytics for Machine Learning” of EURASIP.

F. Malliaros. Member of the program committee at: AAAI Conference on Artificial Intelligence (AAAI), The Web Conference (WWW), Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), Conference on Neural Information Processing Systems (NeurIPS), International Conference on Complex Networks and Their Applications (Complex Networks)

10.1.2.3. Reviewer

The members of the team reviewed numerous papers for several international conferences, such as for the annual conferences on Computer Vision and Pattern Recognition (CVPR), Medical Image Computing and Computer Assisted Intervention (MICCAI), Neural Information Processing Systems (NIPS) and International Conference on Learning Representations (ICLR), IEEE International Conference and Acoustics Speech and Signal Processing (ICASSP), IEEE International Conference on Image Processing (ICIP), IEEE Statistical Signal Processing workshop (SSP), European Signal Processing Conference (EUSIPCO), Joint Urban Remote Sensing Event (JURSE).

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

Hugues Talbot: Senior Area Editor for IEEE Signal Processing Letters

Maria Vakalopoulou: Lead Guest Editor for the special issue on Remote Sensing, in Computer Vision and Image Understanding (CVIU)

Emilie Chouzenoux: Associate Editor of the IEEE Transactions on Signal Processing

Jean-Christophe Pesquet: Associate Editor of the SIAM Journal on Imaging Sciences

10.1.3.2. Reviewer - Reviewing Activities

H. Talbot: IEEE Pattern Analysis and Machine Intelligence, IEEE Transaction on Image Processing, Computer Vision and Image Understanding, J. on Mathematical Imaging and Vision, Signal Processing Letters, Transactions on Signal Processing.

M. Vakalopoulou: International Journal of Computer Assisted Radiology and Surgery (IJCARS), IEEE Trans. on Geoscience and Remote Sensing (TGRS), Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS), ISPRS Journal of Photogrammetry and Remote Sensing, Computer Methods and Programs in Biomedicine (CMPB), Pattern Recognition Letters, Computer Vision and Image Understanding (CVIU), SPIE Optical Engineering (OE), Remote Sensing MDPI.

E. Chouzenoux: IEEE Trans. on Image Processing, IEEE Trans. Signal Processing, SIAM Journal on Imaging Science, Journal of Optimization Theory and Applications, Journal of Global Optimization.

J.-C. Pesquet: IEEE Trans. on Signal Processing, IEEE Trans. on Image Processing, IEEE Trans. on Information Theory (IEEE-TI), Signal Processing, SIAM Journal on Optimization, SIAM Journal on Imaging Sciences, Journal of Mathematical Imaging and Vision, Journal of Optimization Theory and Applications, Mathematical Programming.

F. Malliaros: Data Mining and Knowledge Discovery (DAMI), ACM Transactions on Knowledge Discovery from Data (TKDD).

M. C. Corbineau: Signal Processing: Image Communication (SPIC), Computer Vision and Image Understanding (CVIU).

M. Papadomanolaki: Computer Vision and Image Understanding (CVIU), Journal of Basic and Applied Research International, Journal of Geography, Environment and Earth Science International.

M. Sahasrabudhe: Computer Vision and Image Understanding (CVIU).

D. Khuê Lê-Huu: IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI), International Journal of Computer Vision (IJCV).

10.1.4. Invited Talks

J.-C. Pesquet:

SAMSI workshop on Operator Splitting Methods in Data Analysis, Raleigh, March 2018, New York University, March 2018,

Entropy workshop, Barcelona, May 2018,

SIAM Conference on Imaging Science, Bologna, Italy, June 2018,

Aalto University, Helsinki, October 2018,

Polish Science Academy, Warsaw, December 2018.

H. Talbot:

Heartflow, Redwood City, California, April 2018,

Imperial College, London, October 2018,

Institut Henri Poincaré, Paris, December 2018.

E. Chouzenoux:

CRIStAL, Lille, February 2018,
Ann Arbor University, USA, April 2018,
International Conference Inverse Problems: Modeling and Simulation (IPMS 2018), Malta, 21st-25th May 2018,
Heriot Watt University, Edimburg, UK, June 2018,
SIAM Conference on Imaging Science, Bologna, Italy, June 2018.

F. Malliaros:

The Web Conference, Lyon, France, April 2018,
Paris Descartes University, Paris, France, May 2018,
ACM International Conference on Information and Knowledge Management (CIKM), Turin, Italy, October 2018.

E. Oyallon:

SONY CSL, Paris, January 2018,
DeepMind CSML Seminar Series, January 2018,
Imaging in Paris Seminar, IHP, January 2018,
Criteo, Paris, May 2018,
SequeL, Lille, May 2018,
GE Healthcare, Bures-sur-Yvette, June 2018,
NAVER LABS, Grenoble, June 2018,
GT DeepNet, LRI/TAO, Gif-sur-Yvette, December 2018,
GREYC, Caen, December 2018.

M. Vakalapolou:

ONERA, March 2018,
Telecom ParisTech - LTCI, May 2018,
CNRS Workshop on Artificial Intelligence and its Applications, CentraleSupélec, July 2018.

A. Celikkanat:

Paris-Saclay Junior Conference on Data Science and Engineering (JDSE2018) (Poster), Orsay, France, 13-14th September 2018.

M. C. Corbineau:

SIAM Conference on Imaging Science, Bologna, Italy, June 2018.

R. A. Guler:

Inria Paris, March 2018,
University of Amsterdam, April 2018
Max Planck Institute for Intelligent Systems, Tubingen, July 2018.

10.1.5. Leadership within the Scientific Community

J.-C. Pesquet is senior member of the Institut Universitaire de France and a Fellow of IEEE.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master : Corbineau, Marie-Caroline and Pesquet, Jean-Christophe. Advanced course on Optimization, 33h, M1, CentraleSupélec, FR

Master : Chouzenoux, Emilie and Pesquet, Jean-Christophe and Corbineau, Marie-Caroline. Foundations of Distributed and Large Scale Computing, 26h, M.Sc. in Data Sciences and Business Analytics, CentraleSupélec, MVA ENS Cachan, Master Optimization Paris Sud and ESSEC Business School, FR

Master: Pesquet, Jean-Christophe. Introduction to Optimization, 6h, MVA ENS Cachan, FR

Master: Malliaros, Fragkiskos. Machine Learning, 27h, M.Sc. in Data Sciences and Business Analytics, CentraleSupélec and ESSEC Business School, FR

Master: Malliaros, Fragkiskos. Network Science Analytics, 27h, M.Sc. in Data Sciences and Business Analytics, CentraleSupélec and ESSEC Business School and M.Sc. in Artificial Intelligence, CentraleSupélec, FR

Master: Malliaros, Fragkiskos. Introduction to Machine Learning, 33h, 2nd year course at Centrale-Supélec, FR

Master: Malliaros, Fragkiskos. Mathematical Modeling of Propagation Phenomena – Propagation on Graphs, 15h, 1st year course at CentraleSupélec, FR

Master: Sahasrabudhe, Mihir: Programming and Languages, 24h, M.Sc. in Data Science and Business Analytics, CentraleSupélec and ESSEC Business School, FR

Master: Sahasrabudhe, Mihir and Battistella, Enzo: Introduction to Machine Learning, 28h, 2nd year CentraleSupélec, FR

Master: Chouzenoux, Emilie. Advanced Machine Learning, 24h, 3rd year CentraleSupélec, FR

Master: Papadomanolaki, Maria. Deep Learning, 3rd year CentraleSupélec and MVA ENS Cachan, FR

Master: Marmin, Arthur, Cours de soutien de mathématiques, 28h, 2nd year CentraleSupélec, FR

Master: Celikkanat, Abdulkadir. Network Science Analytics, 20h, M.Sc. in Data Sciences and Business Analytics, ESSEC and 3rd year CentraleSupélec, FR

Master: Celikkanat, Abdulkadir. Mathematical Modeling of Propagation Phenomena - Propagation on Graphs, 12h, 3rd year CentraleSupélec, FR

Master: Estienne, Théo. Deep Learning, 7h30, 3rd year CentraleSupélec, FR

Master: Papadomanolaki, Maria. Deep Learning, 7h30, 3rd year CentraleSupélec, FR

Master: Oyallon, Edouard. Deep Learning, 12h, 3rd year CentraleSupélec, FR

Master: Oyallon, Edouard. Deep Learning, 1h, MVA ENS Cachan, FR

Master: Vakalopoulou, Maria. Deep Learning, 12h, 3rd year CentraleSupélec, FR

Master: Vakalopoulou, Maria. Introduction to Machine Learning, 12h, 2nd year CentraleSupélec, FR

Master: Talbot, Hugues. Discrete Optimisation, 2nd year course, CentraleSupélec, 30h, FR

Master: Talbot, Hugues. Big Data, Techniques and Platforms, M.Sc in Data Science and Business Analytics, CentraleSupélec and ESSEC Business School, 30h, FR

10.2.2. Lecturing activities

Chouzenoux, Emilie and Talbot, Hugues. Enjeux et technologies de l'intelligence artificielle. CentraleSupélec Exed, 2 days (×2), FR.

Oyallon, Edouard. Introduction to Deep Learning. Ateliers Statistiques de la Société Française de Statistique, 2 days, IHP, Paris, FR.

Oyallon, Edouard. Advanced Deep Learning. Mathematical Coffees, 3 hours, Huawei, Paris, FR.

Chouzenoux, Emilie. Parallel Stochastic Computing. Mathematical Coffees, 3 hours, Huawei, Paris, FR.

Vakalopoulou, Maria. Introduction to Computer Vision, Applications to Medical Images. Summer School on Artificial Intelligence, 5 hours, CentraleSupélec, FR.

Pesquet, Jean-Christophe. Proximal Splitting Methods in Image Processing, Lake Como School of Advanced Studies on Computational Methods for Inverse Problems in Imaging, 12 hours, May 2018, Italy.

10.2.3. Supervision

PhD (defended) : Siddhartha Chandra, Deep Structured Prediction for Dense Labeling Tasks in Computer Vision, 2014-2018, supervised by Iasonas Kokkinos. Defended on 11st May 2018.

PhD (defended) : Stefan Kinauer, Représentations à base de parties pour la vision 3D de haut niveau, 2014-2018, supervised by Iasonas Kokkinos. Defended on 31st August 2018.

PhD (defended) : Afef Cherni, Méthodes modernes d'analyse de données en biophysique analytique, 2015-2018, supervised by Emilie Chouzenoux and Marc-André Delsuc (IGBMC, Strasbourg). Defended on 20th September 2018.

PhD (defended): Clara Jaquet. Vers la simulation de perfusion du myocarde à partir d'image tomographique scanner. 2014-2018. Supervised by Hugues Talbot and Laurent Najman (ESIEE). Defended on 13 December 2018.

PhD in progress : Mihir Sahasrabudhe, Understanding Correlations in High-Dimensional Spaces and their Applications in Medical Imaging and Computer Vision, 2015-2019, supervised by Nikos Paragios

PhD in progress : Marie-Caroline Corbineau, Fast online optimization algorithms for machine learning and medical imaging, 2016-2019, supervised by Emilie Chouzenoux and J.-C. Pesquet

PhD in progress : Loubna El Gueddari, Parallel proximal algorithms for compressed sensing MRI reconstruction - Applications to ultra-high magnetic field imaging, 2016-2019, supervised by J.-C. Pesquet and Ph. Ciuciu (Inria PARIETAL)

PhD in progress: Diane Genest. Imagerie du Modele alevin de poisson / Application a la toxicologie du developpement. 2016-2019. Supervised by Hugues Talbot and Jean Cousty (ESIEE).

PhD in progress: Daniel Antunes: Contraintes géométriques et approches variationnelles pour l'analyse d'image. 2016-2019. Supervised by Hugues Talbot and Jacques-Olivier Lachaud (U. Savoie-Mont Blanc)

PhD in progress: Guillaume Chassagnon, Development of new quantitative imaging biomarkers for obstructive and interstitial lung diseases, 2016-2019, supervised by N. Paragios

PhD in progress: Maïssa Sghaier, clinical Task-Based Reconstruction in tomosynthesis, 2017-2020, supervised by E. Chouzenoux, J.-C. Pesquet and G. Palma (GE Healthcare)

PhD in progress: Arthur Marmin, Rational models optimized exactly for chemical processes improvement, 2017-2020, supervised by Marc Castella (Telecom Paristech) and J.-C. Pesquet

PhD in progress: Roger Sun, Deep learning and computer vision approaches on medical imaging and genomic data to improve the prediction of anticancer therapies' efficacy, 2017-2020, supervised by N. Paragios

PhD in progress: Marie-Charlotte Poilpre: Méthode de comparaison faciale morphologique, adaptée aux expertise judiciaires, basée sur la modélisation 3D. 2017-2020. Supervised by Hugues Talbot and Vincent Nozick (U. Paris-Est)

PhD in progress: Théo Estienne, Improving anticancer therapies efficacy through Machine Learning on Medical Imaging & Genomic Data, 2017-2020, supervised by N. Paragios

PhD in progress: Abdulkadir Celikkanat, Representation learning methods on graphs, 2017-2020, supervised by N. Paragios (TheraPanacea, Paris) and F. Malliaros

PhD in progress: Maria Papadomanolaki, Change Detection from Multitemporal High Resolution Data with Deep Learning, 2017-2021, supervised by M. Vakalopoulou and K. Karantzalos (National Technical University of Athens).

PhD in progress: Enzo Battistella, Development of novel imaging approaches for tumour phenotype assessment by noninvasive imaging 2017-2020, supervised by M. Vakalopoulou and N. Paragios.

PhD in progress: Thanh Xuan Nguyen. Détection et étude morphologique des sources extragalactiques par analyse variationnelle. 2018-2021. Supervised by Hugues Talbot and Laurent Najman (ESIEE)

PhD in progress: Marvin Lerousseau. Apprentissage statistique en imagerie médicale et en génomique pour prédire l'efficacité des thérapies anti-tumorales. 2018-2021. Supervised by Nikos Paragios (Therapanacea), Eric Deutch (IGR) and Hugues Talbot.

PhD in progress: Yunshi Huang, Majorization-Minimization approaches for large scale problems in image processing, 2018-2021, supervised by E. Chouzenoux.

PhD in progress: Georgios Panagopoulos, Influence maximization in social networks, 2018-2021, supervised by F. Malliaros and M. Vazirgiannis (École Polytechnique).

10.2.4. Juries

The faculty members of the team participated to numerous PhD Thesis Committees, HDR Committees and served as Grant Reviewers.

Emilie Chouzenoux, Marie-Caroline Corbineau, Fragkiskos Malliaros, Edouard Oyallon, Jean-Christophe Pesquet, Mihir Sahasrabudhe and Hugues Talbot were part of the jury committee for several end-of-course internship presentations in CentraleSupélec.

10.3. Popularization

10.3.1. Interventions

Enzo Battistella, Marie-Caroline Corbineau, Théo Estienne and Maria Vakalopoulou have participated at the 'Demi-journée Recherche' organised by CentraleSupélec for the first year students of the school.

MATHNEURO Team

6. Dissemination

6.1. Promoting Scientific Activities

6.1.1. Scientific Events Organisation

6.1.1.1. Member of the Organizing Committees

Olivier Faugeras and Romain Veltz were on the Advisory Board of the **4th International Conference on Mathematical Neuroscience**, held in Antibes Juan les Pins (France), June 11 - 13, 2018.

6.1.2. Scientific Events Selection

6.1.2.1. Member of the Conference Program Committees

Mathieu Desroches was on the Program Committee of the **4th International Conference on Mathematical Neuroscience**, held in Antibes Juan les Pins (France), June 11 - 13, 2018.

Mathieu Desroches was on the Scientific Committee of the **2nd International workshop in Neurodynamics (Ndy'18)**, held in Castro-Urdiales (Spain), September 26-29, 2018.

6.1.3. Journal

6.1.3.1. Member of the Editorial Boards

Olivier Faugeras is the co-editor in chief of the open access **Journal of Mathematical Neuroscience**. This journal has obtained in 2018 an Impact Factor of 2.4.

6.1.3.2. Reviewer - Reviewing Activities

Fabien Campillo acts as a reviewer for Journal of Mathematical Biology.

Mathieu Desroches acts as a reviewer for Physica D, SIAM Journal on Applied Dynamical Systems (SIADS), PLoS Computational Biology, Journal of Mathematical Biology, Journal of Neurophysiology, Journal of Mathematical Neuroscience, Nonlinear Dynamics.

Olivier Faugeras acts as a reviewer for the Journal of Mathematical Neuroscience, the Journal of Computational Neuroscience, the SIAM Journal on Applied Dynamical Systems (SIADS).

Martin Krupa acts as a reviewer for Nonlinearity, Proceedings of the National Academy of Sciences of the USA (PNAS), the SIAM Journal of Applied Dynamical Systems (SIADS).

Romain Veltz acts as a reviewer for Neural Computation, eLIFE, SIADS, PNAS, Journal of the Royal Society Interface.

6.1.4. Invited Talks

Pascal Chossat, "Stability of Simple and Pseudo Simple Heteroclinic Cycles in \mathbb{R}^4 ", Perspectives in Nonlinear Science Workshop, Cargèse (France), March 2018.

Pascal Chossat, "Computational aspects of equivariant bifurcation theory", Colloque *Symmetry and Computation*, CIRM (France), April 2018.

Pascal Chossat, "Geometry in neurosciences: the example of the visual cortex" (plenary talk), *Systèmes dynamiques et systèmes complexes - Une conférence pour célébrer les 60 ans de Jean-Marc Gambaudo*, Nice (France), Juin 2018.

Pascal Chossat, "Perception of images by the visual cortex: geometry in neuroscience" (plenary talk), *VI Iberoamerican meeting Geometry, Mechanics and Control*, Guanajuato (Mexico), August 2018.

Pascal Chossat, “Transitions de phase dans le plan hyperbolique, application à la détection des textures par le cortex visuel primaire”, Colloque *Géométrie et représentation de la couleur*, UPMC, November 2018.

Mathieu Desroches, “Canards and spike-adding in neural bursters”, MURPHYS-HSFS-2018 meeting, CRM, Barcelona (Spain), May 2018.

Mathieu Desroches, “Three-Timescale Dynamics: Canards and Spike Adding”, New Trends in Mathematical Biology, CRM, Barcelona (Spain), June 2018.

Olivier Faugeras, “Predicting neuronal correlations in large size networks based on meanfield analysis”, Workshop *Mean-field Approaches to the Dynamics of Neuronal Networks*, EITN, Paris (France), January 2018.

Olivier Faugeras, “Neural networks do not become asynchronous in the large size limit when synaptic weights are correlated: there is no propagation of chaos”, Workshop *InSpire – New Insights on Complex Neural Dynamics*, , Cergy (France), June 2018.

Olivier Faugeras, “Neural networks do not become asynchronous in the large size limit: there is no propagation of chaos”, ICMNS 2018, Antibes (France), June 2018.

Elif Köksal Ersöz, “Anticipation via canards”, MURPHYS-HSFS-2018 meeting, CRM, Barcelona (Spain), May 2018.

Elif Köksal Ersöz, “Anticipation via canards in excitable systems”, XXIII National Conference on Statistical Physics and Complex Systems, Parma (Italy), June 2018.

Elif Köksal Ersöz, “Canard mediated mixed-mode bursting oscillations in a rate model”, European Conference on Mathematical and Theoretical Biology (ECMTB 2018), Lisbonne (Portugal), July 2018.

Elif Köksal Ersöz, “Canard mediated mixed-mode bursting oscillations in a rate model”, 2nd International workshop in Neurodynamics (Ndy’18), Castro-Urdiales (Spain), September 2018.

Martin Krupa, “Heteroclinic chains in a model of associative memory”, *Systèmes dynamiques et systèmes complexes - Une conférence pour célébrer les 60 ans de Jean-Marc Gambaudo*, Nice (France), June 2018.

Romain Veltz, “On a toy network of neurons interacting through nonlinear dendritic compartments”, ICMNS 2018, invited talk, June 2018.

Romain Veltz, “On a toy network of neurons interacting through nonlinear dendritic compartments”, *Mean-field approaches to the dynamics of neuronal networks*, EITN, 2018.

Romain Veltz, “On a toy network of neurons interacting through nonlinear dendritic compartments”, *Systèmes dynamiques et systèmes complexes - Une conférence pour célébrer les 60 ans de Jean-Marc Gambaudo*, Nice (France), June 2018.

Romain Veltz, “Models of neurons interacting through nonlinear dendritic compartments”, Séminaire de Probabilités et Statistique, LJAD, Université de Nice Sophia Antipolis, October 2018.

6.1.5. Scientific Expertise

Fabien Campillo was member of the local committee in charge of the scientific selection of visiting scientists (Comité NICE)

Fabien Campillo was member of the HCERES visiting committee for the evaluation of the INRA Research Unit MAIAGE.

Fabien Campillo was member of the visiting committee of the LIRIMA International Laboratory.

Mathieu Desroches was on the Advisory Board of the Complex Systems Academy of the UCA^{JEDI} Idex.

Olivier Faugeras made a presentation in front of the CCNE (Comité Consultatif National d’Ethique) reporting on the work made by the group “éthique et IA” that he was the president of at the *Académie des Sciences de Paris* in preparation of their revision of the law on bioethics.

Olivier Faugeras was the President of the study group “Intelligence artificielle” of the *Académie des Sciences de Paris*. As such, he led the audition of experts of this research field, namely for 2018, Jean Ponce, Stéphane Mallat and Francis Bach. This study group has also produced a report for the 2019 G7 meeting.

6.2. Teaching - Supervision - Juries

6.2.1. Teaching

Chalk-learning

Master 2 MVA/UPMC: Romain Veltz, *Mathematical Methods for Neurosciences*, 20 hours, Paris, France.

Master 1 BIM/UPMC: Mathieu Desroches, *Modèles Mathématiques et Computationnels en Neurosciences* (Lectures and example classes), 20 hours, Paris, France.

Master 1 BIM/UPMC: Elif Köksal Ersöz, *Modèles Mathématiques et Computationnels en Neurosciences* (Labs), 10 hours, Paris, France.

Mini-course (Master’s level), Basque Center for Applied Mathematics: Mathieu Desroches (together with Serafim Rodrigues), *Introduction to mathematical neuroscience: neuronal models and their bifurcations*, 10 hours, Bilbao, Spain.

6.2.2. Supervision

PhD in progress: Axel Dolcemascolo, “All optical neuromimetic devices”, started in January 2016, co-supervised by Romain Veltz and Stéphane Barland (INLN). Successfully defended on 14 December 2018.

PhD in progress: Louisiane Lemaire, “Multi-scale mathematical modeling of cortical spreading depression”, started in October 2018, co-supervised by Mathieu Desroches and Martin Krupa.

PhD in progress: Yuri Rodrigues, “Towards a model of post synaptic excitatory synapse”, started in March 2018, co-supervised by Romain Veltz and Hélène Marie (IPMC, Sophia Antipolis).

PhD in progress: Halgurd Taher, “Next generation neural-mass models”, started in November 2018, co-supervised by Simona Olmi and Mathieu Desroches.

PhD in progress: Pascal Helson, “Study of plasticity laws with stochastic processes”, started in September 2016, co-supervised by Romain Veltz and Etienne Tanré (Inria TOSCA).

PhD in progress: Quentin Cormier, “Biological spiking neural networks”, started in September 2017, co-supervised by Romain Veltz and Etienne Tanré (Inria TOSCA).

PhD in progress: Samuel Nyobe, “Inférence dans les modèles de Markov cachés : Application en foresterie”, started in October 2017, co-supervised by Fabien Campillo, Serge Moto (University of Yaoundé, Camerun) and Vivien Rossi (CIRAD).

6.2.3. Juries

Mathieu Desroches was president of the Jury of the PhD of Dora Karvouniari (Inria Biovision Team) entitled “Mathematical modeling of retinal waves”, Inria Sophia Antipolis, 15 March 2018.

Pascal Chossat was jury member for the HDR of Philippe Beltrame, Université d’Avignon, 30 November 2018.

Romain Veltz was Examiner for A. Dolcemascolo’s PhD thesis defence entitled “Semiconductor lasers to model and control cells and excitable networks”, which took place on 14 December 2018.

6.3. Popularization

6.3.1. Interventions

National events: Romain Veltz participated at the conference “Fête de la Science”.

6.3.2. Internal action

Romain Veltz gave a talk at “Café des sciences” about “Vers un modèle de synapse excitatrice”

MIMESIS Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. Reviewing Activities

Members of the teams regularly provide reviews for:

- Int. Conferences and journals on Information Processing in Computer-Assisted (miccai, ipcai, media,
- Interventions, Workshop on Virtual Reality Interaction and Physical Simulation (eurographics, vriphys, ...)
- International Conference on Robotics and Automation (iros, icra,..)

10.1.1.2. Member of the Organizing Committees

Stéphane Cotin participated to the organization of the Patient-specific Computational Biomechanics Symposium at World Congress on Computational Mechanics (WCCM 2018).

10.1.2. Journal

Member of the Editorial Boards: Hadrien Courtecuisse was program chair for the international conference Eurographics 2018.

10.1.3. Invited Talks

- 2018 Stéphane Cotin: Invited lecture – workshop on “Virtual and Augmented Reality” (Toulouse, France)
- 2018 Stéphane Cotin: Invited lecture - Academy of Sciences (Paris, France)
- 2018 Stéphane Cotin: Invited lecture - BEST symposium (Strasbourg, France)

10.1.4. Scientific Expertise

Stéphane Cotin provide provides scientific expertise for the startup Insimo.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master : Igor Peterlik, Modélisation des systèmes vivants, 17h, M2, University of Strasbourg

Master : Igor Peterlik, Visualisation des données et simulation, 10h, M1, University of Strasbourg

Master : Hadrien Courtecuisse, Real time simulation, 30h, M2, University of Strasbourg

Master : Hadrien Courtecuisse, Visualisation des données et simulation, 10h, M2, University of Strasbourg

Master : Hadrien Courtecuisse, Visualisation des données et simulation, 10h, M1, University of Strasbourg

10.2.2. Supervision

PhD: Yinoussa Adagolodjo, Coupling between robotics and medical simulation for automated procedures, 01/02/2016, supervised by Hadrien Courtecuisse.

PhD in progress: Jaime Garcia Guevara, Augmented ultrasound imaging for hepatic surgery, 01/09/2015, supervised by Stéphane Cotin, Marie-Odile Berger.

PhD in progress: Raffaella Trivisonne, Computer-aided vascular interventions, 01/09/2015, supervised by Stéphane Cotin and Erwan Kerrien.

PhD in progress: Nicolas Golse, Navigation using the augmented reality during hepatic surgery, 01/09/2016, supervised by Stéphane Cotin.

PhD in progress: Sergei Nikolaev, Characterization of boundary conditions for biomechanical modeling of liver, 01/05/2017, supervised by Stéphane Cotin, co-supervised by Igor Peterlik and Hadrien Courtecuisse.

PhD in progress: Jean-Nicolas Brunet, Characterization of boundary conditions for biomechanical modeling of liver, 01/09/2017, supervised by Stéphane Cotin.

PhD in progress: Andrea Mendizabal, Numerical simulation of soft tissues and machine learning, 01/09/2017, supervised by Stéphane Cotin.

PhD in progress: Paul Baksic, Robotic assistance for percutaneous surgery interventions in deformable structures – Application to radiofrequency ablation, 01/10/2018, supervised by Hadrien Courtecuisse.

10.2.3. Juries

Hadrien Courtecuisse was a member of jury of the PhD defense of Yinoussa Adagolodjo and Fanny Morin. Strasbourg University and Grenoble University.

MNEMOSYNE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Selection

10.1.1.1. Chair of Conference Program Committees

X. Hinaut: organisation of the Workshop on Language and Robotics (follower of the ML-HLCR workshop at IROS 2017), at IROS, 1st of October 2018, Madrid, Spain, <http://iros2018.emergent-symbol.systems/>. <http://iros2018.emergent-symbol.systems/>.

10.1.1.2. Member of the Conference Program Committees

F. Alexandre: TAIMA'18; SAB'18; X. Hinaut: ICDL-Epirob'18; N. Rougier: WSOM'18;

10.1.1.3. Reviewer

X. Hinaut: ICDL-epirob'18; CogSci'18; IJCNN'18; ESANN'18;

10.1.2. Journal

10.1.2.1. Member of the Editorial Boards

- Frédéric Alexandre: Academic Editor for PLOS ONE; Review Editor for Frontiers in Neuro-robotics;
- Nicolas Rougier: Editor in chief for ReScience, Academic editor for PeerJ, review editor for Frontiers in Neuroinformatics.
- Xavier Hinaut: guest editor in the Journal Advanced Robotics of a special issue on "Machine Learning Methods for High-Level Cognitive-Capabilities-in-Robotics"

10.1.2.2. Reviewer - Reviewing Activities

- F. Alexandre: Elife; EMBC; Frontiers in Neuroinformatics; Neurobiology of Disease; PLoS ONE
- André Garenne: Journal of Integrative Neuroscience
- Xavier Hinaut: Adaptive Behavior; Applied Science; Cognitive Computation; Cognitive Systems (CogSys); Neural Networks; ReScience; Transactions in Human-Robot Interaction (THRI); Transactions in Cognitive Developmental Systems (TCDS);
- Nicolas Rougier: Frontiers in Neuroinformatics, Frontiers in Neuroinformatics, Frontiers in Computational Neuroscience, PLOS Computational Biology, PeerJ;
- Thierry Viéville: Frontiers in Neuroinformatics, Frontiers in Neuroinformatics, Frontiers in Computational Neuroscience

10.1.3. Invited Talks

F. Alexandre:

- “When cognitive neurosciences revisit Artificial Intelligence”, Big Data Seminar of the Labri, February 8 and 22 (in two parts);
- “Understanding or transforming the human being ?”, Annual meeting of the International Catholic Center for cooperation with UNESCO, Paris, May 4;
- “Modelling the medial prefrontal cortex for the motivated behaviour of an autonomous agent in the Minecraft video game”, Symposium «Frontiers in medial prefrontal cortex research», Bordeaux, September 6;
- “Modeling the functional organization of the medial and ventral prefrontal cortex”, Symposium on Cognitive Systems, Chemnitz (Germany), September 13;
- “Does Artificial Intelligence learn from its errors ?”, Colloquium Cathy Dufour on Artificial Intelligence, University of Lorraine, November 16;
- “The contributions of Machine Learning to research on neurodegenerative diseases”, in the annual meeting of the Bordeaux Initiative for Neurodegenerative Disorders (BIND), about Technological Innovations and Neurodegenerative Diseases (November, 23);

Ikram Chraïbi Kaadoud: La Grande Jonction (Bordeaux);

Silvia Pagliarini at the European Birdsong Meeting, Odense, Denmark;

N. Rougier:

- Berstein Conference / PhD symposium (Berlin);
- ICML, Workshop on reproducibility in Machine Learning (Stockholm);
- Loria (Nancy);
- Digital Aquitaine / Club Commerce Connecté (Bordeaux);
- Phiteco conference (Compiègne);

10.1.4. Leadership within the Scientific Community

X. Hinaut:

- President of the association MindLaBDX: “open citizen lab” in Cognitive Sciences and Artificial Intelligence in Bordeaux.
- member of the Administration Committee of Fresco association (French Federation of students in Cognitive Science)

Nicolas Rougier: Editor in chief for ReScience

10.1.5. Scientific Expertise

F. Alexandre is the french expert for Mathematics and Computer Science of the PHC (Hubert Curien Program) Utique for scientific cooperation between France and Tunisia. He is also an expert for the Association Robert Debré for Medical Research.

Nicolas Rougier: UNESCO; Engineering and Physical Sciences Research Council (UK); Assistance Publique Hopitaux de Paris; Eurostars program (Eureka).

10.1.6. Research Administration

- F. Alexandre is member of the Inria Evaluation Committee, Deputy Scientific Delegate and Vice-head of the Project Committee of Inria Bordeaux Sud-Ouest (until september2018); member of the Inria monitoring and forecasting cell; Corresponding scientist for Bordeaux Sud-Ouest of the Inria COERLE ethical committee; Member of the national Inria committee for international chairs; Member of the local Inria committee for young researchers hiring; Member of the steering committee of the regional Cluster on Information Technology and Health; of the regional Cluster on Robotics; Expert of the ITMO 'Neurosciences, Sciences Cognitive, Neurologie, Psychiatrie'
- N. Rougier is vice-head of the Mnemosyne team-project; elected member of the Inria Evaluation Committee; IES referent for Inria Bordeaux Sud-Ouest; Member of the committee for researcher recruitment; Member of the steering committee for the BioComp CNRS consortium; Editor in chief and co-founder of ReScience.
- Thierry Viéville is in charge of the <http://classcode.fr> project and in charge, for Inria, of the creation of a Master SmartEdTech at UCA within the scope of his mission for the Inria Sophia Antipolis - Méditerranée direction.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Many courses are given in french universities and schools of engineers at different levels (LMD) by most team members, in computer science, in applied mathematics, in neuroscience and in cognitive science. Thierry Viéville is teaching computer thinking in the Msc #CreaSmartEdtech ("Digital Expertise", "Educational Informatics" including Artificial Intelligence and Ontologies, "Digital Intedisciplinary Project ") and is co-organizing this Master of Science [29]. In addition, this year, N. Rougier gave tutorials to the Advanced Python

Programming for Science summer school (Camerino, Italy) and a Digital Typography course (SIGGRAPH, Vancouver, Canada). In May, X. Hinaut gave an invited course on Echo State Networks in the Neural Networks lecture of the Master of Science on Intelligent Adaptive Systems of the University of Hamburg. F. Alexandre, X. Hinaut and N. Rougier have been participating and teaching to the “Robotics and Social Interactions” summer school (October 1-4, Moliets-et-Maa). We can also mention that S. Pagliarini (PhD student) was selected to participate to the OIST Computational Summer Course (June 24-July 15, Okinawa, Japan).

10.2.2. *Juries*

In addition to several juries in France, we can note a reviewing and participation to a PhD defense in Germany (F. Alexandre)

10.3. Popularization

10.3.1. *Internal or external Inria responsibilities*

Thierry Viéville is in charge of mission regarding e-education in particular the collaborations with the UCA university on these subjects, more precisely the LINE laboratory ESPE of Nice where he is affected at 20%, for the creation and co-direction of the MSc and the relation with EducAzur, and the actions within the Class Code project.

10.3.2. *Articles and contents*

- For online publications: F. Alexandre in Usbek & Rica (June 8) and Inriality (May 17): <https://usbeketrica.com/article/2067-la-singularite-empire-des-machines> and <https://www.inriality.fr/informatique/informatique-ia-intelligence-artificielle/2067-la-singularite-ou/>;
- Interviews in order to popularize: F. Alexandre in La Tribune newspaper (September 10): <https://objectifaquitaine.latribune.fr/innovation/2018-09-10/inria-bordeaux-10-ans-de-recherches-a-la-pointe-du-numerique-789911.html>; I. Chraïbi Kaadoud and A. Garenne in blog scilogs about neural networks: <http://www.scilogs.fr/intelligence-mecanique/architecture-reseaux-de-neurones-de-choix/>; <http://www.scilogs.fr/intelligence-mecanique/architecture-des-reseaux-de-neurones-reseaux-de-neurones-artificiels-classiques-2-3/> and <http://www.scilogs.fr/intelligence-mecanique/architecture-des-reseaux-de-neurones-reseaux-de-neurones-impulsionnels-3-3/>; X. Hinaut about organizing a Hackathon in <https://pixees.fr/hack1-cerveau/>; N. Rougier in CNRS website (September 21): <http://www4.cnrs-dir.fr/insb/recherche/parutions/articles2018/t-boraud.html> and in Le Monde newspaper (September 19): https://www.lemonde.fr/sciences/article/2018/09/19/les-emotions-au-coeur-de-l-apprentissage_5357127_1650684.html; Thierry Viéville is co-editor and/or co-author of about two papers per month on <http://binaire.blog.lemonde.fr>.

10.3.3. *Education*

F. Alexandre: Teaching to the high-school professors in Philosophy of the academy of Poitiers about Artificial Intelligence (April, 25); Thierry Viéville has realized more than ten session of formation (over 400 teachers involved) within the scope of the Class Code project, and co-organized two of them.

10.3.4. *Interventions*

- National events: participation of the team on the NeuroCampus to the Week of the Brain (Semaine du Cerveau: March 19-23); to the Declics program for high-schools (<http://www.cerclefer.org/fr/declics/>, Nov. 22); Fête de la Science at Inria Bordeaux and Cap Sciences in October: The humanoid Nao robot was listening to the instructions and learning names of objects. This demo was performed by X. Hinaut and A. Strock with a German collaborator from the University of Hamburg (J. Twiefel).
- Public exhibitions:
 - “Brain and Artificial Intelligence” at Regional Headquarters in Limoges (Feb. 2);

- “What is the usefulness of Artificial Intelligence ?” at Café des Sciences in Soustons (Dec. 12) (F. Alexandre);
- Science pour tous (Bordeaux), Machine learning (Communauté Urbaine de Bordeaux), AI Unplugged (Bordeaux), Déambulation autour de l’IA (Bordeaux), L’intelligence artificielle en question (Paris) (N. Rougier);
- Participation to the Neurocampus Day (S. Pagliarini, poster “Learning an inverse model for vocal production: toward a bio-inspired model”);
- Thierry Viéville: Interventions on artificial Intelligence and the development of critical thinking on large audience popularization events (Universcience, Médiathèque de Bordeaux, Semaine du Cerveau, Fête de la Science, Select Sophia-Antipolis, more than 200 persons involved) and three interactive talks in high-school (more than 150 students involved).
- T. Firmo Drumond and B. Teja Nallapu prepared and presented a demo for the 10 years of the Bordeaux Inria Centre (September 27).
- N. Rougier and X. Hinaut participated to a theater performance on AI, showing the state of work of an artistic residence in November.

10.3.5. Internal action

- Internal meetings: T. Firmo Drumond presented Deep Learning to the Inria Bordeaux Café des Sciences (March 22);
- Nicolas Rougier gave a talk about scientific fraud and misconduct at the institute of neurodegenerative diseases.

10.3.6. Creation of media or tools for science outreach

Thanks to fundings from the Bordeaux Museum of Science Cap Sciences (<http://www.cap-sciences.net/>) and from the Foundation Blaise Pascal (<https://www.fondation-blaise-pascal.org/>), we have begun to design a software tool to run small demonstrative scenarios, to help everyone discover the brain functions at the origin of our sensorimotor and vital cognitive behaviors (instinctive and motivated behavior, selection of embodied action, emotional decision-making, seat of self-awareness, etc.). This resource is for a wide audience to whom we can show scenarios, but also co-build multi-media resources to share methods and knowledge (participatory scientific mediation approach) and to discuss these topics. It is also at the disposal of scientific mediators (researchers and beyond) who wish to co-construct such resources, or to present research results involving the animation of anatomy of the nervous system as well as of users or authors of computer code who want to reuse shared technologies to derive other applications, in particular become familiar with the specification languages (here JSON and markdown).

NEUROSYS Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

Laurent Bougrain is a member of the Board of Directors of the scientific society CORTICO for the promotion of Brain-Computer Interfaces in France.

Laurent Bougrain is a member of the steering committee of the research network in neuroscience of the university of Lorraine.

Laure Buhry is an elected member of the "Pôle Scientifique AM2I" council of university of Lorraine.

Sébastien Rimbert is an elected member of the doctoral school IAEM of university of Lorraine.

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

- Laurent Bougrain is a member of the organization committee of the scientific days of the research network in neuroscience of the university of Lorraine, June 14th 2018 (topic: learning and memory) & December 18th 2018 (topic: motor system).

9.1.1.2. Member of the Organizing Committees

- Laure Buhry is a member of the organization committee of the IPAC seminar (Image, Perception, Action et Cognition).

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program Committees

Laurent Bougrain is a member of the program committee of the IEEE conference on System, Man and Cybernetics.

9.1.3. Invited Talks

- Laurent Bougrain, Brain-Computer Interfaces, Oct. 4th 2018, Yamazaki Lab, Kuytech, Japan
- Laurent Bougrain, Brain-Computer Interfaces, Oct. 5th 2018, Natsume Lab, Kuytech, Japan
- Laurent Bougrain, Neuronal effect therapeutic hypnosis and anesthesia on the movement intention, scientific days of the research network in neuroscience of the university of Lorraine, Dec. 18th 2018 (topic: motor system).

9.1.4. Leadership within the Scientific Community

Laurent Bougrain is a member of the Board of Directors of the scientific society CORTICO for the promotion of Brain-Computer Interfaces in France.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Engineering school: L. Bougrain, Brain-Computer Interfaces, 4.5h, 3rd year, Supelec, France

Engineering school: L. Bougrain, Artificial Intelligence, 61h, 3rd year, Telecom Nancy, France

Engineering school: A. Aussel, Python, Ecole des Mines, Nancy, France

Master: L. Buhry, Algorithms for Artificial Intelligence, 31h, Master of cognitive science, 1st year, University of Lorraine, France

Master: L. Buhry, Fundamental Artificial Intelligence and data mining, 18h, Master of cognitive science, 1st year, University of Lorraine, France

Master: L. Buhry, Formalisms for representation and reasoning, 25h, Master of cognitive science, 1st year, University of Lorraine, France

Master: L. Buhry, Memory and Machine Learning, 38h, Master of cognitive science, 1st year, University of Lorraine, France

Master: L. Buhry, Computational Neurosciences, 25h, Master of cognitive science, 2nd year/SCMN, University of Lorraine, France

Master: L. Bougrain, Learning and reasoning in the uncertain, 32h, Master of computer science, 2nd year, University of Lorraine, France

Master: S. Rimbart, Brain-Computer Interface, 17h, Master of cognitive sciences, 2nd year, University of Lorraine, France

Master: A. Aussel, Computational Neuroscience, Master of cognitive sciences, 2nd year, University of Lorraine, France

Licence: S. Rimbart, Introduction to Neurosciences, 15h, Licence of cognitive sciences, 1st year, University of Lorraine, France

Licence: L. Buhry, Programmation Python, 37h, level L1 MIASHS, University of Lorraine, France

Licence: L. Buhry Probability and statistics, 30h, level L1 MIASHS, University of Lorraine, France

Licence: L. Buhry, Artificial Intelligence and problem solving, 25h, level L3 MIASHS, University of Lorraine, France

Licence: L. Bougrain, programming on mobile devices, 17h, Licence of computer science, 3rd year, University of Lorraine, France

9.2.2. Supervision

PhD in progress: Amélie Aussel, Extraction of electrophysiological markers and mathematical modelling of the epileptic hippocampus, October 1st 2016, Laure Buhry and Radu Ranta (CRAN).

PhD in progress: Sébastien Rimbart, Study of the dynamic of cerebral motor patterns during general anesthesia, January 1st 2016, Axel Hutt and Laurent Bougrain.

PhD in progress: Oleksii Avilov, methods for on-line detection of neural rhythm changes in the motor system: application to brain-computer interfaces, June 1st 2018, Patrick Hénaff, Laurent Bougrain and Anton Popov (Kiev polytechnic institute).

PhD in progress: Nathalie Azevedo Carvalho, a biologically plausible computer model of pathological neuronal oscillations observed in Parkinson's disease, November 1st 2018, Dominique Martinez and Laure Buhry.

9.2.3. Juries

Ph.D. thesis jury: Louis Korczowski, Methods for multi-subject electroencephalography and application to brain-computer interfaces, university Grenoble-Alpes, October 17th 2018, L. Bougrain (member)

9.3. Popularization

Neurosyst's activities. Artificial Intelligence, IoT and robotics for health, association ATD quart-monde, June 10th 2018 (L. Bougrain)

PARIETAL Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

Bertrand Thirion co-organized the “Imagerie médicale et apprentissage automatique : vers une intelligence artificielle ?” colloque at Collège de France on May, 2nd, 2018.

10.1.1.2. Member of the Organizing Committees

Demian Wassermann: MICCAI 2018

Gaël Varoquaux: PyParis 2018

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

- Philippe Ciuciu: Chairman of scientific oral sessions in ISBI 2018 (Washington DC) and EUSIPCO 2018 (Roma)
- Bertrand Thirion: Member of Program Committee for the OHBM 2018 meeting (Singapore),
- Gaël Varoquaux: program committee of NIPS, ICML, ICLR.
- Alexandre Gramfort: program committee of NIPS, ICML, ICLR.
- Demian Wassermann: ISMRM 2018

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Philippe Ciuciu: Associate Editor for EUSPICO 2018, Roma
- Philippe Ciuciu: Associate Editor for ISBI 2019, Venice
- Alexandre Gramfort: Editor, NeuroImage, Journal of Machine Learning Research (JMLR), Frontiers in Brain Imaging Methods
- Bertrand Thirion: Editor, Frontiers in Brain Imaging Methods

10.1.3.2. Reviewer - Reviewing Activities

- Philippe Ciuciu is reviewer for Nature Communication, Biological Psychiatry, Plos Computational Biology, Scientific Reports, Journal of Neuroscience, IEEE Trans Signal Processing, IEEE Signal Processing Letters, IEEE Trans Medical Imaging, Frontiers in Neuroscience, Magnetic Resonance in Medicine, SIAM Imaging Science
- Gaël Varoquaux: Nature Methods, JMLR, PLOS Bio, NeuroImage, IEEE TBME, IEEE TMI, Annals of Applied Statistics, Biological Psychiatry, MedIA, Science, GigaScience
- Alexandre Gramfort: JMLR, PLOS Computational Biology, NeuroImage, IEEE TBME, IEEE TMI, IEEE TSP, MedIA, NIPS, ICML, ICLR, ICASSP, Scientific Reports, Frontiers in Brain Imaging Methods, Journal of Neuroscience Methods
- Bertrand Thirion: Nature communications, Neuroimage, Medical Image Analysis, IEEE TMI, PNAS, PLOS Comp Bio, Brain Structure and Function, NIPS, ICML, IPMI, OHBM, PRNI, AISTATS

- Denis Engemann PLOS Biology, PLOS Computational Biology, Scientific Reports, Neuroimage, Neuroimage Clinical, Human Brain Mapping, Journal of Machine Learning Research, Brain Topography, Brain Connectivity, Journal of Alzheimer's Disease, Neuroscience of Consciousness, PLOS ONE, Frontiers in Neuroscience, Journal of Computational Neuroscience, Psychiatry and Clinical Neurosciences, Sensors
- Demian Wassermann: NeuroImage, MRM, JMRI, Brain Structure and Function, Cortex, MedIA.

10.1.4. Invited Talks

- Philippe Ciuciu, May 2018: Keynote Lecture at the 8th International Conference on New Computational Methods for Inverse Problems, "Distribution-controlled and optimally spread sampling trajectories for accelerated Magnetic Resonance Imaging" (http://complement.farman.ens-cachan.fr/documents_web_NCMIP_2018/NCMIP_2018_program.pdf)
- Philippe Ciuciu, Nov 2018: Heriott-Watt University, "SPARKLING: variable-density k-space filling curves for accelerated T2*-weighted MRI"
- Philippe Ciuciu, Dec 2018: SHFJ, CEA Orsay, "Recent Advances in Compressed Sensing MRI for Highly Accelerated T2*-weighted Imaging"
- Denis Engemann, Dec 2018, ICM, Paris, MEG user day, 'Preparing data for source reconstruction: dos and dongs'
- Denis Engemann, Nov 2018, ICM, Paris, 'Machine Learning with MEG EEG in Cognitive Neurology. Challenges and Opportunities'
- Denis Engemann, Nov 2018, Paris Machine Learning Meetup, invited talk, 'Random forest methods for EEG-based diagnosis of disorders of consciousness'
- Denis Engemann, Oct 2018, CRNL, Lyon, invited talk, 'Large-Scale Analysis of MEG/EEG in Cognitive Neurology. Challenges and Opportunities'
- Denis Engemann, Oct 2018, CRNL, Lyon, 3-day MNE-Python training workshop
- Denis Engemann, Apr 2018, Hôpital Erasme, Brussels, invited talk, 'The Challenge of Large-Scale and Population Analysis using MEG/EEG' LCFC
- Alexandre Gramfort, Fév 2018, invited talk, séminaire du Centre de Mathématiques Appliquées (CMAP) de l'Ecole Polytechnique
- Alexandre Gramfort, Mars 2018, invited talk, conseil d'administration Institut National du Cancer (INCA), Paris
- Alexandre Gramfort, Mars 2018, invited talk, Center for Data Science, Grenoble
- Alexandre Gramfort, June 2018, invited talk, ICML workshop of reproducibility in machine learning, Stockholm
- Alexandre Gramfort, June 2018, oral presentations, OHBM Conference, Singapore
- Alexandre Gramfort, June 2018, invited talk, DTU, Copenhagen
- Alexandre Gramfort, Aug 2018, oral presentations, Biomag International Conference, Philadelphia
- Alexandre Gramfort, Sept 2018, invited talk, Imperial College, UK
- Alexandre Gramfort, Sept 2018, invited talk, BCG Gamma FreshFromTheLabs Conference, Paris
- Alexandre Gramfort, Oct 2018, invited talk, Universität Heidelberg, Heidelberg
- Alexandre Gramfort, Nov 2018, oral presentation, Society for Neuroscience conference, San Diego
- Alexandre Gramfort, Nov 2018, invited talk, France is AI conference, Paris
- Alexandre Gramfort, Dec 2018, invited talk, Montreal Artificial Intelligence and Neuroscience (MAIN) workshop, Montreal
- Bertrand Thirion, Jan 2018, IHES, Bures sur Yvette, 'Toward a rigorous statistical framework for brain mapping'

- Bertrand Thirion, June 2018, IPHT seminary, Gif sur Yvette, 'A rigorous causal framework for brain mapping'
- Bertrand Thirion, May 2018, High Tech Peripherique conference, 'Large-scale machine learning for medical imaging'
- Bertrand Thirion, April 2018, Tau seminary, Gif sur Yvette, 'Causal analysis for Brain Mapping'
- Bertrand Thirion, July 2018, JST workshop in Paris, 'Toward rigorous e-sciences: High-dimensional statistical inference'
- Bertrand Thirion, Dec 2018, ESSI colloquium, Evry, 'High-dimensional statistical inference for e-sciences'
- Demian Wassermann, Feb 2018, Stanford Medical School, 'Microstructure Imaging with Diffusion MRI'
- Demian Wassermann, June 2018, Harvard Medical School, 'Random Effect Models for Structure Connectivity-Based Cortical Clustering'
- Demian Wassermann, June 2018, New York University, 'Recent advances in Micro and Macro scale brain analysis with Diffusion MRI'
- Gaël Varoquaux, Sept 2018, IPAM (Institute for Pure and Applied Mathematics), UCLA, Long Program Science at Extreme Scales: Where Big Data Meets Large-Scale Computing
- Gaël Varoquaux, August 2018, keynote speaker NeuroInformatics, Montreal
- Gaël Varoquaux, August 2018, invited talk MILA (Montreal Institute for Learning Algorithms), Montreal
- Gaël Varoquaux, August 2018, invited talk MNI (Montréal Neurological Institute), Montréal
- Gaël Varoquaux, August 2018, invited talk Institut de Gériatrie, Montréal
- Gaël Varoquaux, June 2018, invited talk, BCG Gamma days, Paris
- Gaël Varoquaux, Nov 2018, invited talk, chair DAMI (Data, Analytics and Models for Insurance), Paris
- Gaël Varoquaux, Feb 2018, invited talk, Gatsby institute for theoretical neuroscience, UCL, London
- Gaël Varoquaux, Dev 2018, invited talk, Journée Nationale de la Science Ouverte, Paris
- Gaël Varoquaux, Sept 2018, invited talk, MASES International Workshop on Machine Learning and Software Engineering in Symbiosis, ASE (Automated Software Engineering), Montpellier
- Gaël Varoquaux, Sept 2018, invited talk, MICCAI workshop, Granada
- Gaël Varoquaux, June 2018, invited talk, Machine learning in the real world, Paris
- Gaël Varoquaux, July 2018, invited talk, DataIA–Japan Science and Technology agency, Paris
- Gaël Varoquaux, Feb 2018, invited talk, Pycon Belarus, Minsk
- Gaël Varoquaux, May 2018, invited talk, Brainhack Paris
- Gaël Varoquaux, Oct 2018, invited talk, Biomarker days, Toulouse

10.1.5. Leadership within the Scientific Community

- Demian Wassermann: Organising committee of the BrainHack community — Paris Chapter
- Demian Wassermann: ISMRM and MICCAI action organization towards reducing gender and minority biases.

10.1.6. Scientific Expertise

- Philippe Ciuciu has been member of the 45th ANR Scientific Evaluation Committee in charge of evaluating the projects dealing with maths, signal processing, computer science methods for medicine and biology.

- Alexandre Gramfort has been member of the 45th ANR Scientific Evaluation Committee (CE23) in charge of evaluating the projects dealing with machine learning, data knowledge, statistics, optimization.
- Demian Wassermann FET-OPEN ERCA Action
- Gaël Varoquaux was expert for the startup incubator agoranov

10.1.7. Research Administration

- In Nov 2018, Philippe Ciuciu Elected Vice-Chair of the SAT Biomedical Image & Signal Analytics (EURASIP technical committee) for 2019-2020.
- In Dec 2018, Philippe Ciuciu has been Elected IEEE Signal Processing Society Representative at the 2019 IEEE ISBI conference.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master: Alexandre Gramfort, Optimization for Data Science, 20h, Msc 2 Data Science Master Ecole Polytechnique, France

Master: Alexandre Gramfort, DataCamp, 20h, Msc 2 Data Science Master Ecole Polytechnique, France

Master: Alexandre Gramfort, Source Imaging with EEG and MEG, 7h, Msc 2 in Biomedical Imaging at Télécom Paristech

Doctoral School: Alexandre Gramfort, Sparse Optimization, 4h, school at iTWIST workshop, Marseille

Master: Bertrand Thirion, Functional neuroimaging and BCI, 12h, Master MVA, ENS Paris-Saclay, France

Master: Philippe, fMRI course: From acquisition to data Analysis, 6h, Msc 2 in Biomedical Imaging, Université Paris-Sud

Bachelor: Demian Wassermann, CSE201 class, 15h, C++ programming, Ecole Polytechnique

Extension: Demian Wassermann, Data Science, 20h, Ecole Polytechnique

Master: Gaël Varoquaux, Machine learning in Python, 3h, ENSAE

Master: Gaël Varoquaux, Functional brain connectivity, 7h, Msc 2 in Biomedical Imaging at Télécom Paristech

10.2.2. Supervision

The following PhD defense have taken place

HdR : Gaël Varoquaux, Estimating brain functional connectivity and its variations from fMRI, Université Paris VI, 25/03/2018

PhD : Stanislas Chambon, *Learning from electrophysiology time series: From scoring to event detection*, Université Paris-Saclay, 14/12/2018, under the direction of Alexandre Gramfort

PhD : Tom Dupré La Tour, *Non-linear models for neurophysiological time series*, Université Paris-Saclay, 26/11/2018, under the direction of Alexandre Gramfort

PhD : Yousra Bekhti, *Contributions to sparse source localization for MEG/EEG brain imaging*, Université Paris-Saclay, 22/03/2018, under the direction of Alexandre Gramfort

PhD : Mainak Jas, *Advances in automating analysis of neural time series data*, Université Paris-Saclay, 12/04/2018, under the direction of Alexandre Gramfort

PhD : Arthur Mensch, , Université Paris-Saclay, 30/09/2018, under the direction of Bertrand Thirion, Gaël Varoquaux and Julien Mairal.

PhD : Carole Lazarus, , Université Paris-Saclay, 30/09/2018, under the direction of Philippe Ciuciu.

PhD in progress : Pierre Ablin, , 01/10/2016, coadvised by Alexandre Gramfort and Jean-François Cardoso,

PhD in progress : Mathurin Massias, , 01/10/2016, coadvised by Alexandre Gramfort and Joseph Salmon,

PhD in progress : Hicham Janati, , 01/10/2017, , coadvised by Alexandre Gramfort and Marco Cuturi

PhD in progress : Quentin Bertrand, , 01/10/2018, coadvised by Alexandre Gramfort and Joseph Salmon

PhD in progress : Hubert Banville, , 01/10/2018, coadvised by Alexandre Gramfort and Denis Engemann

PhD in progress : David Sabbagh, , 01/10/2018, coadvised by Alexandre Gramfort and Denis Engemann

PhD in progress : Jérôme-Alexis Chevalier, , 01/10/2017, coadvised by Bertrand Thirion and Joseph Salmon

PhD in progress : Hugo Richard, , 01/10/2018, coadvised by Bertrand Thirion and Olivier Grisel

PhD in progress : Thomas Bazeille, , 01/10/2018, advised by Bertrand Thirion

PhD in progress : Tuan Binh Nguyen, , 01/10/2018, coadvised by Bertrand thirion and Sylvain Arlot

PhD in progress : Valentin Iovene, , 01/10/2018, advised by Demian Wassermann

PhD in progress : Antonia Machlouzarides Shalit, , 01/10/2018, coadvised by Demian Wassermann and Bertrand Thirion

PhD in progress : Loubna El Gueddari, , 01/10/2016, coadvised by Philippe Ciuciu and Alexandre Vignaud

PhD in progress : Hamza Cherkaoui, , 01/10/2017, advised by Philippe Ciuciu

PhD in progress : Patricio Cerda Reyes, , 01/10/2016, coadvised by Gaël Varoquaux and Balazs Kegl

PhD in progress : Maeliss Jallais, , 01/10/2018, advised by Demian Wassermann

PhD in progress : Jerome Dockès, , 01/10/2016, coadvised by Fabian Shuchanek and Gaël Varoquaux

10.2.3. *Juries*

Alexandre Gramfort has been involved in the following PhD committees:

- Marine Le Morvan (Reviewer) / Mines ParisTech
- Jérémy Guillon (Examiner) / Inria Paris
- Rémi Leblond (Examiner) / Inria Paris
- Andreas Trier (Reviewer) / DTU, Copenhagen

Alexandre Gramfort was involved in a hiring committee for Telecom ParisTech and a hiring committee for Université Paris Diderot.

Bertrand Thirion has been involved in the following committees:

- PhD Sebastian Tarando / ESSI Evry
- PhD Guillermo Gallardo / Inria Sophia-Antipolis
- Habilitation Florent Meyniel / Université Paris VI

Bertrand Thirion was involved in a hiring committee for Centrale-Supelec.

Gaël Varoquaux was involved in a hiring committee for Centrale-Supelec and a hiring committee for Inria Saclay.

Demian Wassermann was involved in the following committees:

- PhD Guillermo Gallardo / Inria Sophia-Antipolis
- Habilitation Daniel Margulies / ICM – UPMC

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Philippe Ciuciu has been member of the Inria Saclay scientific commission since 2016
- Alexandre Gramfort is member of the steering committee of the Paris-Saclay Center for Data Science
- Alexandre is a Member of the technical development committee of Inria Saclay since Dec 2018
- Bertrand Thirion is Deputy head of research of Inria Saclay research center
- Bertrand Thirion, Leader of the Datasense research axis of the Digicosme Labex
- Bertrand Thirion, Member of the steering committee of the Dataia Convergence Institute
- Bertrand Thirion, Member of the steering committee of the Computer Science Department of Paris Saclay University.
- Gaël Varoquaux was Member of the technical development committee of Inria Saclay until Dec 2018
- Gaël Varoquaux is member of the doctoral monitoring committee of Inria Saclay
- Gaël Varoquaux is member of the steering committee of the Paris-Saclay Center for Data Science

10.3.2. Articles and contents

- Gaël Varoquaux was interviewed by [ActuIA](#)
- Alexandre Gramfort was interviewed by [ActuIA](#)
- Alexandre Gramfort was interviewed by [Libération](#)
- Alexandre Gramfort, Olivier Grisel Gaël Varoquaux are interviewed by [Les Echos](#)

10.3.3. Interventions

- Olivier Grisel gave an interview at the Paris Open Source Summit

10.3.4. Internal action

- In June 2018, Philippe Ciuciu did a training session on the DRF Impulsion funding mechanism at the seminar of new hired CEA DRF scientists"
- In April 2018, Denis Engemann and Alexandre Gramfort gave a 2-day educational course for cognitive neuroscientists at NeuroSpin on analysis of MEG and EEG data using Python.

10.3.5. Creation of media or tools for science outreach

Philippe Ciuciu made Two videos together with the CEA communication division on COSMIC project (funded by CEA)

- Long version: https://www.youtube.com/watch?v=gQh6D_vpkSo&t=23s&fbclid=IwAR0OcU3JEy4KQmo6DD-iN8otjlowyeXDkEF7ljniuzOkI-aWhGqyHhQzruo
- Short version: https://www.youtube.com/watch?v=p_KMEQGK-WA&fbclid=IwAR3xcf8e98M77IF9mpQSDWfKppjOt7p

Gaël Varoquaux, Olivier Grisel, Alexandre Gramfort, Guillaume Lemaître, Joris van den Bossche participated in a general-public movie about scikit-learn: <https://www.youtube.com/watch?v=twqdxTCkeyk&t=9s>

VISAGES Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

- MS workshop: <https://project.inria.fr/msworkshop2018/>, Jan 30-31, London, UK (Claire Cury).
- Brainhack Global Rennes 2018: <https://brainhack.irisa.fr>, May 25-26, Rennes, France (Camille Maumet).
- Christian Barillot is member of the Board of Directors of IPMI conference series (Information Processing in Medical Imaging)

10.1.1.2. Member of the Organizing Committees

- Brainhack Global Rennes 2018: <https://brainhack.irisa.fr>, May 25-26, Rennes, France (Julie Coloigner, Olivier Commowick, Claire Cury, Mathis Fleury, Armelle Mozziconacci, Édith Blin).
- MS workshop: <https://project.inria.fr/msworkshop2018/>, Jan 30-31, London, UK (Christian Barillot).
- ARSEP workshop on multiple sclerosis, Feb 2, ICM (Elise Bannier, Anne Kerbrat).
- Official launching ceremony of Neurinfo new MR scanner, Nov 27, CCP, Rennes (Elise Bannier, Isabelle Corouge in collaboration with Inria and University of Rennes 1).
- Jean-Luc Anton, Elise Bannier, Marie Chupin, Gabriela Hossu, Irène Tropres created in 2016 an academic network for multicenter mutual aid in MRI called REMI. The network gathers over 150 members from nearly 80 different research and clinical sites. Pluri-annual meetings are organised and a website (<https://remi.network/>) allows members to share expertise, observations and questions. Different themes are discussed : Quality Assurance, Devices, Sequences, Good clinical practices, Data preprocessing, Data management and a preclinical theme was added this year. This initiative is supported by France Life Imaging. An issue of the french magazine for MR tech dedicated to research was published in September 2018 and also describes the REMI among other initiatives : <http://new.afppe.com/le-n278-de-septembre-est-en-ligne-sur-la-mediatheque>. REMI meetings, March 27 and Oct 9, ICM, Paris (Elise Bannier).

10.1.1.3. Program Participant

- Organizer of the project “A deep learning playground”, Brainhack Global Rennes 2018: <https://brainhack.irisa.fr>, May 25-26, Rennes, France (Francesca Galassi).
- Session moderator “3T versus 7T”, SFNR, March 21, Paris, France (Elise Bannier).

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

- Christian Barillot was area chair of IEEE-ISBI 2018 and SPIE Medical Imaging 2018
- Scientific committee of SFRMBM 2019, bi-annual congress that will be held in Strasbourg in March 2019 <https://sfrmbm2019.sciencesconf.org/> (Elise Bannier).
- Neuroinformatics 2019: <http://neuroinformatics2019.org/>, Sept. 1-2, Warsaw, Poland (Camille Maumet).

10.1.2.2. Reviewer

- International Symposium on Medical Information Processing and Analysis: ISBI (Julie Coloigner, Olivier Commowick, Pierre Maurel, Emmanuel Caruyer)
- International Symposium on Medical Information Processing and Analysis: SIPAIM (Julie Coloigner)
- MICCAI (Olivier Commowick, Francesca Galassi)
- Annual congress of the Organisation of Human Brain Mapping (Camille Maumet)
- African Conference on Research in Computer Science and Applied Mathematics (CARI) (Pierre Maurel)

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Christian Barillot is Editor-in-Chief of *Frontiers in ICT: Computer Image Analysis*.
- Christian Barillot is member of Editorial Boards of *Medical Image Analysis*, *Current Medical Imaging Reviews*, *ISRN Signal Processing*
- Camille Maumet is member of Editorial Boards of *Neuroinformatics*

10.1.3.2. Reviewer - Reviewing Activities

- *Journal of Alzheimer's disease* (Claire Cury)
- *NeuroImage* (Olivier Commowick, Pierre Maurel, Camille Maumet, Christian Barillot)
- *NeuroImage: Clinical* (Julie Coloigner, Christian Barillot)
- *IEEE TMI* (Olivier Commowick)
- *IEEE Biomedical Engineering* (Christian Barillot)
- *Med Image Anal* (Olivier Commowick, Emmanuel Caruyer, Christian Barillot)
- *Magn Reson Med* (Emmanuel Caruyer)
- *Med Phys* (Emmanuel Caruyer)
- *Nature Scientific Data* (Christian Barillot)

10.1.4. Invited Talks

- Barillot, C., "Defining and evaluating imaging markers for multiple sclerosis". Workshop on Machine Learning in Radiology (MLRad 2018). CHUV - Siemens, Lausanne.
- Barillot, C., "Nouveaux enjeux, nouvelles techniques d'imagerie pour analyser le système nerveux", École Recherche Translationnelle en Neurosciences. ITMO NNP - AVIESAN, Bordeaux.
- Barillot, C., "Medical image analysis and integration". Workshop on "Artificial Intelligence in Health Grand Challenge". AI Singapore, Singapore.
- C. Barillot and O. Commowick. "Objective Evaluation of Multiple Sclerosis Lesion Segmentation using a Data Management and Processing Infrastructure" - Journées françaises de radiologie (JFR 2018) - Paris (Oct 2018) [19]
- Christian Barillot, Michel Dojat, Michael Kain. "France Life Imaging and the transversal node for Information Analysis and Management (IAM)". Journées françaises de radiologie (JFR 2018) - Paris (Oct 2018) [18]
- Michael Kain. "Solutions de gestion des données d'imagerie : exemples avec Shanoir, Archimed et Cati-DB". Journées françaises de radiologie (JFR 2018) - Paris (Oct 2018) [20]
- O. Commowick. "OFSEP and FLI infrastructure for the organisation of the international challenge on MS lesions segmentation". MS workshop, London (January 2018)
- O. Commowick. "Objective Evaluation of Multiple Sclerosis Lesion Segmentation using a Data Management and Processing Infrastructure". France Life Imaging workshop - Orsay (March 2018)

- O. Commowick “Towards Multiple Sclerosis Lesions Segmentation Transfer to the Clinics: Methods and Evaluation”. Gdr ISIS - Paris (March 2018)
- In the context of the EMISEP project on MS and spinal cord imaging and in order to discuss further collaboration, Anne Kerbrat, Benoit Combès and Elise Bannier visited the CEMEREM in Marseille on Monday and gave a talk “Characterisation of spinal cord involvement in early RRMS patients using MRI” (October 22st)
- C. Maumet “Tools and standards to make neuroimaging derived data reusable”, Keynote at Neuroinformatics 2018, Montreal, Canada, August 2018 [21].
- Yao Chi and Christian Barillot “Infrastructures pour le traitement et la gestion de données d’imagerie biologique et médicale”, 6ème Forum de l’Institut de Psychiatrie, Amiens, September 2018.

10.1.5. Leadership within the Scientific Community

- Chair-elect of the international OHBM Open Science Special Interest Group (Camille Maumet)
- Member of the international working group on data sharing in neuroimaging of the International Neuroinformatics Coordinating Facility (Camille Maumet)
- Member (by invitation) of Aperture, an international new online publishing platform for the OHBM community, in the “workflow working group” led by Peter Bandettini (Camille Maumet).
- Member (by selection) of the “comité de la science ouverte”, a national initiative to foster open science in France, in the “open and free software working group” led by Roberto Di Cosmo (Camille Maumet).
- Mentor (by selection) of the international training “Mozilla Open leaders” led by Abigail Cabunoc Mayes (Camille Maumet).
- Member (by selection) of the “Bio Imaging and Signal Processing” (BISP) Technical Committee of the IEEE Signal Processing Society (Emmanuel Caruyer).
- Gilles Edan was elected Fellow of the European Academy of Neurologie. Member of the EAN teaching committee in 2015
- Christian Barillot is member of the Scientific Council of the INS2I⁰ Institute of CNRS since 2011 and is Chairman of the Board since 2015
- Christian Barillot is member of the C3N committee (CNRS)
- Christian Barillot is member of the scientific board of “GIS France Grilles”
- Christian Barillot is member of the scientific board of the Neuroscience and psychiatry institute of AVIESAN

10.1.6. Scientific Expertise

- Expertise as a reviewer for “Agence Nationale de la Recherche” (ANR) (Emmanuel Caruyer)
- Expertise as a reviewer for the Comité Français d’Évaluation de la Coopération Scientifique et Universitaire avec le Brésil (Christian Barillot)
- Expertise as a reviewer for the Israel Science Foundation (Christian Barillot)
- Expertise as a reviewer for the Research Council KU Leuven (Christian Barillot)
- Expertise as a reviewer for the Swiss National Science Foundation (Christian Barillot)
- Expertise as a reviewer for the "European Research Council" for the starting grant call (Christian Barillot)

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

⁰<http://csins2i.irisa.fr>

ESIR: Cédric Meurée, Algorithms and Complexity, 28h, M1, École Supérieure d'Ingénieur de Rennes (ESIR), France

ESIR: Benoit Combès, Statistiques, 12h, M1, École Supérieure d'Ingénieur de Rennes (ESIR), France

Master Molecular and Cellular biology/Master Bioinformatics/Master Fundamental and Applied Microbiology: Corentin Vallée, Machine Learning, 64h, M1, Univ. Rennes, France

L2 informatique: Raphaël Truffet, Génie Logiciel, 24h, L2, ISTIC, France

ESIR: Pierre Maurel, General image processing (60h), Algorithmics and complexity (60h), Medical imaging (60h), École Supérieure d'Ingénieur de Rennes (ESIR).

ENS Rennes: Pierre Maurel, Introduction to image processing (24h)

Licence SIF: Emmanuel Caruyer, Algorithms, 30h, L3, ENS Rennes, France.

Master 2 "Troubles de la Cognition et du Langage": Pierre-Yves Jonin, Introduction aux méthodes de neuroimagerie pour la recherche en neuropsychologie (3h) Master 2. Université de Poitiers, France.

Master 2 "Troubles de la Cognition et du Langage": Pierre-Yves Jonin, Evaluation neuropsychologique à visée diagnostique. Le cas des syndromes démentiels. Master 2 (2 x 6h) Université de Poitiers, France.

Medicine (4th & 5th year) UE Psychologie et Neurobiologie: Pierre-Yves Jonin, L'exploration neuropsychologique des maladies neurologiques et psychiatriques. 4ème & 5ème année de médecine (4h), Université de Brest, France.

Master 2 Neurosciences Cliniques: Pierre-Yves Jonin, Neurosciences cognitives de la mémoire humaine. Master 2. 3 heures. Université de Rennes 1, France.

Licence 3 de Psychologie: Pierre-Yves Jonin, Les syndromes neuropsychologiques. L3, (16h) Université de Rennes 2, France

Licence 3 de Psychologie: Pierre-Yves Jonin, L'approche neuropsychologique du handicap chez les patients cérébro-lésés. Licence 3. Université de Rennes 2.

Master 2 "Handicap et troubles du développement": Pierre-Yves Jonin, Evaluation neuropsychologique à visée diagnostique. Le cas des syndromes démentiels. Master 2. 2 x 6 heures. Université de Rennes 2.

Master 2 "Handicap et troubles du développement": Pierre-Yves Jonin, Méthodologie de la recherche clinique. Master 2. 3 heures. Université de Rennes 2.

Master 2 "Psychologie, mention Neuropsychologie": Pierre-Yves Jonin, Méthodologie clinique et principes de l'évaluation neuropsychologique à visée diagnostique. Master 2. 3h30. Université de Savoie.

L2 biologie: Antoine Legouhy, Bio-statistiques 34h, L2, Univ. Rennes 1, France.

M1 mathématiques: Antoine Legouhy, Optimisation 12h, M1, Univ. Rennes 1, France.

IUT GEA: Mathis Fleury, Mathématiques; 64h (3 months); Licence; IUT Saint-Malo, France.

L1 INF1: Francesca Galassi, Programming in Java (TD : 20h, TP : 20h), L1, ISTIC University of Rennes 1, France.

L2 PO: Francesca Galassi, Object Oriented Programming in Java (TP : 20h), L2, ISTIC University of Rennes 1.

Master SISEA: Benoit Combès, Méthodes statistiques pour l'image 10h, M2, Univ. Rennes 1, France.

Master SIBM, M2, University of Angers-Brest-Rennes, France.

- Christian Barillot (Plenary: 12h), responsible for one semester.
- Jean-Yves Gauvrit, Coordinator for the Master
- Olivier Commowick (Plenary: 6h).

- Quentin Duché, “Traitements des données d’IRM fonctionnelle” (Plenary: 1h).
- Isabelle Corouge, “Bio-marqueurs d’imagerie et IRM métabolique et fonctionnelle” (Plenary: 3h).
- Camille Maumet, “Imaging processing pipelines” (Plenary: 3h).
- Élise Bannier, “IRM fonctionnelle BOLD” (Plenary: 3h).
- Emmanuel Caruyer, “Introduction to diffusion MRI” (Plenary: 3h).
- Benoit Combès, “Méthodes statistiques pour le traitement d’image” (Plenary: 3h).

10.2.2. Supervision

10.2.2.1. PhD & HdR

PhD in progress : Antoine Legouhy, “Longitudinal brain atlas creation, application to development studies”, CNRS, from Nov 2016, Christian Barillot, François Rousseau, Olivier Commowick.

PhD in progress: Cédric Meurée, “Quantitative Analysis Of Arterial Spin Labeling MRI For Robust Parametric Information Of Perfusion Maps”, Inria / Siemens, from Mar 2014, Christian Barillot, Pierre Maurel.

PhD: Sudhanya Chatterjee, “Gaining insights into brain tissues using multi-compartment T2 relaxometry models”, Inria, defended on Dec 5, 2018, Christian Barillot, Olivier Commowick, Jean-Christophe Ferré, Simon Warfield.

PhD in progress : Corentin Vallée, “Joint estimation of neuronal activation, resting-state and basal metabolism from Arterial Spin Labeling”, Univ. Rennes, from Nov 2016, Christian Barillot, Isabelle Corouge, Pierre Maurel.

PhD in progress : Anne-Claire Binter, “Étude des effets possibles des expositions prénatales à des neurotoxiques (solvants organiques et insecticides organophosphorés) sur le fonctionnement du cerveau de l’enfant évalués par imagerie cérébrale (Cohorte Pélagie)”, Univ. Rennes, from Janv 2017, Fabienne Pelé, Cécile Chevrier, Elise Bannier.

PhD in progress : Xavier Rolland, “Modeling analytic variability in brain imaging”, CNRS, from Oct 2018, Christian Barillot, Camille Maumet.

PhD in progress : Raphaël Truffet, “Compressed sensing for microstructure-enabled diffusion MRI”, Univ. Rennes / ENS Rennes, from Oct 2018, Christian Barillot, Emmanuel Caruyer.

PhD: Maia Proisy, “Étude de la perfusion cérébrale par Arterial Spin Labeling en IRM à 1.5T chez le nouveau-né et l’enfant”, Univ. Rennes/CHRU Rennes, defended on Dec 12, 2018, Jean-Christophe Ferré.

PhD: Anne Kerbrat Univ. Rennes/CHRU Rennes, defended on Oct 24, 2018, Gilles Edan

10.2.2.2. Other supervisions

Master student: Solene Tarride, “Deep learning for segmentation of MS lesions from multimodal MRI”, Apr-Oct 2018, Francesca Galassi.

10.2.3. Juries

- Gilles Edan, Jean-Christophe Ferre, Christian Barillot. PhD committee: Anne Kerbrat, Univ. Rennes, Rennes; October 24, 2018.
- Jean-Christophe Ferre, Christian Barillot. PhD committee: Maia Proisy, Univ. Rennes, Rennes; December 12, 2018.
- Jean-Christophe Ferre, Christian Barillot. PhD committee: Jean-Marie Batail, Univ. Rennes, Rennes; December 15, 2018.
- Olivier Commowick, Christian Barillot. PhD committee: Sudhanya Chatterjee, Inria, Rennes; December 5, 2018.

- Isabelle Corouge, PhD thesis in medicine committee: Christophe Paya, Univ. Rennes, Rennes; June 25, 2018.
- Isabelle Corouge, PhD mid-term committee (CSI) : Cédric Meurée, Rennes; May 2018.
- Élise Bannier, PhD mid-term committee (CSI) : Haykel Snoussi, Rennes; May 2018.
- Élise Bannier, PhD mid-term committee (CSI) : Louis Marage, Rennes; July 2018.
- Emmanuel Caruyer, PhD mid-term committee (CSI) : Sudhanya Chatterjee, Rennes; June 2018.
- Christian Barillot, PhD committee: Gaetan Galisot, Tours Université Tours, March 21, 2018
- Christian Barillot, PhD review: Pauline Bezin-Frere, Orsay Université Paris X, July 4, 2018
- Christian Barillot, Chairman PhD committee: Mayela Toledo, Rennes Université Rennes 1, May 23, 2018

10.3. Popularization

10.3.1. Press

- Isabelle Bonan and Christian Barillot did present the activity of Neurofeedback in Visages during a press conference in Paris on November 14th, 2018 organized by Inria. Press reports have been issued from this conference : France Inter morning news, Usbek et Rica (<https://usbeketrica.com/article/le-xxieme-siecle-sera-celui-du-cerveau>), and Egora (<https://www.egora.fr/actus-medicales/neurologie/43575-l-interface-cerveau-ordinateur-efficace-dans-le-traitement-de>).
- Article in "Sciences Ouest" on "*Un miroir intelligent pour entraîner son cerveau*" <https://www.espace-sciences.org/sciences-ouest/366/dossier/un-miroir-intelligent-pour-entraîner-son-cerveau>, Nov. 2018

10.3.2. Film

A film presenting the Neurinfo imaging facility was recorded by Inria for the official launching ceremony of the new 3T Prisma scanner and further use for general communication about Neurinfo. Reports on local press: Ouest-france (<https://www.ouest-france.fr/bretagne/rennes-35000/video-une-irm-ultra-puissante-pour-faire-avancer-la-recherche-rennes-6095044>) and TV-Rennes (<https://www.tvr.bzh/programmes/tvr-soir-1543339500>).

10.3.3. Articles and contents

- Camille Maumet: Blog post “Open science working group on scientific software” <http://blog.camillemaumet.com/posts/12>, November, personal website.
- Elise Bannier: Blog post “Village des sciences 2018” <https://team.inria.fr/visages/village-des-sciences-2018/>, October, VisAGeS blog.
- Camille Maumet: Blog post “Extending BIDS to fMRI analyses” <http://blog.camillemaumet.com/posts/11>, October, personal website.
- Olivier Commowick: Blog post: “Anima scripts release” <https://team.inria.fr/visages/anima-scripts-release/>, September, VisAGeS blog.
- Camille Maumet: Blog post “Collaborative AFNI projects at DC code convergence” <http://blog.camillemaumet.com/posts/10>, September, personal website.
- Camille Maumet: Blog post “Meeting Montreal neuroinformatics community at the INCF congress and hackathon” <http://blog.camillemaumet.com/posts/9>, August, personal website.
- Camille Maumet: Blog post “Mentoring for Mozilla Open Leaders” <http://blog.camillemaumet.com/posts/8>, August, personal website.
- Camille Maumet with Claire Cury: Blog post “Interview: Let’s organise a Brainhack!” <https://team.inria.fr/visages/interview-lets-organise-a-brainhack/>, July, VisAGeS blog.

- Camille Maumet with Elise Bannier: Blog post “Interview: Participating in my first hackathon at Brainhack Rennes 2018” <https://team.inria.fr/visages/participating-in-my-first-hackathon-at-brainhack-rennes-2018/>, July, VisAGeS blog.
- Camille Maumet: Blog post “OHBM 2018: first remotely-attended conference” <http://blog.camillemaumet.com/posts/7>, June, personal website.
- Camille Maumet: Blog post “Sprinting with bio-imagers and how I learnt about NEUBIAS, EuBI, Elixir and tried out myBinder!” <http://blog.camillemaumet.com/posts/6>, May, personal website.
- Olivier Commowick: Blog post “Anima v3.0 release” <https://team.inria.fr/visages/anima-v3-0-release/>, March, VisAGeS blog.
- Claire Cury: Blog post “Workshop Multiple Sclerosis 2018 (UCL, Inria)” <https://team.inria.fr/visages/workshop-multiple-sclerosis-2018-ucl-inria/>, April, VisAGeS blog.
- Olivier Commowick: Blog post “Brainhack Rennes 2018 (April 25-26)” <https://team.inria.fr/visages/brainhack-rennes-2018-april-25-26/>, March, VisAGeS blog.
- Olivier Commowick: Blog post “medInria 3.0 available” <https://team.inria.fr/visages/medinria-3-0-available/>, March, VisAGeS blog.

10.3.4. Education

- L codent L créent - An outreach program to send PhD students to teach Python to middle school students in 8 sessions of 45 minutes. Tassadit Bouadi (Univ. Rennes 1), Camille Maumet (VisAGeS) and Anne-Cecile Orgerie (Myriads) are coordinating the local version of this program, initiated in Lille. The first session in Rennes is planned for April 2019. The program is currently supported by: Fondation Blaise Pascal, ED MathSTIC, Inria and Fondation Rennes 1.

10.3.5. Interventions

10.3.5.1. National brain week: “Semaine du Cerveau”

- Giulia Lioi: Talk “Lire dans son cerveau grâce au neurofeedback EEG, c’est mieux bouger”, March 14, Warpzone, Rennes, France.
- Mathis Fleury: Bar en (neuro) sciences; May 14-16; Presentation of the Neurofeedback and demonstration of a EEG based Neurofeedback with a motor imagery paradigm.

10.3.5.2. National science week: “Village des sciences”

Visages took part in the Village des Sciences 2018, opening the Neurinfo platform to 45 middle school students (Oct 5) and 120 visitors from the general public (Oct 6-7), Oct 5-7, Rennes, France. <https://www.univ-rennes1.fr/evenements/20072018/village-des-sciences-2018-visites-guidees-de-laboratoires-pour-les-scolaires>, <https://team.inria.fr/visages/members-area/projects/village-des-science-2018/>. The event was coordinated by Julien Le Bonheur from the University of Rennes, and Elise Bannier coordinated the contribution of Neurinfo/Visages. We covered 4 themes:

- Giulia Lioi, Mathis Fleury, Simon Butet, Pauline Rolland: Neurofeedback EEG
- Pierre Maurel, Charlélie Erhart, Antoine Legouhy, Corentin Vallée, Francesca Galassi, Julie Coloiner: Image processing with MedInria
- Isabelle Corouge, Catherine Guillemot, Emmanuel Caruyer, Elise Bannier, Benjamin Parat: Brain and MRI
- Quentin Duché, Florian Chapelain, Virginie Dardier: Functional MRI

10.3.5.3. Other interventions

- Pierre-Yves Jonin: Series of 6 talks on neuropsychology, Universités du Temps Libre de Bretagne, Jan-Dec, Rennes, France.
- Pierre-Yves Jonin: Talk “La mémoire humaine, comment la conserver, quand s’inquiéter”, Bien Vieillir en Ille-et-Vilaine, June, Rennes, France.
- Mathis Fleury: Talk “Qu’est ce qu’un doctorant ?” Journée des métiers IUT rennes - , Nov 16, IUT Rennes, France.
- Camille Maumet: Talk to middle school students (around 100) “La neuroinformatique”, PRNB, April, Rennes, France.
- Olivier Commowick: Presentation of research done in VisAGeS on medical image processing and of the MedInria software, Journée LOGIN, Nov 27, Grenoble, France.

10.3.6. Creation of media or tools for science outreach

- Launching of a Twitter account for the VisAGeS team (Camille Maumet) and setup on the VisAGeS website (Olivier Commowick) http://twitter.com/visages_inria. Tweets by lab members (Quentin Duché, Christian Barillot)
- Development of the VisAGeS blog and writing of blog posts (Camille Maumet, Olivier Commowick, Claire Cury, Elise Banner).

AIRSEA Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

E. Blayo, E. Cosme and A. Vidard organized a one-week school “Introduction to data assimilation” for doctoral students (Jan. 8-12, 2018).

9.1.1.2. Member of the Organizing Committees

E. Blayo and A. Vidard were members of the organizing committee of the 7th National Conference on Data Assimilation (CNA 2018), held in Rennes Sept. 26-28, 2018.

E. Blayo organized with Pr Hansong Tang (City University of New York) a mini-symposium on domain decomposition and model coupling issues for oceanic and atmospheric flows, within the 25th International Domain Decomposition Conference, DD XXV (St. John’s, Canada, July 23-27, 2018).

L. Debreu was the co-organizer of the DRAKKAR workshop on global ocean simulations based on the NEMO platform. <http://pp.ige-grenoble.fr/pageperso/barnierb/WEBDRAKKAR2018/>

F. Lemarié and L. Debreu (with H. Burchard, K. Klingbeil and J. Sainte-Marie) have organized the international COMMODORE workshop on numerical methods for oceanic models (Paris, Sept. 17-19, 2018). <https://commodore2018.sciencesconf.org/>, see [12] for a summary of the scientific discussions.

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program Committees

Clémentine Prieur was a member of the conference program committee of the annual conference of the GdR MASCOT NUM 2018, Nantes (France), march 21-23, 2018.

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

F. Lemarié is associate editor of the Journal of Advances in Modeling Earth Systems (JAMES)

C. Prieur is associate editor of the Annales Mathématiques Blaise Pascal, as far as of the journal Computational & Applied Mathematics, which was conceived as the main scientific publication of SBMAC (Brazilian Society of Computational and Applied Mathematics).

9.1.3.2. Reviewer - Reviewing Activities

F. Lemarié received a certificate for outstanding contribution in reviewing in recognition of the contributions made to the Ocean Modelling journal

F. Lemarié: reviewer for Journal of Computational and Applied Mathematics

E. Blayo: reviewer for Journal of Scientific Computing, Communications in Computational Physics

O. Zahm reviewed papers for: ESAIM: Mathematical Modelling and Numerical Analysis (M2AN), Journal Of Computational Physics, Journal on Uncertainty Quantification (JUQ), International Journal for Numerical Methods in Engineering, Aerospace Science and Technology, Computational and Applied Mathematics, Engineering Computations.

9.1.4. Invited Talks

E. Arnaud, M. Nodet. (Se) tromper avec les chiffres. Colloque "Sciences et esprit critique, interroger les certitudes", Maison pour la sciences, Académie de Grenoble, 8 nov. 2018, Grenoble

E. Arnaud. Estimation de paramètre sous incertitude. atelier incertitude du projet Idex trajectories, 17 mai 2018, Grenoble

F. Lemarié:

- Comod Workshop on "Coastal Ocean Modelling" in Hamburg (Germany) [16]
- Colloque de Bilan et de Prospective du programme LEFE in Clermond-Ferrand (France) [17]

C. Prieur:

- L'école Mathématiques pour l'énergie Nucléaire organised in partnership with GDR MaNu, July, 2-6, 2018.
- 13th International Conference in Monte Carlo & Quasi-Monte Carlo in Scientific Computing, July 1-6, 2018, Rennes, France.
- International workshop on Design of Experiments : New Challenges, April 30-May 4th, 2018, Luminy, France.
- Journée du groupe SIGMA of the SMAI, November, 30 2018, Jussieu (Paris).
- SIAM UQ 2018, 16-19 avril 2018, Garden Grove, Californie, US, invitation to participate in the "Advances in Global Sensitivity Analysis" session.
- Séminaire de Statistique d'Avignon, December, 10, 2018.
- Talk at the Issac Newton Institute in Cambridge (UK, June 2018).

9.1.5. Leadership within the Scientific Community

E. Blayo was the chair of the CNRS-INSU research program LEFE-MANU on mathematical and numerical methods for ocean and atmosphere <http://www.insu.cnrs.fr/lefe> until March 2018.

L. Debreu is the chair of the CNRS-INSU research program LEFE-MANU on mathematical and numerical methods for ocean and atmosphere <http://www.insu.cnrs.fr/lefe> since April 2018.

L. Debreu is the coordinator of the national group COMODO (Numerical Models in Oceanography).

L. Debreu is a member of the steering committee of the CROCO ocean model <https://www.croco-ocean.org>

C. Prieur chairs GdR MASCOT NUM. <http://www.gdr-mascotnum.fr/doku.php>.

9.1.6. Scientific Expertise

E. Arnaud, scientific evaluation for the AAP ANR 2018

E. Arnaud, C. Prieur, scientific expertise for the ANR project HIGH-TUNE

E. Arnaud, evaluation for the AAP Idex formation UGA 2018

F. Lemarié is a member of the CROCO (<https://www.croco-ocean.org/>) scientific committee in charge of the « numerical methods » topic.

F. Lemarié is a member of the NEMO (<https://www.nemo-ocean.eu/>) Developers Committee as external expert.

9.1.7. Research Administration

E. Blayo is a deputy director of the Jean Kuntzmann Lab.

E. Arnaud is in charge of the MAD (Modèles et algorithmes déterministes) department of Laboratoire Jean Kuntzmann

L. Debreu is a member of the scientific evaluation committee of the French Research Institute for Development (IRD).

L. Debreu is the chair of the French LEFE/MANU program on Applied mathematics and numerical methods for the ocean and the atmosphere. <http://www.insu.cnrs.fr/lefe/presentation-manu>

C. Prieur is a member of the Scientific Council of the Mathematical Society of France (SMF).

C. Prieur is a member of the Research Council of UGA.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

License: E. Arnaud, Mathematics for engineer, 50h, L1, Univ. Grenoble Alpes, France.

License: E. Arnaud, statistics for biologists, 40h, L2, Univ. Grenoble Alpes, France.

Licence: M Nodet, Mathématiques pour l'ingénieur, 50h, L1, Univ. Grenoble Alpes

Licence: E. Blayo, Analyse approfondie, 80h, L1, Univ. Grenoble Alpes.

Licence : C.Kazantsev, Mathématiques outils pour les sciences et l'ingénierie, 76h, L1, Univ. Grenoble Alpes, France

Licence : C.Kazantsev, Mathématiques pour les sciences de l'ingénieur, 60h, L2, Univ. Grenoble Alpes, France

Master: E. Arnaud, Advising students on apprenticeship, 28h, M2, Univ. Grenoble Alpes, France.

Master: E. Arnaud, Inverse problem and data assimilation, 28h, M2, Univ. Grenoble Alpes, France.

Master: C. Prieur and O. Zahm, Model Exploration for Approximation of Complex, High-Dimensional Problems, 18h, M2, Univ. Grenoble Alpes-ENSIMAG, France.

Master: L. Debreu, Numerical methods for ocean models, 14h, M2, ENSTA Bretagne engineer school, Brest.

Master: E. Blayo, PDEs and numerical methods, 43h, M1, Univ. Grenoble Alpes and Ensimag engineer school.

Master: M Nodet Equations aux derivees partielles travaux pratiques, 18h, M1, Univ. Grenoble Alpes

Master: M Nodet Methodes inverses, 18h, M2, Univ. Grenoble, Alpes

Master: M Nodet taught was responsible for the 1st year of the applied mathematics master of Univ. Grenoble, Alpes

Doctorat: E. Blayo and A. Vidard, Introduction to data assimilation, 20h, Univ. Grenoble Alpes

Doctorat: M. Nodet, Data assimilation, 3h, Univ. Grenoble, Alpes

Doctorat: L. Debreu co-organized a one week doctoral training session on numerical modelling of atmospheric and oceanic flows (with F. Hourdin (LMD, Paris), G. Roulet (UBO, Brest) and T. Dubos (Ecole Polytechnique, Paris)).

Doctorat: F.-X. Le Dimet, Data Assimilation, 16h, Harbin Institute of Technology.

E-learning : M.Nodet, Videos level L1, youtube channel https://www.youtube.com/channel/UCfYhfa8eKzdiM_MYAOoeMiQ

E-learning : E. Arnaud, Mathematics for engineer, L1, Pedagogical resources on <http://math.u-ga.fr> and videos for <http://tinyurl.com/youtube-mat207>

E-learning :E. Arnaud, Inverse problem and data assimilation, L2, Pedagogical resources on <http://math.u-ga.fr>.

9.2.2. Supervision

Intern: Natalie Noun, Characterization of coupling errors in ocean-atmosphere coupled models, M2R, mathématiques appliquées, Université Lyon 1, 6 months, A. Vidard and F. Lemarié.

PhD in progress: Victor Trappler, Parameter control in presence of uncertainties, October 2017, E. Arnaud, L. Debreu and A. Vidard.

PhD in progress: Adrien Hirvoas, Development of a data assimilation method for the calibration and continuous update of wind turbines digital twins, May 2018, E. Arnaud, C. Prieur, F. Caleyron

PhD in progress : Sophie Théry, Numerical study of coupling algorithms and boundary layer parameterizations in climate models. October 2017, E. Blayo and F. Lemarié.

PhD in progress : Emilie Duval, Coupling hydrostatic and nonhydrostatic ocean circulation models. October 2018, L. Debreu and E. Blayo.

PhD in progress: Long Li, Assimilation d'image pour le suivi de polluants, September 2017, A. Vidard, J.-W. Ma (Harbin University, China).

PhD in progress: Reda El Amri, Analyse d'incertitudes et de robustesse pour les modèles à entrées et sorties fonctionnelles, April 2016, Clémentine Prieur, Céline Helbert (Centrale Lyon), funded by IFPEN, in the OQUAIDO chair program.

PhD in progress: Maria Belén Heredia, A generic Bayesian approach for the calibration of advanced snow avalanche models with application to real-time risk assessment conditional to snow conditions, October 2017, Nicolas Eckert (IRSTEA Grenoble), Clémentine Prieur, funded by the OSUG@2020 Labex.

PhD in progress: Philomène Le Gall, Nonparametric non stationarity tests for extremes, October 2018, Clémentine Prieur, Anne-Catherine Favre (IGE, Grenoble), Philippe Naveau (LSCE, Paris), funded by the cross-disciplinary-project Trajectories from Idex Grenoble.

PhD in progress: Arthur Macherey, Uncertainty quantification methods for models described by stochastic differential equations or partial differential equations with a probabilistic interpretation, April 2018, Clémentine Prieur, Anthony Nouy (Ecole Centrale de Nantes), Marie Billaud Friess (Ecole Centrale de Nantes), funded by Inria and Ecole Centrale de Nantes.

PhD : Rémi Pellerej, Étude et développement d'algorithmes d'assimilation de données variationnelle adaptés aux modèles couplés océan-atmosphère, Université Grenoble-Alpes, Mars 2018, A. Vidard, F. Lemarié.

PhD : Charles Pelletier, Etude mathématique du problème de couplage océan-atmosphère incluant les échelles turbulentes, Université Grenoble Alpes, February 15, 2018, E. Blayo and F. Lemarié

9.2.3. Juries

E. Blayo:

- February 27, 2018: HDR thesis of Igor Gejadze, Univ. Grenoble Alpes (president)
- March 26, 2018: PhD thesis of Rémi Pellerej, Univ. Grenoble Alpes (president)
- June 28, 2018: PhD thesis of Pedro Colombo, Univ. Grenoble Alpes (president)
- July 3, 2018: PhD thesis of Matthieu Brachet, Université de Lorraine (referee)
- September 21, 2018: PhD thesis of Joseph Bellier, Univ. Grenoble Alpes (president)
- September 25, 2018: PhD thesis of Alexandre Vieira, Univ. Grenoble Alpes (president)

L. Debreu:

- November 12, 2018: PhD thesis of Thibaud Vandamme, Univ. of Toulouse (referee).

E. Arnaud, in charge of ATER recruitment in computer sciences, University Grenoble Alpes

E. Arnaud, member of a recruitment comitee for a "Maitre de conférences", University Grenoble Alpes

M. Nodet was a reviewer for the PhD of R. Ventura

M. Nodet was an expert at the TIPE jury (oral examination for the admission to Grandes Ecoles)

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

E.Kazantsev is a member of the Local Commission for Permanent Formation of Inria Grenoble - Rhône-Alpes.

9.3.2. Articles and contents

Blog : E. Blayo, Les big data peuvent-ils faire la pluie et le beau temps ?, October 25, 2018, <http://binaire.blog.lemonde.fr/2018/10/25/les-big-data-peuvent-ils-faire-la-pluie-et-le-beau-temps/Binaire> and <https://theconversation.com/quand-les-big-data-font-la-pluie-et-le-beau-temps-105608>The conversation

Interviews : E. Blayo, Carnets de campagne - France Inter, September 27, 2018

E. Arnaud, "Sans le numérique, pas de prévision météo !" Dossier C'est quoi le numérique. "Le dauphiné des enfants", numéro 14, novembre-décembre 2018, http://www.ledauphinedesenfants.ledauphine.com/numero-archiv/dde2018_14#

In collaboration with teachers, M. Nodet wrote an article about how to set up a "glaciers" for secondary school teachers in Reperes IREM journal [31]

9.3.3. Education

E. Arnaud, animation of a "Laboratoire des mathématiques" in Lycée Pablo Neruda (Saint Martin d'Hères), on the subject of math and critical thinking.

C.Kazantsev is a member of an IREM group for creation of scientific activities for professional development of secondary schools teachers.

C.Kazantsev is the creator and animator of the mathematical club for motivated pupils aged from 8 up to 18 years. 10 meetings for about 20 pupils of 2 hours each have been organized on Sunday morning during the year.

C.Kazantsev participated in the meeting "Espace Mathématique Francophone" EMF2018, Gennevilliers, October, 22-26, 2018. Presentation of animations and participation in the working group "Étude des processus de vulgarisation".

C.Kazantsev participated in the elaboration and planning of the permanent exposition of the "Salle de thé" group at the meeting IHP2020, 30 October, Institut Henri Poincaré, Paris.

9.3.4. Interventions

- National events:

E. Arnaud, M. Nodet. (Se) tromper avec les chiffres. Colloque "Sciences et esprit critique, interroger les certitudes", Maison pour la sciences, Académie de Grenoble, 8 nov. 2018, Grenoble - intervention in a training days for teachers from Education Nationale

M. Nodet facilitated a yearly math club with three secondary schools around Grenoble, aiming pupils to research open projects ("Math en Jeans" initiative)

M. Nodet facilitated a workshop about "Math modelling, example with oceanography" for high school and secondary school teachers

M. Nodet welcomed schoolchildren for short-time internship and offered a small workshop about oceanography

E. Blayo gave several outreach talks, in particular for middle school and high school students, and for more general audiences.

Ch. Kazantsev and E. Blayo are strongly involved in the creation of "La Grange des maths", a science popularization center that will be located in Varcès (south of Grenoble), which will offer a huge variety of mathematical hands-on exhibits. See <http://www.la-grange-des-maths.fr/>

Ch. Kazantsev participated in the "Fête de la Science", Parvis de Sciences, October, 13.

Ch. Kazantsev participated in the "Fille et Maths" day, Decembre, 5, with the presentation of the "La Grange des Maths" center and its activities.

Ch. Kazantsev presented the exposition "La recherche se prend au jeu" at the "Culture and mathematical games Salon" by invitation of the Henri Poincaré Institute, Place St Sulpice, Paris, 24-27 May.

- Public exhibitions

C.Kazantsev participated in the "Oriol des Maths" and in the "Forum des associations" with the presentation of the "La Grange des Maths" center and its activities. Varcès, March, 11.

C.Kazantsev participated at the "Raout de Domène" with the presentation of mathematical animations. Domene, September, 3.

C.Kazantsev participated at the "Maths en ville" with the presentation of the "La Grange des Maths" center and its activities. Grenoble, November, 28.

- In educational institutions

L. Debreu gave an introductory lecture on the finite element method at the Ecole des Pupilles de l' AIR (superior mathematics)

C.Kazantsev presented mathematical animations to pupils of the Poussous scholl in Varcès for about 80 children during 3 hours. Varcès, March, 15.

9.3.5. Creation of media or tools for science outreach

C.Kazantsev participated in the edition of the Teachers notebooks which explain and advise how to use the "La Grange Suitcases" (sets of mathematical games, problems and animations) destined for primary and secondary schools teachers as well as for the general public.

C.Kazantsev participated in the creation of mathematical activities that can be autonomously used by schoolchildren of primary and secondary schools and by the general public.

E. Arnaud, in charge of the UGA Idex project math@uga : implementation of a collaborative moodle platform <http://math.u-ga.fr> to share pedagogical resources within teachers and towards students.

E. Arnaud, participation to UGA Idex projects Caseine and data@ugat

ANGE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

- Y. Penel and J. Sainte-Marie organised (with E. Fernández-Nieto) the workshop “non-hydrostatic effects in oceanography ” that took place at Sevilla univ. on 15-16th October and that gathered 35 international researchers ⁰.
- J. Sainte-Marie took part of the organization of the 6th EGRIN summer school that took place at Le Lioran from 18th to 21st of June and that gathered 40 researchers ⁰.
- J. Sainte-Marie took part of the organization of the Workshop COMMODORE "Community for the numerical modeling of the global, regional and coastal ocean" ⁰ (17-19/9/18).
- B. Haspot and Y. Penel organise the monthly ANGE seminar ⁰.
- J. Salomon co-organises the LJLL-Inria meetings ⁰ (twice a month).
- J. Salomon co-organised the minisymposium "Domain-decomposition methods for integral equation problems " at the 25th International Domain Decomposition Conference, DD XXV, in St. John's, Newfoundland, Canada, July 23-27, 2018.
- L. Boittin co-organises the Junior Seminar at Inria–Paris.
- M. Parisot and J. Salomon organise a workshop entitled “Scientific computing and optimisation processes for renewable energies” at Inria ⁰ on January 2018.

10.1.1. Journal

The summary of the reviewing activities of the team is given in the next table.

Member	Journal
Julien Salomon	CRAS, SIAM SISC
Cindy Guichard	J. Comp. Phys., J. Sci. Comp., CRAS, J. Comp. Math., Num. Math.
Jacques Sainte-Marie	M2AN, Computer and Fluids, Ocean Modelling, J. Comp. Phys., J. Sci. Comp. Adances in Comp. Math.
Martin Parisot	J. Hydraulic Research, Computers and Fluids, J. Comp. Phys., J. de Math. Pures et Appliquées
Vivien Mallet	ANR, Journal of Machine Learning Research
Edwige Godlewski	Sinum

⁰<https://team.inria.fr/ange/workshop-non-hydrostatic-effects-in-oceanography/>

⁰<https://indico.math.cnrs.fr/event/3345/overview>

⁰<https://commodore2018.sciencesconf.org/>

⁰<https://team.inria.fr/ange/gdt-slides/>

⁰<https://project.inria.fr/rencontresljl/fr/>

⁰<https://emrsim2018.sciencesconf.org/>

10.1.2. Invited and contributed Talks

Conference	Location	Month	Members involved
Julien Salomon	7-th Parallel-in-time Integration Workshop (PinT 2018).	Roscoff, France	02-05/05/2018
Julien Salomon	25-th International Conference on Domain Decomposition Methods (DD25).	St-Johns, Canada	23-27/07/18
Julien Salomon	Séminaire du laboratoire de mathématiques Blaise Pascal.	Clermont-Ferrand, France	01/02/18
Julien Salomon	Séminaire du CMAP.	Palaiseau, France	15/5/18
Julien Salomon	Séminaire du Laboratoire J.-L. Lions	Paris, France	30/03/18
Julien Salomon	Séminaire du groupe d'analyse	Universität Konstanz	14/11/18
Fabien Wahl	Simulation et Optimisation pour les Energies Marines Renouvelables	Inria Paris	11/01/18
Fabien Wahl	GdT ANGE	Inria Paris	10/10/18
Fabien Wahl	EGRIN	Le Grand Lioran	18/06/18
Bilal Al Taki	Journée interne du LJLL	Paris diderot (P7)	05/04/18
Bilal Al Taki	Séminaire du laboratoire	Marseille	20/11/18
Frédéric Allaire	8th International Conference on Forest Fire Research (ICFFR)	Coimbra, Portugal	12-16/11/18
Virgile Dubos, Martin Parisot	Non-hydrostatic effects in oceanography	Séville, Espagne	15-16/10/18
Virgile Dubos	18th Spanish-French Sch. J-L. Lions, Num. Sim. in Phy. and Eng.	Las Palmas, Espagne	25-29/06/18
Cindy Guichard	rencontres Inria-LJLL en calcul scientifique	Paris	05/11
Cindy Guichard	Mini-symposium, CANUM	Cap d'Agde	29/05
Cindy Guichard	séminaire d'analyse numérique, CEA/DIF	Bruyères-le-Châtel	03/05/18
Cindy Guichard	journée interne du LJLL	Paris	05/04/18
Cindy Guichard	séminaire d'analyse numérique des EDP	univ. Orsay	22/03/18
Yohan Penel	Mini-symposium, CANUM	Cap d'Agde	29/05/18
Yohan Penel	GDR Manu (poster)	Roscoff, France	02/07/18
Yohan Penel	Workshop "non-hydrostatic effects in oceanography"	Séville, Espagne	16/10/18
Jacques Sainte-Marie	Plenary in " Free Surface Flows: from Hydrostatic to Non-Hydrostatic Models"	Saint-Malo	6/6/18
Jacques Sainte-Marie	Séminaire du laboratoire N. Oresme - université de Caen	Caen	12/02/18
Léa Boittin	GdT ANGE	Inria Paris	21/02/18
Léa Boittin	GTT LJLL	LJLL, Paris	30/1
Léa Boittin	CMWR XXII (poster)	Saint-Malo	04/06/18
Léa Boittin	EGRIN	Le Grand Lioran	18/6/18
Martin Parisot	Seminaire d'équipe LEMON	Montpellier	6/2/18
Martin Parisot	SIMAI-UMI Congres	Wroclaw, Poland	16-20/09/18
Martin Parisot	Séminaire du Laboratoire Jean Leray	Nantes	11/10/18
Martin Parisot	Conference Balance laws in fluid mechanics, geophysics, biology	Orléans	19-22/10/18
Martin Parisot	Séminaire "Math et Eau"	Montpellier	25/10/18
Martin Parisot	Colloque LEFE	Clermont-Ferrand	28-30/03/18
Martin Parisot	Workshop Non Hydro, Séville	Séville	10/18
Jacques Sainte-Marie	Séminaire du laboratoire de	Beyrouth université	19/12/2018

10.1.3. Leadership within the Scientific Community

Yohan Penel is a member of the Council Administration of SMAI (2015-2018).

10.1.4. Scientific Expertise

- Yohan Penel was reviewer for the grant CNRS INSU LEFE
- Vivien Mallet was reviewer for ANR

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Member	Level	Institution	Duration	Type	Topic
J. Salomon	M2	Univ. Paris-Dauphine	15	CM	Cours de rentrée : méthodes numériques pour les EDP
J. Salomon	M2	Univ. Paris-Dauphine	30	CM	Méthodes numériques pour des modèles incluant des EDP
L. Lu	L1	SU	27.4	TD	Analyse et algèbre pour les sciences
B. Al Taki	L1	SU	36	TD	Analyse et algèbre pour les sciences
F. Allaire	L1	SU	38.5	TD	Calculus
V. Dubos	L3	Polytech Sorbonne	32	TP	Mathématiques appliquées
V. Dubos	M1	Polytech Sorbonne	14+22	CM+TP	Traitement numérique
V. Dubos	L3	Polytech Sorbonne	10	TP	Projet d'initiation
C. Guichard	M2	SU	22	CM+TD	Méthodes numériques
C. Guichard	M1	SU	58	TP	Fondements des méthodes numériques
C. Guichard	L3	SU	21	TP	Python
C. Guichard	M1	SU	18	CM	Mise en oeuvre de la méthode des éléments finis
B. Di Martino	L1	Univ. Corse	18	CM+TD	Techniques mathématiques et physiques pour les sciences de la vie
B. Di Martino	L2	Univ. Corse	72	CM+TD+TP	Analyse et TP Python Sage algèbre et analyse
B. Di Martino	L3	Univ. Corse	54	CM+TD+TP	Analyse numérique matricielle
B. Di Martino	M2	Univ. Corse	24	CM+TD+TP	Modélisation master Gestion Intégrée du Littoral et Valorisation Halieutique
Y. Penel	L2	SU	12	CM	Analyse vectorielle et intégrales multiples
Y. Penel	M1	Univ. Paris Descartes	37.5	CM+TD+TP	Modélisation déterministe en sciences du vivant
J. Sainte-Marie	M1	IPGP	40	CM	Modélisation des écoulements gravitaires
J. Sainte-Marie	M2	IPGP	30	CM et TP	Méthodes numériques, appli. géosciences
J. Sainte-Marie	M2	SU	20	CM	Méthodes numériques pour les systèmes hyperboliques Applications aux énergies renouvelables
N. Boulos	L1	Paris 13	48	TD	Mathématiques pour le parcours aménagé
L. Boittin	L3	SU	24,5	TD	Méthodes numériques pour les EDO
M. Parisot	L3	Polytech	46	CM+TP	Méthodes numériques

10.2.2. Supervision

Supervisor ANGE	Type	Name	Institution	Time	Title
JS	PhD	Sebastian Reyes-Riffo	Paris-Dauphine	2016-2019	Méthodes numériques pour les énergies marines renouvelables
JS, VM	PhD	Antoine Lesieur	Inria	2017-2020	Estimation d'état et modélisation inverse appliquées à la pollution sonore en milieu urbain
JS	PhD	Nadia Jbili	Paris-Dauphine	2016-2019	Contrôle optimal pour la résonance magnétique nucléaire
JS, JSM	PhD	Liudi Lu	Inria	2018-2021	Approches Lagrangiennes pour la modélisation et l'optimisation du couplage hydrodynamique-photosynthèse
JSM, VM	PhD	Frédéric Allaire	Inria	2017-2020	Quantification du risque incendie par méta-modélisation de la propagation de feux de forêt
YP, CG, JSM	PhD	Virgile Dubos	SU	2017-2020	Numerical methods for the elliptic/parabolic parts of non-hydrostatic fluid models
BDM, BH	Post Doc	Bilal AL Taki	Inria	09/17-12/18	Understanding and modeling the rheology of complex surface flow
NA, EA, MP	stage M2	Nelly BOULOS	Inria	04-08/2018	Analyse et simulation de modèles d'écoulement à surface libre intégrés selon la verticale
EA, MP, JSM, MOB	PhD	Léa Boittin	Paris 6	2015-2019	Modelling, analysis and efficient numerical resolution for erosion processes,
MP, NA, EA, MP	PhD	Nelly BOULOS	Paris 13	2018-2021	Modélisation et simulation numérique de la dynamique d'un aquifère érodable
VM	PhD	Ngoc Bao Tran Le	Inria	2016-2019	Uncertainty quantification based on model reduction for atmospheric dispersion
VM	Post Doc	Janelle Hammond	Inria	2017-2019	Uncertainty quantification, metamodeling and data assimilation applied to urban air quality
EA, MP,JSM	PhD	Léa Boittin	inria	2016-2019	Modelling, analysis and efficient numerical resolution for erosion processes

JS : J. Salomon, VM : Vivien Mallet, JSM : Jacques Sainte-Marie, YP : Yohan Penel, CG : Cindy Guichard, BDM : Bernard Di Martino, BH : Boris Haspot, NA: Nina Aguillon, EA : Emmanuel Audusse, MP : Martin Parisot, EG : Edwige Godlewski

10.2.3. Juries

Member	Date	Type (PhD, HdR)	role	Name	Institution	Title
JS	Novembre	PhD	rapporteur	Quentin Ansel	Univ. Dijon, TUM Munich	Optimal control of inhomogeneous spin ensembles: Applications in NMR and Quantum optics
JS	Décembre	PhD	rapporteur	Pierre Terrier	ENPC, Université Paris-Est	Simulations numériques pour la prédiction de l'évolution microstructurale d'alliages ferritiques. Une étude de la dynamique d'amas.
JS	Décembre	PhD	rapporteur	Amina Benaceur	ENPC, Université Paris-Est	Réduction de modèles en thermique et mécanique non-linéaires
YP	Septembre	comité de mi-thèse	examineur	Moustoifa Rafiou	Univ. Toulon	Modélisation et simulation numérique d'un écoulement à faible nombre de Mach. Application à un réacteur à eaux pressurisées.
JSM	Novembre	PhD	rapporteur	Nicolas Peton	IFPEN et univ. Paris-Saclay	Étude et simulation d'un modèle stratigraphique advecto-diffusif non-linéaire avec frontières mobiles
JSM	Janvier	PhD	président	Charles Demay	EDF et univ. Savoie Mont-Blanc	Modelling and simulation of transient air-water two-phase flows in hydraulic pipes
EG	mars	PhD	membre	Alexis Marboeuf	Ecole Polytechnique	Schémas ALE multi-matériaux totalement conservatifs pour l'hydrodynamique
EG	juillet	PhD	présidente	Camilla Fiorini	UVSQ	Analyse de sensibilité pour systèmes hyperboliques non linéaires
EG	octobre	PhD	présidente	Julie Llobell	UCA (Nice)	Schémas Volumes Finis à mailles décalées pour la dynamique des gaz
EG	novembre	PhD	présidente	Nicolas Cagnart	SU	Quelques approches non linéaires en réduction de complexité
EG	novembre	PhD	rapporteuse	David Iampetro	AMU (EDF Saclay)	Contribution à la simulation

JS : J. Salomon, VM : Vivien Mallet, JSM : Jacques Sainte-Marie, YP : Yohan Penel, EG : Edwige Godlewski

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Julien Salomon is a member of the "Comité des usagers de la rue Barrault" in view of the move of Paris Inria Center to Rue Barrault.

10.3.2. Articles and contents

Julien Salomon wrote a vulgarization article "Décomposer et itérer pour résoudre un problème " for the CNRS website " Images des mathématiques " (12/2018)

10.3.3. Education

- Edwige Godlewski is the president of the "commission française pour l'enseignement des mathématiques" (CFEM)
- Jacques Sainte-Marie is a member of the "Groupe de travail : Recherche et développement durable" at the French Ministry of Research.

10.3.4. Interventions

- Julien Salomon took part of the "Salon Culture et Jeux mathématiques" - Stand AMIES (Paris, 24/05/18)
- Julien Salomon gave a talk at Waterford Kamhlaba United World College, Mbabane, Eswatini (Swaziland, 5/8/2018).
- Julien Salomon took part of "Fête de la science", and gave a talk at école rue st-Isaure, 18ème (Paris, 11/10/2018)
- Léa Boittin 25/5/18 took part of the "Salon Culture et Jeux mathématiques" - Stand AMIES (Paris, 25/05/18)
- Vivien Mallet gave a talk "Bruit dans la ville", for the association "Versailles environnement initiative" (01/12/18)

10.3.5. Internal action

Julien Salomon gave talk (3.4.18) at the internal meeting "La demi-heure de science": "Décomposer et itérer pour résoudre un problème complexe, quelques exemples en calcul scientifique".

Anne Mangeney gave talk (4.9.18) at the internal meeting "La demi-heure de science": "Les ondes sismiques : une mine d'informations sur les risques naturels".

CASTOR Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

- IPL FRATRES Workshop 2018. Alsace, November 21-23 (<https://team.inria.fr/ipl-fratres/2018-ipl-meetings-ipl-workshop-alsace/>)
- Final Summary meeting, Inria Paris, November 19 (<https://team.inria.fr/ipl-fratres/final-summary-meeting/>)

9.1.2. Journal

9.1.2.1. Member of the Editorial Boards

- C. Boulbe is layout editor of the free journal SMAI-Journal of Computational Mathematics.
- J. Blum is member of
 - the editorial board of the Journal of Scientific Computing (JSC),
 - the scientific committee of the collection "Mathématiques et Statistiques" of the ISTE publications,
 - editor in chief of the ISTE Open Science journal: "Mathématiques appliquées et stochastiques".
- F. Rapetti is member of the editorial board of the Advances in Computational Mathematics (ACOM) journal by Springer

9.1.2.2. Reviewer - Reviewing Activities

- Hervé Guillard has been reviewer for the Journal of Computational physics, Computers and Fluids and International Journal for Numerical methods in Fluids.

9.1.3. Invited Talks

- Hervé Guillard, "Low Mach and multiphase flows", Workshop on numerical and physical modeling in multiphase flows: a cross-fertilisation approach, Paris, February 1-2, 2018, <https://workshopmultiphase.wixsite.com/mpf2018>
- Hervé Guillard, "Tokamesh : A software for mesh generation in Tokamaks", Renewable Energy meets High Performance Computing: Final Conference of the Energy-Oriented Centre of Excellence, Nicosia, Cyprus, September 17-18, 2018, <https://www.eocoe.eu/events/final-eocoe-conference-cyprus>
- Jacques Blum, "Algorithmes de contrôle optimal pour l'identification de l'équilibre du plasma et pour l'optimisation de scénarios dans un Tokamak", Marseille, November 29, 2018, <https://plasmas2018.sciencesconf.org/resource/page/id/3>

9.1.4. Leadership within the Scientific Community

- H. Guillard is coordinator of the topic "Turbulence and transport of edge plasma" within the Fédération FR-FCM

9.1.5. Scientific Expertise

- H. Guillard has acted as scientific expert for the FRS-FNRS (Fonds de la Recherche Scientifique - FNRS Fédération Wallonie-Bruxelles) and PRACE (Partnership for Advanced Computing in Europe).

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Ecole d'ingénieur: D. Auroux, Optimisation, 66h, M1, Polytech Nice, Université de Nice Sophia Antipolis, France

Ecole d'ingénieur: D. Auroux, Méthodes numériques, 36h, M2, Polytech Nice Sophia, Université de Nice Sophia Antipolis, France

Ecole d'ingénieur: D. Auroux, Projet, 35h, L3, Polytech Nice Sophia Antipolis, France

Master: J. Blum, Optimisation, 36h, M1, Université de Nice Sophia Antipolis, France

Ecole d'ingénieur: C. Boulbe, Analyse Numérique, 71.5h, L3, Polytech Nice Sophia Antipolis, France

Ecole d'ingénieur: C. Boulbe, Projet, 35h, L3, Polytech Nice Sophia Antipolis, France

Licence: S. Minjeaud, module Eléments de calcul différentiel, 18 h, L3, Université de Nice Sophia Antipolis, France.

Master: S. Minjeaud, module Méthodes numériques en EDP, 62 h, M1, Université de Nice Sophia Antipolis, France.

Licence: S. Minjeaud, module Compléments de calcul différentiel, 20 h, L3, Université de Nice Sophia Antipolis, France.

Master: B. Nkonga, Analyse Numérique, 40h, M1, Université de Nice Sophia Antipolis, France

Ecole d'ingénieur/Master: B. Nkonga, Méthode des éléments finis, 24h, M2, Polytech Nice Sophia, France

Ecole d'ingénieur/Master: B. Nkonga, Eléments finis mixtes, 24h, M2, Polytech Nice Sophia, France

Licence: A. Sangam, Analyse, 40h, L1, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Analyse, 70h, L2, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Analyse Numérique, 86h, L3, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Projet tuteuré en laboratoire, 15h, L3 Physique, Université Nice Sophia Antipolis, France

Master: A. Sangam, Introduction to Finite Elements, 25h, M1, Université Nice Sophia Antipolis, France

9.2.2. Supervision

- PhD : Julie Llobel, "Schémas Volumes Finis à mailles décalées pour la dynamique des gaz", Université Cote d'Azur, Thierry Goudon et Sebastian Minjeaud
- PhD in progress : Ali Elarif, "Simulation numérique des instabilités magnétohydrodynamique dans les Tokamaks", since October 2017, Hervé Guillard
- PhD in progress: Xiao Song, "Model-based control-oriented scenario construction in tokamaks", since October 2016, Blaise Faugeras and Holger Heumann
- PhD in progress: Ashish Bhole, Numerical improvements and validations of the stabilized full MHD with applications to tokamaks, October 2017, Boniface Nkonga

9.2.3. Juries

- Hervé Guillard was referee in the HDR jury of Jean-Philippe BRAEUNIG, October 19, 2018, "Contributions à l'étude de schémas numériques de type Volumes Finis et de leurs applications pratiques".
- F. Rapetti was examiner in the jury of Matteo Valentinuzzi PhD defense at CEA in Cadarache on December, the 17th, 2018, "Numerical modelling of power flux densities on tokamak plasma facing components by using advanced coupling techniques for kinetic and fluid codes"

COFFEE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

We do not keep track of such activities.

10.1.1. Journal

10.1.1.1. Member of the Editorial Boards

T. Goudon is the founding editor and co-Editor in chief of SMAI Journal of Computational Mathematics.

10.1.2. Scientific Expertise

Thierry Goudon is member of the scientific board of CIRM and of FSMP.

10.1.3. Research Administration

- Roland Masson is the head of the team PDE and Numerical Analysis of the laboratory J.A. Dieudonné.
- Roland Masson is a member of the scientific committee of CERFACS.
- Roland Masson is scientific advisor at the scientific direction of Total.
- Thierry Goudon is member of the Evaluation Committee of Inria.
- Thierry Goudon is Scientific Officer at the French Ministry of Education and Research.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Members of the team are faculties of Université Côte d'Azur and they teach in all degrees of the University.

Florent Berthelin, Master 2 Mathématiques fondamentales, Université Côte d'Azur.

Florent Berthelin, Chair of the Master 2 Mathématiques fondamentales, Université Côte d'Azur.

Florent Berthelin, Analysis, L2, Université Nice Sophia Antipolis, 60h.

Thierry Goudon is President of the national competition to hire teachers (agregation de mathématiques).

Stella Krell, Linear Algebra, Master 1 enseignement, ESPE Nice, 23h.

Stella Krell, Didactics of mathematics, Master 1 EEF, Université Nice Sophia Antipolis, 43h.

Stella Krell, Theses and placement supervision, Master 2 EEF, Université Nice Sophia Antipolis, 12h.

Stella Krell, Preparation to mathematics agrégation interne, Université Nice Sophia Antipolis, 18h.

Stella Krell, Intervention, Master 2 enseignement, Université Nice Sophia Antipolis, 3h.

Stéphane Junca, Hyperbolic PDEs and mechanics, Master 2 MPA, Université Nice Sophia Antipolis, 36h.

Roland Masson, Numerical methods for PDEs, Master 2 MPA, Université Nice Sophia Antipolis, 36h.

Laurent Monasse, Introduction to dynamical systems, Ecole des Ponts ParisTech, 10h.

Laurent Monasse, Numerical analysis, L3, Université Nice Sophia Antipolis, 40h.

10.2.2. Supervision

PhD: Julie Llobell, Numerical schemes on staggered grids for conservation laws, Univ Nice Sophia Antipolis, 24 October 2018, Thierry Goudon and Sebastian Minjeaud

PhD: Laurence Beaudé, Discretization of high energy geothermal systems in faulted porous media, Univ Nice Sophia Antipolis, 10 December 2018, Roland Masson, Konstantin Brenner, Simon Lopez and Farid Smai

PhD in progress: Kevin Atsou, Mathematical modeling of tumor growth, analysis and simulation, 01 October 2017, Thierry Goudon

PhD in progress: Billel Guelmame, Conservation laws in mechanics, 01 October 2017, Stéphane Junca

PhD in progress: Giulia Lissoni, DDFV methods and domain decomposition: applications in fluid mechanics, 01 September 2016, Stella Krell and Thierry Goudon.

PhD in progress: Leo Vivion, Dynamical model of a Lorentz gas: kinetic approach, analysis and asymptotic issues, 01 September 2017, Thierry Goudon

PhD in progress: Frédéric Marazzato, Modeling of fracture and fragmentation using a Discrete Element method, 01 October 2016, Alexandre Ern, Karam Sab and Laurent Monasse.

PhD in progress: Nadine Dirani, Effect of a shock wave on a structure with contact, 01 November 2018, Thierry Goudon and Laurent Monasse.

10.2.3. Juries

- Roland Masson:
 - Referee of the PhD of Florent Chave, 12/11/2018, Montpellier, “Méthodes Hybrides d’Ordre Elevé pour les problèmes d’interface”.
 - Referee of the PhD of El Houssaine Quenjel, 15/12/2018, Meknes, Maroc “Volumes finis/Eléments finis pour des écoulements diphasiques compressibles en milieux poreux hétérogènes et anisotropes”.
 - Referee of the PhD of Thibaut Lunet, 09/01/2018, Toulouse, “Stratégies de parallélisation espace-temps pour la simulation numérique des écoulements turbulents”.

FLUMINANCE Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Scientific Events Organisation

9.1.1.1. General Chair, Scientific Chair

- J. Erhel organized with J-R. de Dreuzy (OSUR), T. Le Borgne (OSUR) and G. Pichot (Inria) the international conference CWMR (Saint-Malo, France, June 2018).
- J. Erhel organized with T. Faney (IFPEN) and A. Michel (IFPEN) a workshop on reactive transport (Paris, France, February 2018).
- E. Mémin organized the national colloquium on data assimilation (Rennes, september 2018).

9.1.2. Scientific Events Selection

9.1.2.1. Member of the Conference Program Committees

Jocelyne Erhel

- international advisory committee of the parallel CFD conferences (Indianapolis, USA, May 2018).
- program committee of the workshop Visualization in Environmental Sciences 2018 (co-event of EuroVis)
- scientific committee of the conference JEMP (Nantes, October 2018)
- Scientific Committee of the workshop "Parallel solution methods for systems arising from PDEs" (Marseille, september 2019)

9.1.3. Journal

9.1.3.1. Member of the Editorial Boards

Jocelyne Erhel

- member of the editorial board of ETNA.
- member of the editorial board of ESAIM:Proceedings and Surveys.

Etienne Mémin

- Associate editor for the Int. Journal of Computer Vision (IJCV)
- Associate editor for the Image and Vision Computing Journal (IVC)

9.1.3.2. Reviewer - Reviewing Activities

Jocelyne Erhel: Reviewer for the journals Computational Geosciences, Software X, Parallel Computing

Dominique Heitz: Reviewer for Exp. in Fluids, Fire Technologies

Etienne Mémin: Reviewer for Tellus-A, Journ. of Fluid Mech., Im. Vis. Comp., Exp. in Fluids, Journ. of Comp. Phys.

Gilles Tissot: Reviewer for Journal of Sound and Vibration, Fluid Dynamics Research.

9.1.4. Invited Talks

Werner Bauer

- Gung Ho Network Meeting, UK, July 2018

Jocelyne Erhel

- Workshop on analysis, Rennes, France, January
- Scientific Days of Inria, Bordeaux, France, June

Dominique Heitz

- CCFTL 2018, Dourdan, France, September 17-21, 2018. Keynote lecture
- Active Flow and Combustion Control 2018, TU Berlin, Germany, September 19-21, 2018. Keynote lecture

Roger Lewandowski

- Colloquium Virginia Tech (mars 2018)
- Colloquium Pisa (Novembre 2018)
- Kolmogorov Days in Évry 2018, September 26-28, 2018, Évry , France.

Etienne Mémin

- Classical and Modern Results in Nonlinear Filtering and Applications, Imperial College London, November 2018, GB.
- ECCM - ECFD 2018 - 6th European Conference on Computational Mechanics - 7th European Conference on Computational Fluid Dynamics. Glasgow, GB.
- In Particle methods and data assimilation, Imperial College London, May 2018, GB.

9.1.5. Leadership within the Scientific Community

- J. Erhel is scientific coordinator of the website Interstices (since June 2012). <https://interstices.info>.

9.1.6. Scientific Expertise

- J. Erhel is a member of the scientific council of IFPEN, since April 2016.

9.1.7. Research Administration

Jocelyne Erhel

- correspondent of Maison de la Simulation for Inria Rennes.
- correspondent of AMIES for Inria Rennes, from September 2015.
- member of the maths thesis committee of IRMAR, from January 2017.

Dominique Heitz

- Responsible of the Irstea ACTA Team
- Member of Pôle Cristal scientific council
- Member of Irstea OPAALE research unit Executive Committee
- Member of Irstea center of Rennes Executive Committee

Roger Lewandowski

- Président du Comité de liaison du groupe GAMNI-SMAI
- Président of the Blaise Pascal award jury
- Président of GAMNI-SMAI PhD thesis award
- Corresponding person of the SMAI in Rennes
- Responsible of the group "Mathematical modeling" of IRMAR
- Member of the scientific council of IRMAR,
- Member of Mathematical teaching council of U. Rennes I
- Member of the scientific council of the Henri Lebesgue Centre

Etienne Mémin

- Member of the scientific council of LEFE-MANU action of CNRS INSU
- Member of the comity GAMNI-SMAI

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

Licence: Jocelyne Erhel, Optimisation, 24h, niveau L3, ENSAI Rennes

Licence : Dominique Heitz, Mécanique des fluides, 30h, niveau L2 INSA Rennes

Master: Jocelyne Erhel, arithmétique flottante, 4h, niveau M1, INSA Rennes

Master : Dominique Heitz, Mécanique des fluides, 25h, niveau M1, Dep GMA INSA Rennes

Master: Roger Lewandowski, Euler and the Navier-Stokes equations, M2, master « fondamentale mathematics ».

Master : Etienne Mémin, Analyse du mouvement, Master Informatique, 15h, niveau M2, Université de Rennes 1.

Master : Etienne Mémin, Vision par ordinateur , 15h, niveau M2, ESIR Université de Rennes 1.

Master : Gilles Tissot, mathematics for acoustics, 20h, niveau M1, Université du Mans.

9.2.2. Supervision

PhD in progress: Pierre-Marie Gibert, University of Lyon, October 2015, co-advisors D. Tromeur-Dervout and Jocelyne Erhel.

PhD in progress: Bastien Hamlat, University of Rennes 1, October 2016, co-advisors Jocelyne Erhel and A. Michel.

PhD in progress : Benoit Pinier, Scale similarity and uncertainty for Ocean-Atmosphere coupled models, started October 2014, supervisors: Roger Lewandowski, Etienne Mémin

PhD in progress : Pranav Chandamouli, Turbulent complex flows reconstruction via data assimilation in large eddy models, started October 2015, Dominique Heitz, Etienne Mémin.

PhD in progress : Romain Schuster, Large-scale fluid motion estimation, started October 2016, Dominique Heitz, Etienne Mémin.

PhD in progress : Long Li, Data assimilation and stochastic transport for the upper ocean dynamics, started November 2017, Etienne Mémin.

PhD in progress : Yacine Ben Ali, Variational assimilation of RANS models for wind engineering, started November 2017, Dominique Heitz, Etienne Mémin, Gilles Tissot.

PhD in progress : Dinh Duong Nguyen, Regular and singular solutions of Navier-Stokes equations with eddy viscosity, started September 2017 , Roger Lewandowski.

PhD in progress : Robin Billard, Modelling of non-conventional perforated acoustic liners, Université du Mans, started December 2017, Gilles Tissot.

9.2.3. Juries

Johan Carlier

- Kevin Chatelain, PhD, Polytech'Orléans, (examinateur)

Jocelyne Erhel

- Jérôme Carrayrou, HdR, Univ. Strasbourg (examinatrice)
- Nicolas Peton, PhD, Univ. Paris (rapporteur)
- Samuel Corre, PhD, INSA Rennes (examinatrice)
- G. Moreau, PhD, Univ. Lyon (examinatrice)

Dominique Heitz

- Jianhua Fan, PhD, INSA de Rennes (Rapporteur).

Roger Lewandowski

- Charles Pelletier, PhD Univ. Grenoble Alpes(Rapporteur)

Etienne Mémin

- Pranav Chandramouli, PhD U. Rennes I (Examineur)
- Musaab Khalid, PhD U. Rennes I (Examineur),

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

Jocelyne Erhel

- member of the Inria local committee for health and safety (réfèrent chercheur) 2016-2018.
- member of the Inria administrative commission (CAP) for researchers, from January 2016.
- member of the Inria national committee for secondment, 2016.

Etienne Mémin

- Responsible of the "Commission Développement Technologique" Inria Rennes
- Member of the "Commission Personnel" Inria-IRISA Rennes

9.3.2. Education

Jocelyne Erhel

- présidente du jury du rallye de mathématiques du CNED, since 2017.

9.3.3. Interventions

Jocelyne Erhel

- talk about melting ice caps, general public, Musée des Arts et Métiers, March 2018.
- talk about spreading epidemics, stage de collégiens, January and February 2018.
- contribution to website redesign of Interstices, 2017-2018.

9.3.4. Creation of media or tools for science outreach

Jocelyne Erhel

- scientific coordinator of the website Interstices (since June 2012).
- contribution to website redesign of Interstices, 2017-2018.

LEMON Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Event Organisation

10.1.1.1. Member of Organizing Committee

Gwladys Toulemonde is chair of the organizing committee of the international conference METMA IX (June 2018, Montpellier).

10.1.2. Journal

10.1.2.1. Member of Editorial Board

Antoine Rousseau is member of DCDS-S editorial board

Gwladys Toulemonde is guest editor (with L. Bel, AgroParisTech) of the Special Issue entitled "Space-time modeling of rare events and environmental risks" which will be published in Spatial Statistics.

10.1.2.2. Reviewer - Reviewing Activities

Carole Delenne is a reviewer for Journal of Hydraulic Research, Water (2 manuscripts/year)

Vincent Guinot is a reviewer for Journal of Hydrology, Advances in Water Resources, Mathematical Problems in Engineering (3 manuscripts/year)

Antoine Rousseau is a reviewer for Journal of Hydrology and Environmental Modeling & Assessment (2 manuscripts/year)

10.1.3. Leadership within the Scientific Community

Antoine Rousseau is the scientific coordinator of the the research line *advanced modeling for marine energy* at MERIC (Santiago, Chile).

10.1.4. Scientific Expertise

Antoine Rousseau is member of the scientific board of Fondation Blaise Pascal

Carole Delenne was reviewer for the STIC-AmSud Program

Gwladys Toulemonde is appointed by the Occitanie region to the scientific board in charge of innovation projects in the field of intelligent systems and digital data chain

Gwladys Toulemonde is member of the scientific committee of Spatial Statistics 2019 (Sitges, Spain)

10.1.5. Research Administration

Vincent Guinot is head of the ETH team at HSM (10 staff members),

Vincent Guinot is a member of the HSM steering board,

Antoine Rousseau is head of the LEMON team at Inria CRI-SAM (5 staff members),

Antoine Rousseau is a member of the Inria CRI-SAM steering board (*Comité des Projets*)

Gwladys Toulemonde is elected member of the IMAG board (UMR 5149)

Gwladys Toulemonde is elected member of the MIPS Scientific Department (Mathematics, Computer Science, Physics and Systems), a component of the University of Montpellier

Gwladys Toulemonde is elected member of the French Statistical Society board (*Société Française de Statistique, SFdS*)

Gwladys Toulemonde is elected member of Environment group of the French Statistical Society board (*Société Française de Statistique, SFdS*)

Gwladys Toulemonde is elected member of the liaison committee of the MAS Group (*Modélisation Aléatoire et Statistique*), SMAI (*Société de Mathématiques Appliquées et Industrielles*)

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Three LEMON permanent members (out of four) are university staff and have teaching duties. Most of their lectures are given at master level at Polytech Montpellier in the departments Informatics and Management (IG), Water Sciences and Technologies (STE) and Water and Civil Engineering (EGC) as well in other courses of University of Montpellier. Carole Delenne is also teaching manager of the department EGC at Polytech. The teaching load is summarized in Table 1 .

Table 1. Teaching

Antoine	Teaching M1 level: 0 to 30 hrs/year Student supervision: 50 hrs/year
Carole	Teaching L1-M2 level: 200-250 hrs/year hydraulics, applied mathematics, informatics Student tutorship and supervision: 50-100 hrs/year
Gwladys	Teaching L3/M1/M2 level: 200-250 hrs/year mathematics, probability, statistics, data mining Student tutorship and supervision: 50-100 hrs/year
Vincent	Teaching L3/M1/M2 level: 290 hrs/year Student tutorship and supervision: 50-100 hrs/year

10.2.2. Supervision

Gwladys Toulemonde is responsible for student recruitment at the IG department (Polytech Montpellier).

Gwladys Toulemonde co-supervises a PhD thesis in an established collaboration with Sanofi and is also involved in two other industrial collaborations (BALEA, Twin Solutions)

Gwladys Toulemonde advises a post-doctoral fellow since october 2017 on spatio-temporal extreme processes to assess flood hazards (NUMEV funding until Oct 2018)

10.2.3. Juries

Antoine Rousseau was appointed internal member of a recruitment campaign at Inria (CR2 at Inria CRI-SAM)

10.3. Popularization

Antoine Rousseau is member of the editorial board of [Interstices](#) and the [Binaire Blog](#) in Le Monde.

10.3.1. Internal or external Inria responsibilities

Antoine Rousseau is member of "Bureau du Comité des Équipes-Projet" in the research center of Sophia-Antipolis Méditerranée.

10.3.2. Interventions

Antoine Rousseau has given lectures in the following events:

- Fête de la Science (Genopolys Montpellier) and Semaine des maths (Collège Les Fontanilles, Castelnaudary)
- FUTUR·E·S in La Villette (Paris) for a **demo of Tsunamilab**
- another Tsunamilab demo for Region Occitanie (November 30th, Port Barcarrès)
- **Centre d'Alembert** (Orsay-Saclay)
- public schools of Aubais (Gard) and Castelnaudary (Aude)

10.3.3. Internal action

- Antoine Rousseau gave a talk in the Café des Sciences at Inria Rocquencourt, March 20th.

10.3.4. Creation of media or tools for science outreach

- Antoine Rousseau has contributed to the development of Tsunamilab in collaboration with Inria Chile
- Antoine Rousseau is a co-administrator of the association **Le Calendrier Mathématique**

MAGIQUE-3D Project-Team

9. Dissemination

9.1. Promoting Scientific Activities

9.1.1. Journal

9.1.1.1. Reviewer

Members of Magique 3D have been reviewers for the following journals:

- Applicable Analysis
- Applied Numerical Mathematics
- Computers and Geosciences
- Geophysical Journal International
- IMA Journal of Numerical Analysis
- International Journal for Numerical Methods in Engineering
- Journal of Computational Physics
- Journal of Inverse and Ill-posed Problems
- SIAM Journal of Numerical Analysis
- SIAM Journal on Scientific Computing
- Wave Motion

9.1.2. Leadership within the Scientific Community

Hélène Barucq is elected member of the Liaison Committee of SMAI-GAMNI (Society of Applied and Industrial Mathematics - Group for promoting the Numerical Methods for Engineers).

9.1.3. Scientific Expertise

- Julien Diaz was expert for the evaluation of Millennium Science Initiative project for the government of Chile.
- Since 2017, Hélène Barucq has been chairwoman of the committee which evaluates research projects in Mathematics, Computer Science, Electronics and Optics to be funded by the Regional Council New Aquitaine

9.1.4. Research Administration

- Julien Diaz is elected member of the Inria Technical Committee and of the Inria Administrative and Scientific Boards.
- Justine Labat is elected member of Laboratory Committee of UPPA
- Justine Labat organized the seminar of PhD students of LMAP
- Juliette Chabassier is member of the Inria BSO Young Researcher Committee and of the Inria BSO Center Committee. She is member of the Workgroup for sustainable development at Inria Bordeaux Sud-Ouest.
- Victor Péron is appointed member of the CJC (Commission Jeunes Chercheurs) of Inria Bordeaux Sud-Ouest.
- Hélène Barucq is member of the monitoring and studies forward unit of Inria. She is the scientific head of the project DIP since its creation in 2009.

9.2. Teaching - Supervision - Juries

9.2.1. Teaching

- Master : Julien Diaz, Transformées, 24h Eq. TD, M1, EISTIA, France
- Licence : Marc Duruflé, Équations différentielles, 20h Eq. TD, L3, Enseirb-MatMeca, France
- Licence : Marc Duruflé, Algorithmique Numérique, 30h Eq. TD, L3, Enseirb-MatMeca, France
- Licence : Marc Duruflé, Mathématiques pour les sciences du milieu naturel, 30h Eq. TD, L3, Ensegid, France
- Master : Marc Duruflé, Calcul scientifique en C++, 96h Eq. TD, M1, Enseirb-MatMeca, France
- Licence : Marc Duruflé, Calcul scientifique en Fortran90, 20h Eq. TD, L3, Enseirb-MatMeca, France
- Master : Florian Faucher, Inversion / optimisation, 10.5h Eq. Cours et TD, M2, Université de Pau et des Pays de l'Adour, France
- Licence : Justine Labat, Algèbre pour l'informatique, 19.5h Eq. TD, L1, UPPA, France
- Licence : Justine Labat, Introduction aux Probabilités, 12.5h Eq. TD, L2, UPPA, France
- Licence : Victor Péron, Analyse 2, 39 Eq. TD, L1, UPPA, France
- Licence : Victor Péron, Mathématiques appliquées, 15 Eq. TD, L1, UPPA, France
- Licence : Victor Péron, Courbes et calcul intégral, 19.5 Eq. TD, L2, UPPA, France
- Licence : Victor Péron, Analyse numérique des systèmes linéaires, 48.75 Eq. TD, L3, UPPA, France
- Licence: Géométrie analytique, 20h Eq. TD, UPPA, France
- Master : Victor Péron and Sébastien Tordeux, Analyse numérique des EDP 1: différences finies, 75 eq. TD, Master1, UPPA, France
- Master : Victor Péron and Sébastien Tordeux, Introduction aux phénomènes de propagation d'ondes, 38 eq. TD, Master 2, UPPA, France
- Master : Robin Tournemene, Math-Info, 64h eq. TD, L3+M1, ENSAM Bordeaux, France

9.2.2. Supervision

- PhD : Izar Azpiroz Irigorri, Contribution to the Numerical Reconstruction in Inverse Elasto-Acoustic Scattering, February 28th, Hélène Barucq, Julien Diaz and Rabia Djellouli (CSUN).
- PhD : Elvira Shishenina, Discrétisation espace-temps d'équations d'ondes élasto-acoustiques dans des bases TREFFTZ-DG polynomiales, December 7th, Hélène Barucq and Julien Diaz.
- PhD in progress : Hamza Alaoui Hafidi, Imagerie ultrasonore tridimensionnelle dans les milieux hétérogènes complexes, October 2015, Marc Deschamps, Michel Castaings, Eric Ducasse, Samuel Rodriguez (I2M), Hélène Barucq, Marc Duruflé, Juliette Chabassier (Magique 3D).
- PhD in progress : Aurélien Citrain, Déformation 3D de maillages en imagerie sismique, Méthodes d'inversion sismique dans le domaine fréquentiel, October 2016, Hélène Barucq and Christian Gout.
- PhD in progress : Alexandre Gras, Hybrid resonance for sensing applications, IOGS, October 2017, Philippe Lalanne(IOGS), Marc Duruflé, Hélène Barucq (Magique 3D)
- PhD in progress : Pierre Jacquet, ,October 2017, Hélène Barucq and Julien Diaz.
- PhD in progress : Justine Labat, Diffraction of an electromagnetic wave by small obstacles, Université de Pau et des Pays de l'Adour, October 2016, Victor Péron and Sébastien Tordeux
- PhD in progress: Victor Martins Gomez, Experimental characterization and modeling of seismo-electromagnetic waves, Université de Pau et des Pays de l'Adour, October 2018, Hélène Barucq and daniel brito (LFCR)

PhD in progress : Rose-Cloé Meyer, Modeling of conducting poro-elastic media using advanced numerical methods , Université de Pau et des Pays de l'Adour, October 2018, Hélène Barucq and Julien Diaz

PhD in progress : Nathan Rouxelin, Advanced numerical modeling of acoustic waves propagating below the surface of the Sun, Université de Pau et des Pays de l'Adour, October 2018, Hélène Barucq and Juliette Chabassier

PhD in progress : Chengyi Shen, Approches expérimentale et numérique de la propagation d'ondes sismiques dans les roches carbonatées, October 2016, Julien Diaz and Daniel Brito (LFCR).

Master 2 internship : Rose-Cloé Meyer, Analyse de performances de schémas à pas de temps locaux pour la simulation numérique de phénomènes de propagations d'ondes, Enseirb-Matmeca, Sept. 2018.

Master 2 internship : Nathan Rouxelin, Comparaison des modèles de Galbrun et d'Euler linéarisé dans le contexte de l'héliosismologie , Insa Rouen, Sept. 2018.

Master 2 internship: A discontinuous Galerkin Trefftz type method for solving the Maxwell equations, INSA Toulouse, Sept 2018

Master 2 internship : Auxence MBaimou: Models for plates and beams, application to the piano bridge, Marseille University, Sept. 2018.

L3 internship : Jérémy Martin, Sept. 2018.

9.2.3. *Juries*

- Hélène Barucq : (Insa de Rouen et ENSA d'Agadir (Maroc)) "De l'optimisation pour l'aide à la décision. Application au problème du voyageur de commerce probabiliste et l'approximation de données", PhD thesis, December 12th 2018
- Hélène Barucq : Bruno Weber (Université de Strasbourg) "Optimisation de code Galerkin discontinu sur ordinateur hybride. Application à la simulation numérique en électromagnétisme", PhD thesis, November 26th 2018
- Hélène Barucq : Florent Masmoudi (Université de Toulouse) "Non intrusive reduced order models", PhD thesis, July 9th 2018
- Hélène Barucq : Boris Caudron (Université de Nancy) "Couplages FEM-BEM faibles et optimisés pour des problèmes de diffraction harmoniques en acoustique et en électromagnétisme, PhD thesis, June 25th 2018
- Julien Diaz : Florian Monteghetti (Université de Toulouse), Analysis and Discretization of Time-Domain Impedance Boundary Conditions in Aeroacoustics, October 15th 2018
- Sébastien Tordeux: Hélène Canot (Université de Bretagne Sud) Méthodes d'homogénéisation et simulations numériques appliquées à la réponse électromagnétique des matériaux multi échelles
- Juliette Chabassier : Antoine Bensalah (Université Paris Saclay) Une approche nouvelle de la modélisation mathématique et numérique en aéroacoustique par les équations de Goldstein, 6 July 2018
- Victor Péron : Mostafa Shahriari (Basque Center for Applied Mathematics, BCAM), Fast One-Dimensional Finite Element Approximation of Geophysical Measurements, November 14th 2018

9.3. Popularization

9.3.1. *Interventions*

- Justine Labat participated in scientific 'speed datings' during the 'Filles et Maths' day at Pau in May 2018.
- Justine Labat animated the stand in Mathematics during 'Le Village des Sciences' day at Pau in October 2018.

- Sébastien Tordeux gave a talk on numerical analysis in the Cercle Sofia Kovalevskaja of Toulouse in May 2018
- Juliette Chabassier participated to a movie - debate event in Cognac in march 2018.
- Juliette Chabassier animated a workshop around virtual piano during the Inria "10 years night" in september 2018.
- Juliette Chabassier animated a workshop around virtual piano during the Inria "fête de la science" in october 2018.
- Robin Tournemene animated a workshop around virtual piano during the Inria "fête de la science" in october 2018.
- Juliette Chabassier animated a workshop around virtual piano during the Inria "open doors day" in october 2018.
- Juliette Chabassier welcomed L3 students around a virtual piano workshop in december 2018.

SERENA Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

Géraldine Pichot was the co-chair of the **Computational Methods in Water Resources 2018** conference.

Ibtihel Ben Gharbia and Martin Vohralík have organized a 1-day workshop **Journée contrat cadre IFP Energies Nouvelles/Inria**.

10.1.1.2. Member of the Organizing Committees

Michel Kern was the member of the local organizing committee of the **Computational Methods in Water Resources 2018** conference.

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

Alexandre Ern is a member of the Scientific Committee for the **European Finite Element Fair**.

Michel Kern was a member of the program committee for the **JCAD 2018** (Journées Calcul et Données, Lyon October 2018).

Géraldine Pichot co-organized a mini-symposium, entitled “Numerical methods for processes in fractured media” at the **InterPore 2018 - 10th Annual Meeting and Jubilee**, New Orleans, United States, June 2018.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

François Clément was a member of the editorial board of **Matapli** until June 2018.

Alexandre Ern is a member of the editorial boards of **SIAM Journal on Scientific Computing**, **ESAIM Mathematical Modelling and Numerical Analysis**, **IMA Journal of Numerical Analysis**, and **Computational Methods in Applied Mathematics**.

Martin Vohralík is a member of the editorial boards of **SIAM Journal on Numerical Analysis**, **Acta Polytechnica**, and **Applications of Mathematics**.

10.1.3.2. Reviewer - Reviewing Activities

Alexandre Ern served as reviewer for dozens of papers in different journals.

Michel Kern was a reviewer for OGST, BIT, Mathematics and Computers in Simulation, Computers and Geosciences.

Martin Vohralík served as reviewer for dozens of papers in different journals.

10.1.4. Invited Talks

Alexandre Ern gave an invited lecture at the **BAIL 2018** conference in Glasgow (*International conference on Boundary and Interior Layers*).

Géraldine Pichot was an invited speaker at the **InterPore 2018 - 10th Annual Meeting and Jubilee**, New Orleans, United States, June 2018 and at the Workshop **Reactive Flows in Deformable, Complex Media**, Oberwolfach, Germany, August 2018.

Martin Vohralík was an invited speaker at the workshop **FEEC and High Order Methods**, Oslo, Norway, the **Seventh Conference on Finite Difference Methods: Theory and Applications**, Lozenetz, Bulgaria, and the Workshop **Reactive Flows in Deformable, Complex Media**, Oberwolfach, Germany, August 2018.

10.1.5. Leadership within the Scientific Community

Alexandre Ern is the leader of the Master *Mathématiques et applications*, Ecole nationale des ponts et chaussées.

M. Kern is a member of the Scientific Committee of **Orap** (ORganisation Associative du Parallélisme), of the steering committee of **Géosciences franciliennes** of the Scientific Board of **GDR Calcul**, and of the jury and executive board of **Label C3I**.

M. Vohralík is a member of the steering committees of **Géosciences franciliennes** and **Summer schools CEA–EDF–Inria**.

M. Vohralík is in charge of the topic “Numerical schemes, mesh generation algorithms, and error control” in the **ANDRA, BRGM, CEA, EDF, IFP Energies Nouvelles**, and **Total** working group on *High-Performance Numerical Simulation in the Geosciences* (identification of common challenges and collaboration opportunities).

10.1.6. Scientific Expertise

M. Kern is a reviewer for the German Supercomputing Center JARA program.

10.1.7. Research Administration

François Clément is a member of the *Comité local d’hygiène, de sécurité et des conditions de travail* of the Inria Research Center of Paris.

François Clément was the **AMIES** *facilitator* of the Inria Research Center of Paris until June 2018.

M. Kern is Deputy Director of **Maison de la Simulation**, a joint project between CEA, CNRS, Inria, Université de Paris 11, and Université de Versailles, focused on applications of high end computing.

M. Kern is a member of the *Comité de site* of the Inria center of Paris.

Géraldine Pichot was a member of the *Comité local d’hygiène, de sécurité et des conditions de travail* of the Inria Research Center of Paris until Sep 2018.

Géraldine Pichot was a member of the *Commission de développement technologique* of the Inria Research Center of Paris until March 2018.

Martin Vohralík is a member of the Inria Paris *Committee on scientific positions* (evaluation of applications for Ph.D. theses (CORDI-S), post-docs, and “délégations”).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence : Alexandre Ern, Optimal Control, 20h, L3, Ecole Polytechnique, France.

Licence : Alexandre Ern, Partial differential equations, 10h, L3, Ecole nationale des ponts et chaussées, France.

Master : Alexandre Ern, Discontinuous Galerkin methods, 20h, M2, Sorbonne University, France.

Master: Michel Kern, Inverse Problems, 26h, M1, Mines-ParisTech, France

Master: Michel Kern, Advanced Numerical Analysis, 30h, M2, Institut Galilée, Université Paris 13, France

Master: Michel Kern, Subsurface flows, 30h (with E. Mouche), M2, Université Paris Saclay, France

Master: Martin Vohralík, A posteriori error estimates for efficiency and error control in numerical simulations, 36h, M2, Charles University, Prague, Czech Republic.

10.2.2. Supervision

PhD: Amina Benaceur, Model reduction for nonlinear thermics and mechanics, 21 Dec 2018, Alexandre Ern.

PhD: Karol Cascavita, Hybrid discretization methods for Signorini contact and Bingham flow problems, 18 Dec 2018, Alexandre Ern and Xavier Chateau.

PhD in progress: Jad Dabaghi, A posteriori error estimates and adaptive stopping criteria for formulations with complementarity constraints, 01 November 2015, Martin Vohralík and Vincent Martin.

PhD in progress: Patrik Daniel, Adaptive hp -finite elements with guaranteed error contraction and inexact multilevel solvers, 01 October 2015, Martin Vohralík and Alexandre Ern.

PhD in progress: Frédéric Marazzato, Discrete element methods for fracture and fragmentation, 01 October 2016, Alexandre Ern.

PhD in progress: Riccardo Milani, Compatible Discrete Operator schemes for Navier–Stokes equations, 01 October 2017, Alexandre Ern.

PhD in progress: Ani Miraci, Robust a posteriori error control and adaptivity with inexact solvers, 01 October 2017, Martin Vohralík and Alexandre Ern.

PhD in progress: Nicolas Pignet, Hybrid High-Order methods for nonlinear mechanics, 01 November 2016, Alexandre Ern.

10.2.3. Juries

Alexandre Ern, Referee, PhD A. Bensalah, ENSTA ParisTech, Jul 2018.

Alexandre Ern, Examiner, PhD G. Morel, Sorbonne University, Sep 2018.

Alexandre Ern, Referee, PhD P. Vega, University of Concepcion, Chile, Nov 2018.

Alexandre Ern, Referee, PhD G. Pennesi, Politecnico Milano, Italy, Dec 2018.

Michel Kern, Examiner, HDR J. Carrayrou, University of Strasbourg, 21 March 2018.

Martin Vohralík, Referee, PhD O. Gorynina, Université de Bourgogne Franche-Comté, Besançon, Feb 2018.

Martin Vohralík, Examiner, PhD M. Botti, Université de Montpellier, Nov 2018.

10.3. Popularization

10.3.1. Interventions

- M. Kern: présentation “Des mathématiques pour modéliser et simuler le monde”, Lycée des Pierres–Vives (Terminale S), Carrières–sur–Seine, May 2018.
- M. Vohralík: “Advancing scientific knowledge together to support innovation”, dissemination video, [IFP Energies Nouvelles](#). Available [here](#). February 2018.

Major publications by the team in recent years:

STEPP Project-Team

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Organisation

8.1.1.1. General Chair, Scientific Chair

- Denis Dupré, Pierre-Yves Longaretti and Emmanuel Prados are the Scientific Chair of the series of conferences entitled “Understanding and Acting”; see section 8.3.1 .

8.1.1.2. Member of the Organizing Committees

- P. Sturm was member of the Organization and the Program Committees of the 2018 edition of the Inria Science Days (*Journées Scientifiques Inria*)

8.1.2. Scientific Events Selection

8.1.2.1. Member of the Conference Program Committees

- Emmanuel Prados was member of the Program Committees of the Workshop on “Information and decision-making systems and democracy” at the INFORSID 2018 Congress , Nante, France 28-31 May 2018.
- Emmanuel Prados was member of the Program Committees of the Workshop on “EIAH and sustainability” at RJC-EIAH 2018, Besançon, France 3-5 April 2018.

8.1.3. Journal

8.1.3.1. Reviewer - Reviewing Activities

- P. Sturm was reviewer for Environment and Planning B: Urban Analytics and City Science, International Journal of Computer Vision, and Journal of Mathematical Imaging and Vision.

8.1.4. Invited Talks

- E. Prados give an invited talk to the **Journées scientifiques de l’Inria** “”, Bordeaux, France, June 27-29, 2018. Organizers: Inria (<http://journées-scientifiques2018.inria.fr/>).
- E. Prados give an invited talk to the **LIED Thematic Seminar** “Effondrement, déclin ou catastrophe ? : théories sur les risques et l’avenir des sociétés” (Laboratoire interdisciplinaire sur les énergies de demain) with Pierre-Yves Longaretti and Grégoire Chambaz, Paris, France, June 19, 2018. Organizers: Petros Chatzimpiros.
- E. Prados give an invited talk to the **round table** on military nuclear [links with the risk of collapse of modern society] at the **first anniversary of the “Nuclear Knowledges” program**, Science Po, Paris, France, May 31, 2018. Organizers: Benoît Pelopidas.
- E. Prados give an invited talk to the **Conference for the Société Française de Physique** : “Vers un effondrement de notre société moderne ?”, Grenoble, France, June 7, 2018 ; Conférence with Pierre-Yves Longaretti. Organizer: Thomas Thuillier.

8.1.5. Research Administration

- P. Sturm is, since 2015, Deputy Scientific Director of Inria, in charge of the domain Perception–Cognition–Interaction
- E. Prados was in charge of the working group “Digital tools for the progress of society” for the Strategic Plan of Inria, 2017-2018. His work resulted in the writing of the Scientific Challenges entitled “Digital world, society, and complexity”.

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

As teacher-researchers, Denis Dupré and Serge Fenet completed their full teaching service in 2018 (full-time) in their field of study. Regis Perrier did a half service.

8.2.2. Supervision

PhD : Luciano Gervasoni, *Contributions to the formalization and implementation of spatial urban indices using open data: application to urban sprawl studies*, University Grenoble Alpes, November 19th, 2018, Peter Sturm (supervisor) and Serge Fenet (co-supervisor).

PhD in progress : Michela Bevione, *Socio-ecological transition, wealth creation and territorial metabolism: the case of Maurienne Valley*, October 2016, Pierre-Yves Longaretti (co-supervisor) and Nicolas Buclet (supervisor). Phd thesis in collaboration with the PACTE Laboratory. This interdisciplinary research on territorial ecology aims at bridging the gap between quantitative modeling and socio-economic and qualitative approaches to better understand the interactions between human society and the environment.

8.2.3. Juries

- P. Sturm chaired the Habilitation committee of Rémi Boutteau (Normandie Université, president), was reviewer of the PhD theses of Laura Fernández Julià (Université Paris-Est) and Mathias Gallardo (Université Clermont Auvergne) and chaired the PhD committee of Fatima Aziz (Université de Limoges).

8.3. Popularization

8.3.1. Conferences “Understanding and Acting” :

Saving Civilization is not a spectator sport
Lester Brown

Following a dynamics of exponential growth in a finite world, humanity today faces a number of unprecedented and tightly interlinked challenges. With a growing number of environmental limits being largely and irreversibly exceeded (GHG concentrations in the atmosphere, biodiversity loss, soil erosion, freshwater shortages...), social, economic, geopolitical, humanitarian (etc.) consequences are becoming more urgent than ever to address, while the threat of an uncontrolled global collapse is now more than a prospect. It is urgent to initiate deep, structural, socioeconomic changes on virtually all aspects of our increasingly global societies (economics, industrial and agricultural production, consumption, education, all requiring major new local and global policies).

In view of these facts, the STEEP research team has initiated in 2016 a series of conferences-debates entitled “Understanding & Acting” (“Comprendre et agir”) that examines these issues in order to help researchers and citizens to increase their awareness of the various issues at stake in order to initiate relevant individual and collective actions. From now on, the scientific community at large must realize that its duty also lies in helping citizens to better understand these issues. If the fraction of people in society whose privilege is to be paid to think about society’s problems do not seize this opportunity in the critical times we face, who will? Researchers must become more involved in the search of socioeconomic alternatives and help citizens to implement them. The interactions between researchers and citizens must also to be reinvented.

The presentations of this series of conferences typically last between 30 to 45 minutes; they are followed by a 45 minute public debate with the audience. The presentations are captured on video and then made directly accessible on the YouTube Channel “Comprendre et Agir”. At the end of 2017 the YouTube channel reached almost 45,000 views with a rate of integral viewings remaining at above 25%.

Examples of conferences given in 2016-2017:

- “Why and how to recognize money as a common good?” by Jean-Michel Servet, Graduate institute of international and development studies (IHEID) at Genève.
- “What alternative to the crisis of representation?” by Loic Blondiaux, University of Paris I Panthéon-Sorbonne.
- “Reinventing agriculture and food in the 21st century?” by Gilles Billen, CNRS.

- “Can the commons movement re-activate democracy? by Christian Laval, University of Paris Ouest Nanterre La Défense.
- “Limiting climate change: Why do we not do it?” by Denis Dupré, University of Grenoble Alpes.
- “Understanding society collapses. What future for ours? ” by Emmanuel Prados, Inria.
- “Environment, economy, collapse: squaring the circle?” by Pierre-Yves Longaretti, CNRS.

Link to the web page of the series [program, abstracts, dates, complements etc.]:

<https://team.inria.fr/steep/les-conferences-debats-comprendre-et-agir/>

Link to the YouTube channel :

https://www.youtube.com/channel/UCJbcXCcOA63M8VMysAbmt_A

8.3.2. Other popularization activities :

- Emmanuel Prados was guest speaker at
 - the **public debate "defying disaster"** that held at Grenoble City Hall., Grenoble, France, 13 December 2018. Organizers: City of Grenoble. “Climat, défier la catastrophe : vers un nouvel humanisme”
http://www.grenoble.fr/uploads/Externe/a1/757_069_Conference-Climat-defier-la-catastrophe-vers-un-nouvel-humanisme.pdf
Video of the conference on YouTube : <https://www.youtube.com/watch?v=IfvFHx0kYa0>
 - the **exchange day on travel modelling in Grenoble** “”, Grenoble, France, 5 October 2018. Organizers: Agence d’urbanisme de Grenoble.
 - the **Controversation** entitled “Digital technology in the face of environmental impasse: an exit door or a way forward?”, Aix en Provence, France, 17th of February 2018. Organizers: association “Tous Chercheurs” in collaboration with the students of the School of Journalism and Communication of Aix-Marseille ; Amina Mokrane.
 - the **Opening Conference at the Alterre Day** «Voyages en transitions » : “De l’urgence de tout changer face à l’effondrement qui vient”, Dijon, France, March 21th 2018. Organizers: Alterre Bourgogne-Franche-Comté (Agence régionale pour l’environnement et le développement soutenable) ; Fabienne Lapiche-Jaouen.
<https://www.alterrebourgognefranchecomte.org/c/agenda/10604/journee-alterre-sur-le-theme-des-transitions?>
- Emmanuel Prados participated **Fictionnalisation de controverse** in the research-action project FORCCAST. 22 April, 2018, Paris.
- Emmanuel Prados gave a conference at **STMicroelectronics Grenoble** : ‘Collapse: understanding and accepting the game over of our modern society’, Grenoble, France, March 8 2018. Organizers: Philippe Vincent and Violaine Pasini.

TONUS Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. Organization of events

- Philippe Helluy: Workshop on Compressible Multiphase Flows : Derivation, closure laws, thermodynamics, IRMA, May 2018.
- Emmanuel Franck: Workshop IPL : Breitenbach, November 2018

10.1.1.2. Reviewer

- Emmanuel Franck was a reviewer for
 - Communication in computation physics,
 - Journal of Computational Physics.
- Philippe Helluy was a reviewer for
 - Computers and fluids,
 - Communication in computational physics,
 - Numerical methods for partial differential equations,
 - ESAIM proceedings.
- Philippe Helluy is editor for:
 - International Journal on Finite Volume,
 - Computational and Applied Mathematics.
- Sever Hirstoaga was a reviewer for
 - Acta Applicandae Mathematicae,
 - Journal of Approximation Theory,
 - Journal of Computational and Applied Mathematics.

10.1.2. Invited Talks

- Emmanuel Franck was invited in
 - Canum 2018, Cap d'Agde, June 2018 (national conference),
 - Workshop Jorek, Oxford , May 2018,
 - Workshop Achylles, Bordeaux, March 2018,
 - Workshop ABPDE3, Lille, September 2018,
 - Numkin 2018, Munich, October 2018,
 - Würzburg numerical analysis seminar, April 2018,
 - Workshop IPL , November 2018.
- Florence Drui was invited in
 - Summer School GDR Manu, Roscoff, July 2018,
 - Workshop on compressible multiphase flow, Strasbourg, May 20118,
 - Autumn school, "Hyperbolic Conservation Laws", Würzburg, October 2018,
 - item Workshop IPL , November 2018.

- Laura Mendoza was invited in
 - Numkin 2018, Munich, October 2018,
 - Workshop IPL , November 2018,
 - Research and Scientific meeting, IRFM, CEA, Cadarache.
- Laurent Navoret was invited in
 - Numkin 2018, Munich, October 2018,
 - Workshop IPL , November 2018,
 - Seminar, Groupe de travail "Applications des Mathématiques", ENS Rennes.
- Michel Merhenberger was invited in
 - Numkin 2018, Munich, October 2018.
- Sever Hirstoaga was invited in
 - Workshop "Kinetic equations for Astrophysics", IRMA.

10.1.3. Scientific Expertise

- Philippe Helluy is in the evaluation committee of the "réseau calcul" of CNRS.

10.1.4. Research Administration

- Philippe Helluy
 - Director of the IRMA mathematics institute since September 2018.
- Laurent Navoret
 - Head of the master (Agrégation) since September 2018.
- Matthieu Boileau
 - Elected to the "Commission de la Recherche du Conseil Académique" of Strasbourg University,
 - Co-leader of "réseau métier Calcul" CNRS,
 - Member of the "Commission du Développement Technologique". l'Inria Nancy,
 - Member of users comity. IDRIS,
 - Member of X-Stra network (IA days in 2018).
- Michel Mehrenberger
 - Correspondent SMAI for IRMA,
 - Member of "École Doctorale ED209".

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

- Florence Druï :
 - Numerical analysis, TD and TP, L3 (58h)
- Laura Mendoza :
 - Scilab and algorithm, CPGE Lycée Kleber (120h).
- Laurent Navoret :
 - Licence : Nonlinear optimisation (18h eq. TD),
 - Licence : Scientific computing (64 eq. TD),
 - Master 1: Scientifique computing 2 (35h eq. TD),
 - Master 2 (Agrégation) : scientific computing (38h eq. TD),

- Master 2 (Agrégation) : Problem correction (12h eq. TD),
- Master 2 (Cell physics) : Basics in maths (24h eq. TD),
- Philippe Helluy :
 - L2: Scientific computing (64 eq. TD),
 - Master 1: graph and algorithm (30h eq. TD),
 - Master 2 (Agrégation) : scientific computing (30h eq. TD),
 - Master 2 CSMI : hyperbolic PDE (30h eq. TD),
 - Master 2 CSMI : Optimal control (30h eq. TD).
- Matthieu Boileau:
 - Master 2 : data sciences (18h),
 - Master 1 CSMI : parallel computing (15h),
 - Master ESPE : Python for science (28h).
- Michel Mehrenberger:
 - Summer school at Harbin Institute of Technology (HIT) en Chine (16h),
 - L1: mathematics for biology (42h),
 - L3: nonlinear optimisation (54h+65h),
 - Master 1: scientific computing (32.5h),
 - Master 1: python (13h),
 - Master 2 (agrégation): scientific computing (8h).
- Michaël Gutnic:
 - L1: mathematics for biology (66h),
 - L1: statistic for biology (72h),
 - L3: scientific computing (32h).

10.2.2. Supervision

- Master 2 (agrégation) thesis: Louis Stutzmann, 01/2018 - 05/2018, Advisor: Sever Hirstoaga.
- PhD in progress: Lucie Quibel (CIFRE support): in collaboration with EDF Chatou, from October 2017, Advisor: Philippe Helluy.
- PhD in progress: Marie Houillon: "Modeling of thin wires in electromagnetic software", Advisors: Philippe Helluy and Laurent Navoret, from October 2017, Labex Irmia support.
- PhD finished in November 2018: Bruno Weber(CIFRE support): "Optimization of DG software on GPU in the AxesSim company". Advisor: Philippe Helluy.
- PhD in progress: Maxime Schmitt: "Optimization of scientific software with arbitrary mesh refinement", Advisors: Philippe Helluy and Cédric Bastoul (CAMUS team). Labex Irmia support.
- PhD in progress: Ksander Ejjaaouani, "Conception of a programmation model, application to gyrokinetic simulations", from October 2016, Advisors: Michel Mehrenberger, Julien Bigot, Olivier Aumage.
- PhD finished in December 2018: Nicolas Bouzat, "Conception of a programmation model, application to gyrokinetic simulations", from October 2015, Advisors: Michel Mehrenberger, Jean Roman, Guillaume Latu.
- PhD finished in october 2018: Yann Barsamian "Optimization of PIC and SL schemes for multi species simulations", from October 2015, Advisors: Michel Mehrenberger, Sever Hirstoaga, Eric Violard.
- PhD in progress: Pierre Gerhard, "Résolution des modèles cinétiques. Application à l'acoustique du bâtiment", from October 2015, Advisors: Philippe Helluy, Laurent Navoret.

10.2.3. Juries

- M. Mehrenberger and S. Hirstoaga were members of jury of the PhD committee of Yann Barsamian, University of Strasbourg,
- Philippe Helluy was member/reviewer of jury of the PhD committee of Benedict Dingfelder, TUM,
- Philippe Helluy was member/reviewer of jury of the PhD committee of Gentien Marois, Bordeaux,
- Philippe Helluy was member of jury of the PhD committee of Nicolas Bouzat, University of Strasbourg.

10.3. Popularization

- Philippe Helluy: "Des modèles mathématiques en acoustique des bâtiments" Rencontres mathématiques-architecture. Strasbourg, October 2018.
- Michel Mehrenberger: participation to "Maths-en-Jean".

BIOCORE Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

O. Bernard is the Co-Chair of the next Dycops-CAB conference (CAB 2019 Florianópolis, Brazil, 23-26 April).

M. Chaves is organizing co-chair for the International Symposium on Molecular Logic and Computational Synthetic Biology (Santiago Chile, 17-18 December, 2018).

10.1.1.2. Member of the Organizing Committees

M. Chaves is part of the organizing committee for the Summer School on “Modélisation formelle des réseaux de régulation biologique” (Porquerolles, France, June 2019).

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

O. Bernard is in the technical committee of the Computer Applied to Biotechnology (CAB) conferences, of the conference Foundations of Systems Biology in Engineering (FOSBE) and of the Algae Europe conference.

M. Chaves is a member of the program committee of Journées ouvertes de biologie informatique et mathématiques (JOBIM 2018, Marseille, France, 3-6 June; JOBIM 2019, Nantes). She is in the program committee of Foundations of Systems Biology in Engineering (FOSBE 2019).

J.-L. Gouzé is a member of the program committee for the International Conference on Positive Systems (POSTA 2018, Hangzhou, China, 25-27 August).

10.1.2.2. Reviewer

All BIOCORE members have been reviewers for the major 2018 conferences in our field: CDC, ECC, IFAC World Congress,...

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

M. Chaves is an Associated Editor of SIAM Journal on Applied Dynamical Systems (SIADS), since January 2015

S. Touzeau is an Academic Editor of PLOS ONE since August 2018

10.1.3.2. Reviewer - Reviewing Activities

All BIOCORE members have been reviewers for the major journals in our field: Automatica, IEEE Transactions on Automatic Control, Journal of Mathematical Biology, Mathematical Biosciences, New Phytologist,...

10.1.4. Invited Talks

O. Bernard was invited to give a conference on microalgae at Ecole Centrale de Paris (“Biotechnological challenge”) “Use of microorganisms for biofuel production” (January, 16th, 2018).

O. Bernard was invited to give a conference at the PROMES Laboratory for solar energy (Odeillo) “Purple Sun-sharing photons between semi transparent PV panels and microalgae production” (July, 13rd, 2018).

M. Chaves and J. Roux gave a paired presentation on modeling heterogeneity in cell-death drug response at the group UCancer (a UCA structuring project) (December 2018).

M. Chaves gave a Colloquium at the Department of Mathematics at Universidade de Aveiro, Portugal (June 2018).

10.1.5. Other Selected Talks

M. Chaves gave a presentation on ANR project ICycle at the workshop ComplexDays, organized by Université Côte d’Azur (January 2018).

J.-L. Gouzé gave a talk at the SFBT meeting (St Flour, June 2018).

L. Chambon participated at the Workshop MOMI 2018 on the 26th and 27th of February, organised by Inria in Sophia-Antipolis about Mathematics in industry, where she presented a poster of her research. On the 18th and 19th of June, she presented a poster at the "Modelife Days" of the UCA Jedi IDEX Core program "Modeling, physics and mathematics of living systems" in Nice.

10.1.6. Scientific Expertise

O. Bernard is a member of the scientific committee of the companies Inalve and BioEnTech.

J.-L. Gouzé was in several evaluation committees or juries: FWO, NWO, FNRS...

S. Touzeau evaluated a project for the “Centre d’excellence africain en Mathématiques, Informatique et Technologies de l’Information et de la Communication” (CEA-MITIC), Senegal.

10.1.7. Research Administration

O. Bernard represents Inria at the ANCRE (Alliance Nationale de Coordination de la Recherche pour l’Energie).

O. Bernard is a member of the ADT (Technological Development Actions) commission at Inria.

M. Chaves is a member of the COST-GTRI (working group on International Relations at Inria’s council for scientific and technological orientation). The group is charged with evaluating Inria’s Associated Teams.

M. Chaves is a member of the CLHSCT of Inria Sophia Antipolis (local committee for the safety of working conditions).

M. Chaves is in the Pedagogical Committee of the Master “Quantitative and Computational Sciences for Biomedical data”, Université Côte d’Azur.

J.-L. Gouzé is in the Inria committee supervising the doctoral theses, and a member of the scientific committee of Labex SIGNALIFE of the University of Nice-Sophia-Antipolis, and of COREBIO PACA. He is in the scientific committee of Académie 4 of UCA-Jedi. He is a member of the board of the SFBT (French Speaking Society for Theoretical Biology).

F. Grogard is a member of the NICE committee, which allocates post-doctoral grants and fundings for visiting scientists at Inria Sophia Antipolis. He is a member of the scientific committee of the doctoral school “Sciences de la Vie” at the University of Nice-Sophia Antipolis.

Since 2015, F. Grogard is a member of the MBIA CSS (Specialised Scientific Commission), in charge of the research scientists evaluation at INRA. He is a member of the steering committee of Academy 3, Space, Environment, Risk & Resilience of UCA-JEDI. He is co-responsible of the development of the MSc Risk of UCA-JEDI.

L. Mailleret is the head of the M2P2 team (Models and Methods for Plant Protection) of ISA. He's in the Unit and scientific council of Institut Sophia Agrobiotech.

S. Touzeau is a member of the steering committee of the metaprogramme SMaCH *Sustainable Management of Crop Health*, INRA (since 2016).

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence: F. Grognard (45.5h ETD) and L. Mailleret (26h ETD), "Equations différentielles ordinaires et systèmes dynamiques", L3, 1st year Engineering in Modeling and Applied Mathematics, Polytech Nice Sophia, Université Nice Sophia Antipolis, France.

Master: O. Bernard (4.5h ETD), "Bioenergy from microalgae", M2, Master International Energy Management : alternatives pour l'énergie du futur, Ecole Nationale Supérieure des Mines de Paris, France.

Master: O. Bernard (18h ETD), "Modeling biotechnological processes", M2, Ecole CentraleSupélec, Saclay, France.

Master: F. Grognard (21h ETD) and L. Mailleret (21h ETD), "Bio-Mathématiques", M1, 2nd year Engineering in Modeling and Applied Mathematics, Polytech Nice Sophia, Université Nice Sophia Antipolis, France.

Master : J.-L. Gouzé (18h ETD), M. Chaves (12h ETD) "Modeling biological networks by ordinary differential equations", M1, 2nd year Engineering in Génie biologique, Polytech Nice Sophia, Université Nice Sophia Antipolis, France.

Master: S. Touzeau (27h ETD), "Analyse de données", M1, 2nd year Engineering in Génie biologique, Polytech Nice Sophia, Université Nice Sophia Antipolis, France.

10.2.2. Supervision

HdR : L. Mailleret. Modélisation et contrôle en dynamiques de populations. Applications en protection des plantes, 16 February 2018, Université Côte d'Azur.

PhD : S. Almeida. "Synchronization of biological oscillators: modeling, analysis and coupling of the mammalian cell cycle and circadian clock", 17 December 2018, Université Côte d'Azur. Supervisors: M. Chaves and F. Delaunay (Univ. Nice, iBV).

PhD : M. Caïa, "Characterization and modeling of a mixotrophic algae - bacteria ecosystem for waste recovery", 13 December 2018, Université Montpellier. Supervisors: J.-P. Steyer and O. Bernard.

PhD : C. Lopez-Zazueta. "Réduction dynamique de réseaux métaboliques par la théorie des perturbations singulières : application aux microalgues", 14 December 2018, Université Côte d'Azur. Supervisors O. Bernard and J.-L. Gouzé.

PhD : V. Burte. "Étude des stratégies de mouvement chez les parasitoïdes du genre Trichogramma : apports des techniques d'analyse d'images automatiques", 14 December 2018, Université Côte d'Azur. Supervisors V. Calcagno et L. Mailleret.

PhD in progress : M. Haond. "Causes et conséquences des fronts de colonisation poussés", since October 2015, Univ. Nice Sophia Antipolis. Supervisors: E. Vercken (UMR ISA), L. Mailleret and L. Roques (UR BioSP).

PhD in progress : L. Chambon. "Control of models of genetic regulatory networks", since October 2016, Université Côte d'Azur. Supervisor J.-L. Gouzé.

PhD in progress : L. Pereira. "Experimental and computational approaches to understanding the molecular origins of drug response heterogeneity, underlying resistance to cancer therapies", since October 2016, Université Côte d'Azur. Supervisors: M. Chaves and J. Roux (IRCAN, Nice).

PhD in progress: M. Gachelin, “Selection pressure to improve lipid productivity of microalgae”, since March 2017, Sorbonne Université. Supervisors: O. Bernard and A. Sciandra.

PhD in progress : E. Firippi. “Mathematical analysis, control design and coupling for models of biological oscillators”, since October 2017, Université Côte d’Azur. Supervisor: M. Chaves.

PhD in progress: A. Yabo, “Control and optimal control of bacterial growth”, since October 2018, Université Côte d’Azur. Supervisors J.-L. Gouzé and J.-B. Caillaud (McTao).

PhD in progress: A. Dos Reis de Souza, “Estimation and Control Methods for Microbial Communities”, since October 2018, Université de Lille. Supervisors: J.-L. Gouzé and D. Efimov (Valse, Inria Lille).

PhD in progress: S. Nilusmas, “Gestion durable des nématodes à galles en cultures maraîchères : modélisation et optimisation du déploiement des résistances et des pratiques agronomiques”, Université Côte d’Azur, since December 2016. Supervisors: S. Touzeau, C. Caporalino (ISA), V. Calcagno (ISA) and L. Mailleret.

PhD in progress: I. Tankam Chedjou, “Modeling, analysis and control of plantain plant-parasitic nematodes”, University of Yaoundé 1, since December 2015. Supervisors: J.-J. Tewa, F. Grognard, L. Mailleret, S. Touzeau.

PhD in progress: Y. Fotso Fotso, “Modeling, analysis and control of coffee berry borers”, University of Dschang, since January 2017. Supervisors: S. Bowong, B. Tsanou, F. Grognard, L. Mailleret, S. Touzeau.

10.2.3. Master thesis and internships

PFE: Adrien Boudin, “Contrôle optimal des ressources dans une cellule”, EPU MAM, supervisors J.-L. Gouzé et JB. Caillaud (McTao).

Engineer: Bruno Assis Pessi, “Modeling microalgal growth under a greenhouse”, Ecole CentraleSupélec, supervisor O. Bernard.

M2: Jenna Balaguer, “Effect of background turbidity on microalgae growth”, Sorbonne Université, supervisor O. Bernard.

M2: Jean-Baptiste Excoffier, “Modélisation in silico de médicaments, et personnalisation des traitements”, Université Côte d’Azur, supervisors J.-L. Gouzé and F. Dayan (Exacture).

M2: Pauline Clin, “Résistance systémique acquise, mélanges variétaux et épidémiologie évolutive des interactions plantes-pathogènes”, Université de Rennes 1, supervisors F. Grognard and F. Hamelin (Agrocampus Ouest).

M1: David Davtian, “Modélisation multi-agent pour l’étude et l’optimisation des introductions biologiques”, Université Côte d’Azur, supervisors L. Mailleret and F. Grognard.

M1: Thomas Brenière, “Physiologie de la plante attaquée par les nématodes: Modélisation et expérimentation”, INSA Lyon, supervisors V. Baldazzi and C. Djian-Caporalino (ISA, INRA Sophia Antipolis).

Other: O. Bernard supervised a project involving 4 students from CentraleSupélec (first year of engineering school), 4 months, to design a system for detecting contamination in microalgae cultures.

10.2.4. Juries

V. Baldazzi and L. Mailleret participated in the thesis committee of Marta Zaffaroni (INRA Avignon) in October 2018.

O. Bernard was reviewer for the PhD thesis of G. Jeanne “Optimization of bioprocess design: towards an integrated approach synthetic biology and process control”. University Paris-Saclay (27 Sept. 2018).

M. Chaves was member of the jury for the PhD thesis of Sofia Almeida, December 2018.

J.-L. Gouzé and O. Bernard were in the jury of the PhD of Claudia Lopez Zazueta “Réduction dynamique de réseaux métaboliques par la théorie des perturbations singulières : application aux microalgues.” Université Côte d’Azur, December 14, 2018.

J.-L. Gouzé was reviewer of the PhD of Hongjun Ji “Systèmes dynamiques coopératifs appliqués en biologie”, Sorbonne Université, October 11, 2018.

S. Touzeau was the external examiner of Rebecca Bekker’s MSc thesis in Applied Mathematics “Mathematical models of the epidemiological dynamics of soil-borne pathogens”, University of Pretoria, South Africa, 2018.

S. Touzeau was a member of the selection committee MC 25–26 “Analyse des EDP pour la dynamique des populations”, University of Bordeaux, France, 2018.

10.3. Popularization

10.3.1. Articles and contents

- A popularization paper has been published on the study of peach sugar metabolism [64].
- L. Mailleret was a co-author of the press kit “Les conquêtes de l’INRA pour le biocontrôle” [86].
- The activities related to microalgae have generated many articles in national newspapers (Le Monde, Nice Matin, ...), and broadcasts on national TV (France 3). See, for instance, <https://www.nicematin.com/vie-locale/ces-azureens-inventent-223249>.

10.3.2. Interventions

- O. Bernard together with R. Lemée gave a general public conference on the topic “Les microalgues en Méditerranée: quels avenir environnementaux, énergétiques, sanitaires et industriels?” (MA-MAC, Nice, 6 Apr 2018).
- L. Chambon and O. Bara participated in the open doors days of Inria Sophia-Antipolis on the 7th of October. L. Chambon presented a popularization poster about Biocore scientific methodologies to general public.
- L. Chambon represented Biocore, Inria in the national event “Fête de la Science” in Mouans-Sartoux and Juan-les-Pins (13th and 20th of October). She presented scientific popularization games and experiments to children and general public.
- L. Mailleret presented three Posters on biological control with predatory mites during the visit of the national press (AFP, France Inter, Le Parisien,...) at Institut Sophia Agrobiotech on the 30th of May 2018.

CARMEN Project-Team

8. Dissemination

8.1. Promoting Scientific Activities

8.1.1. Scientific Events Selection

8.1.1.1. Chair of Conference Program Committees

N. Zemzemi organized a mini-symposium “inverse problems in cardiac electrophysiology” at the PICO conference (Inverse Problems, Control and Shape Optimization conference), which was held at the American University of Beirut, Lebanon, June 18–20, 2018.

8.1.1.2. Member of the Conference Program Committees

M. Potse: track chair (modeling) for *International Congress of Electrocardiology*, Chiba, Japan, June 2018.

8.1.1.3. Reviewer

M. Potse, Y. Coudière: reviewers for *Computing in Cardiology*, Maastricht, The Netherlands, September 2018.

8.1.2. Journal

8.1.2.1. Member of the Editorial Boards

M. Potse: associate editor of *Frontiers in Cardiac Electrophysiology*.

M. Potse: section editor (Electrocardiology and Computing), *Journal of Electrocardiology*.

8.1.2.2. Reviewer - Reviewing Activities

L. Weynans: Computers and Fluids, Multiscale Modeling and Simulation

M. Potse: Heart Rhythm, Medical & Biological Engineering & Computing, Journal of Electrocardiology, Frontiers in Computational Physiology and Medicine, Mathematical Biosciences, American Journal of Physiology.

Y. Coudière: Journal of computational and applied mathematics, PLOS ONE, SMAI Journal of Computational Mathematics

N. Zemzemi: Inverse Problems, Europace, Inverse Problems in Science and Engineering, Mathematical Modelling of Natural phenomena.

M. Bendahmane: Afrika Matematika, Journal of Computational and Applied Mathematics, Journal of Theoretical Biology.

8.1.3. Invited Talks

L. Weynans. “Local Lubrication Model for Ellipsoidal Particles within an Incompressible Navier-Stokes Flow.” Pre-meeting of the Fifth International Workshop on Modeling, Analysis, Simulations, and Applications of Inter-Facial Dynamics and FSI Problems (IMA-FSI), Chinese Academy of Sciences, Beijing.

L. Weynans. “Super-convergence of the gradient for the Shortley-Weller method.” Fifth International Workshop on Modeling, Analysis, Simulations, and Applications of Inter-Facial Dynamics and FSI Problems (IMA-FSI), Chinese Academy of Sciences, Sanya, China, June 2018

M. Bendahmane, “Mathematical analysis and numerical simulation of optimal control in cardiac models.” ENSA d’Essaouira, Université Cadi Ayyad, Morocco, April 2018.

M. Bendahmane, “Recent progress on Inverse problems in Electrocardiology.” Université Cadi Ayyad, Morocco, December 2018.

M. Potse, “The lead field: modern applications of a classic.” International Congress of Electrophysiology, Chiba, Japan, June 2018.

Y. Coudière, “Modeling the propagation of cardiac action potential in hearts with structural heterogeneities.” 18ème Journée “Calcul scientifique et modélisation mathématique” aux journées scientifiques de l’Université d’Amiens, <https://www.u-picardie.fr/recherche/presentation/actualites/18eme-journee-calcul-scientifique-et-modelisation-mathematique-514070.kjsp>

Y. Coudière, “Modeling the propagation of cardiac action potential in hearts with structural heterogeneities.” INdAM Workshop “Mathematical and Numerical Modeling of the Cardiovascular System,” Roma, April 16–19, 2018 Istituto Nazionale di Alta Matematica (INdAM) <http://www-dimat.unipv.it/workshoproma/>

Y. Coudière, “Modeling the propagation of cardiac action potential in hearts with structural heterogeneities.” QBIO2018 – Quantitative Biomedicine in Health and Disease, Bilbao, February 28th–March 1st, 2018. <https://wp.bcama.org/qbio/>

Y. Coudière, “Simulation numérique en électrocardiologie.” 2ième Edition “Rencontre Santé Civilo-Militaire du Sud-Ouest,” 27 March 2018. <https://sante.u-bordeaux.fr/Actualites/2eme-Edition-Rencontre-Sante-Civilo-Militaire-du-Sud-Ouest>

N. Zemzemi gave a talk “Inverse problems in cardiac electrophysiology” at the LIRIMA evaluation seminar 18 and 19 september 2018,

8.1.4. Leadership within the Scientific Community

M. Potse: council member of the International Society of Electrophysiology.

Y. Coudière: committee member HCERES for the evaluation of the UMMISCO lab (<http://www.ummisco.fr/>) 27–28 February, 2018.

Y. Coudière: recruitment committee ATER, IUT de Bordeaux, May 2018

Y. Coudière: special recruitment committee for a permanent contract (LRU) for J. Bayer.

L. Weynans: local correspondent for SMAI.

N. Zemzemi: recruitment committee of permanent research scientists at Inria Bordeaux Sud-Ouest 2018.

8.1.5. Research Administration

L. Weynans: member of the “Conseil du département Sciences et Technologies” of Bordeaux University.

Y. Coudière: Scientific responsibility of the IMB (CNRS UMR 5251) team “Calcul Scientifique et Modélisation,” ~ 60 persons.

N. Zemzemi: Administration of the Inria associated team Epicard.

M. Leguèbe: co-organization of team “Calcul Scientifique et Modélisation” seminar (IMB, Université de Bordeaux).

8.2. Teaching - Supervision - Juries

8.2.1. Teaching

A. Karaoui, Initiation à l’informatique, 34h, L1 Université de Bordeaux, France

A. Gérard, TD Analyse Numérique, 48h, ENSEIRB-Matmeca, Bordeaux, France

A. Gérard, Équations différentielles, 20h, ENSEIRB-Matmeca, Bordeaux, France

A. Gérard, TP Programming in C++, 48h, ENSEIRB-Matmeca, Bordeaux, France

M. Leguèbe, Utilisation de plateforme industrielle pour le calcul intensif, 16h, M1, Université de Bordeaux, France

L. Weynans, Cours Programmation avancée pour le calcul scientifique, 24h, L3, Université de Bordeaux, France

- L. Weynans, Introduction Analyse Numérique, 24h, L3, Université de Bordeaux, France
- L. Weynans, Linear Algebra, L1, Université de Bordeaux, France
- L. Weynans, encadrement de projets 1ère année Matmecca, 25h, L1, Université de Bordeaux, France
- L. Weynans, TD approximation of partial differential equations, M1, Université de Bordeaux, France
- L. Weynans, integration and rational fractions, 1st year prepa INP
- N. Zemezmi, Optimisation et statistiques, 80h, ESSCA Bordeaux, France
- N. Zemezmi, Computational modeling in medicine, 8h, PhD, Université de Bordeaux, France
- N. Zemezmi, Modelling and numerical methods in cardiac electrophysiology, 14h, doctoral school, department of mathematics Puebla, Mexico,
- M. Bendahmane, Algèbre Linéaire, CM/TD 36h, L2, Université de Bordeaux, France
- M. Bendahmane, Fonctions de plusieurs variables et optimisation, TD 33h, L2, Université de Bordeaux, France
- M. Bendahmane, Neurosciences computationnelles applications à l'ingénierie, CM/TD 30h, M2, Université de Bordeaux, France
- M. Bendahmane, Séries et intégrales multiples, CM 27h, L2, Université de Bordeaux, France
- M. Bendahmane, Séries et intégrales multiples, TD 25h, L2, Université de Bordeaux, France
- M. Bendahmane, Mise à niveau L2, TD, 12h L2, Université de Bordeaux, France
- M. Bendahmane, Neuropsychologie et Psychophysologie, CM 7h L3, Université de Bordeaux, France
- M. Bendahmane, Neuropsychologie et Psychophysologie, TD 8h L3, Université de Bordeaux, France
- Y. Coudière, GTA, 12h, L3, Université de Bordeaux, France
- Y. Coudière, utilisation de plateforme de calcul intensif, 28h, M1, Université de Bordeaux, France
- Y. Coudière, Éléments finis avancés, 36h, M2, Université de Bordeaux, France
- Y. Coudière, Projets longs, 20h, INP-MATH
- Y. Coudière, Enseignement scientifique Médecine, 4h, L2, Université de Bordeaux, France
- Y. Coudière, responsable for Licence and Masters teaching at the Mathematics department, Université de Bordeaux, France

8.2.2. Supervision

PhD thesis, P-E. Bécue, "Modélisation et simulation de l'électrophysologie cardiaque à l'échelle microscopique." Université de Bordeaux, 5 December 2018, supervised by Y. Coudière.

8.2.3. Juries

Y. Coudière: jury member for HDR, L. Weynans, "Prise en compte précise de géométries complexes pour l'approximation d'EDP sur grilles cartésiennes et leur simulation en calcul parallèle," Université de Bordeaux, 4 December 2018.

L. Weynans, M. Potse: jury members for PhD thesis of P-E. Bécue, "Modélisation et simulation de l'électrophysologie cardiaque à l'échelle microscopique." Université de Bordeaux, 5 December 2018, supervised by Y. Coudière.

Y. Coudière, jury member (rapporteur) for the PhD thesis of S. Corre, Insa de Rennes, 19 October 2018.

8.3. Popularization

8.3.1. Internal or external Inria responsibilities

- L. Weynans is responsible for the communication (*Chargé de communication*) of the IMB
- Exhibit at the open days on the occasion of the 10-years anniversary of the Inria center Bordeaux Sud-Ouest.

8.3.2. Interventions

L. Weynans:

- Organization of the day “Filles et Maths, une équation lumineuse”
- Several presentations for high-school students about scientific computing

DRACULA Project-Team

7. Dissemination

7.1. Promoting Scientific Activities

7.1.1. Scientific Events Organisation

7.1.1.1. General Chair, Scientific Chair

- Olivier Gandrillon International Conference of Systems Biology 2018, Lyon, France <http://icsb2018-france.com/>.

7.1.1.2. Member of the Organizing Committees

- Fabien Crauste, International Conference of Systems Biology 2018, Lyon, France <http://icsb2018-france.com/>.
- Laurent Pujo Menjouet, co-organization of the minisymposium « Hematopoiesis and its disease » at ECMTB 2018, 11th European Conference on Mathematical and Theoretical Biology, Lisbon, Portugal, 23 – 27 July , 2018

7.1.2. Scientific Events Selection

7.1.2.1. Reviewer

M .Adimy : 2nd International Conference on Applied Mathematics (ICAM 2018), 2018 Fez-Morocco,

7.1.3. Journal

7.1.3.1. Member of the Editorial Boards

- O. Gandrillon Associate editor for BMC research notes
- M. Adimy Journal of Nonlinear Systems and Applications; Chinese Journal of Mathematics.
- L. Pujo Menjouet :Associate editor of PLOS ONE Journal of Thoerical Biology, Mathematical modelling of natural phenomena

7.1.3.2. Reviewer - Reviewing Activities

- O. Gandrillon : BioEssays, BioTechniques, BMC Bioinformatics, BMC Genomics, Cell Biology and Toxicology, Genes, Genomics, Journal of the Royal Society Interface, Journal of Theoretical Biology, Molecular BioSystems, Nature Communications, npj Systems Biology and Applications, Plos Computational Biology and Progress in Biophysics and Molecular Biology
- L. Tine Journal of Theoretical Biology
- T. Lepoutre Applied Mathematical Letters, Journal of Differential Equations, Siam Journal of Mathematical Analysis, Marrow
- L. Pujo Menjouet Journal of Theoretical Biology Bulletin of mathematical biology Journal of mathematical biology Plos computational biology
- S. Bernard J Theor Biol, Comput and Appl Math, J Roy Soc Interface

7.1.4. Invited Talks

- S Bernard, Modélisation mathématique de la croissance et de la réparation tissulaire, Fondation Les Treilles, Tourtour FR, 12-17/11/2018
- S Bernard, Workshop Mathematics of Biological rhythms, Northumbria University, Newcastle, 3-5/12/2018
- Thomas Lepoutre : Mathematical perspectives in the biology and therapeutics of cancer, Cirm, Luminy France, <https://mathscancer.sciencesconf.org/>

- Thomas Lepoutre : Mathematical Challenges in the Analysis of Continuum Models for Cancer Growth, Evolution and Therapy, CMO, Oaxaca MEXICO, <https://www.birs.ca/events/2018/5-day-workshops/18w5115>
- Mostafa Adimy, 2nd International Conference on Applied Mathematics (ICAM 2018), Fez-Morocco.
- Mostafa Adimy, 2ème Colloque des Mathématiciens Marocains à l'étranger, Marrakech-Morocco.
- Mostafa Adimy, 8th Mathematical and Biological School (Programa Argentino BIOMAT), Córdoba-Argentina.
- Mostafa Adimy, Mathematical Challenges in the Analysis of Continuum Models for Cancer Growth, Evolution and Therapy, Oaxaca, Mexico. <https://www.birs.ca/events/2018/5-day-workshops/18w5115>
- Laurent Pujo Menjouet, talk at the minisymposium « Topics in structured population dynamics » ECMTB 2018, 11th European Conference on Mathematical and Theoretical Biology, Lisbon, Portugal, 23 – 27 Juillet , 2018
- Laurent Pujo Menjouet, LIAM-IRC-MfPH 2018 Symposium in Structured population models: theory, numerics and applications, 27-29 août 2016

7.1.5. Leadership within the Scientific Community

- O. Gandrillon : Director of BioSyL, the Federative Research Structure for Systems Biology attached to University of Lyon
- T. Lepoutre : Head of the Groupe de Recherches CNRS MAMOVI on applied mathematical modelling in Life Sciences.

7.1.6. Scientific Expertise

- L. Pujo Menjouet: reviewer for ANR

7.1.7. Research Administration

- L.M. Tine :Membre conseil du département de Mathématiques, Lyon 1
- L.M. Tine Co-responsable de l'enseignement TMB (Techniques Mathématiques de Base) du portail PCSI.
- M. Adimy : Comité scientifique (COS) du centre Rhône-Alpes.
- M. Adimy : Comité scientifique (CS) de l'Institut Camille Jordan.
- M. Adimy : Comité des thèses de l'Institut Camille Jordan.
- M. Adimy : Comité d'évaluation de l'Université de Guyane.
- L. Pujo- Menjouet : Responsable de la filière mathématiques pour la biologie et la médecine pour le master 2 math en actions à l'université Claude Bernard Lyon 1,
- L. Pujo- Menjouet : correspondant mobilité international pour le département de mathématiques à l'université Claude Bernard Lyon 1,
- L. Pujo- Menjouet : directeur du portail mathématiques et informatique à l'université Claude Bernard Lyon 1,
- T. Lepoutre member of the CORDI-S commission.

7.2. Teaching - Supervision - Juries

7.2.1. Teaching

Licence: Samuel Bernard: Algèbre Linéaire, 15h, L3, INSA

Licence: Samuel Bernard: EDO-EDP, 15h, L3, INSA

- Licence : Ronan Duchesne, Anglais, 5h, L3
- Licence : Ronan Duchesne, Modélisation des systèmes biologiques, 22h, L3
- Licence : Ronan Duchesne, Bioinformatique, 20h, L3
- Licence : Ronan Duchesne, Développement, 4h, L3
- Licence : Simon Girel, Fondamentaux des mathématiques 1, 86h, L1, Université Lyon 1, France
- Licence : Simon Girel, Introduction à l'analyse numérique, 10h, L1, Université Lyon 1, France
- Licence: Laurent Pujo Menjouet, Fondamentaux des mathématiques I, 138h EQTD, L1, UCBL 1, FRANCE
- Licence: Laurent Pujo Menjouet, Introduction à l'analyse numérique, 62h EQTD, L2, UCBL 1, FRANCE
- Licence: Laurent Pujo Menjouet, bio-mathématiques et modélisation BISM, 10.5h EQTD, L3 UCBL 1, FRANCE
- Licence: Laurent Pujo Menjouet, 3ème année biosciences BIM: EDO, 35h EQTD, INSA Lyon, FRANCE
- Licence : L. M. Tine, Techniques mathématiques de base, 53h (EqTD), niveau L0, Lyon 1, France.
- Licence : L. M. Tine, Techniques mathématiques de base, 62h (EqTD), niveau L1, Lyon 1, France.
- Licence : L. M. Tine, Initiation LaTeX+ stage, 12h (EqTD), niveau L3, Lyon 1, France.
- Master : Samuel Bernard, Population Dynamics, 36h ETD, M2, UCBL, Lyon.
- Master : Mostafa Adimy, Population Dynamics, 9h ETD, M2, UCBL, Lyon.
- Master : Mostafa Adimy, Epidemiology, 12h ETD, M2, UCBL, Lyon.
- Master : Ronan Duchesne, Biologie du développement, 12h, M1
- Master : Ronan Duchesne, Statistiques, 2h, M1
- Master : Ronan Duchesne, Adaptation, 2h, M1
- Master : Ronan Duchesne, Practicals in statistics and modelling for the biosciences, 28h, M2
- Master: Thomas Lepoutre, préparation à l'option pour l'agrégation, 45 h eq TD, M2 UCBL 1, FRANCE
- Master: Laurent Pujo Menjouet, maths appliquées et statistiques: Systèmes dynamiques, 78h EQTD, M1, UCBL 1, FRANCE,
- Master: Laurent Pujo Menjouet, master modélisation des systèmes complexes: modelling biology and medicine, M2, 9h EQTD, ENS-Lyon, FRANCE
- Master: Laurent Pujo Menjouet, INSA 4ème année biosciences BIM: ED-EDP, 22h EQTD, M1 INSA Lyon, FRANCE
- Master: L. M. Tine, Maths en action, Remise à niveau analyse, 12h (EqTD), niveau M2, Lyon 1, France.
- Master: L. M. Tine, Maths en action, épidémiologie, 18h (EqTD), niveau M2, Lyon 1, France.

7.2.2. Supervision

- PhD in progress: Aurélien Canet, "Contribution à l'étude de la quantification de la réponse d'une tumeur solide après un traitement par radiothérapie", Université Lyon, since January 2016, encadrants: Larry Bodgi, Nicolas Foray and Laurent Pujo Menjouet.
- PhD in progress: Kyriaki Dariva, "Modélisation mathématique des interactions avec le système immunitaire en leucémie myéloïde chronique". Université Lyon 1, September 2018, supervisor : Thomas Lepoutre
- PhD in progress: Ronan Duchesne, "Vers un modèle multi-échelle de la différenciation cellulaire : Application à la différenciation érythrocytaire", École normale supérieure de Lyon and Université Lyon 1, since September 2016, supervisors: Olivier Gandrillon and Fabien Crauste.

PhD in progress: Alexey Koshkin, Inferring gene regulatory networks from single cell data , ENS de Lyon, since September 2018, supervisors : Olivier Gandrillon and Fabien Crauste.

PhD in progress : Paul Lemarre, " Modélisation des souches de prions". Université Lyon 1, since May 2017, supervisors Laurent Pujo Menjouet et Suzanne Sindi (University of California, Merced)

PhD : Arnaud Bonnaffoux, Vers une inférence automatique de réseaux de gènes dynamiques à partir de « mégadonnées » temporelles discrètes acquises sur cellules uniques, Université Lyon 1, October 2018, Olivier Gandrillon (CIFRE with the COSMOTECH).

PhD : Loïs Boullu, Modélisation de la mégacaryopoïèse et applications aux maladies liées à la production des plaquettes, Université Lyon 1, November 2018, Laurent Pujo Menjouet and Jacques Bélaïr (co-tutelle avec l'Université de Montréal).

PhD : Simon Girel, Modélisation de la réponse immunitaire T CD8 : analyse mathématique et modèles multi-échelles, Université de Lyon, November 2018 , encadrant: Fabien Crauste.

PhD : Ulysse Herbach, Modèles graphiques probabilistes pour l'inférence de réseaux de gènes, Université Lyon 1, September 2018, Olivier Gandrillon, Thibault Espinasse (ICJ) and Anne-Laure Fougères (ICJ).

7.2.3. *Juries*

We separate the juries of team members from external participations. PhD Defense within the team in 2018

- Arnaud Bonnaffoux (O. Gandrillon supervisor),
- Loïs Boullu (L. Pujo Menjouet supervisor, M. Adimy and F. Crauste examiners),
- Ulysse Herbach (O. Gandrillon supervisor)
- Simon Girel (F. Crauste supervisor L. Pujo Menjouet examiner).
- M. Adimy: PhD of Linlin Li, Mathematical analysis of a model of partial differential equations describing the adaptation of mosquitoes facing the usage of insecticides, University of Bordeaux, reviewer.
- M. Adimy: PhD of Zhengyang Zhang, A class of state-dependent delay differential equations and applications to forest growth, University of Bordeaux, examiner.
- V. Volpert: PhD of Guillaume Cantin, Étude de réseaux complexes de systèmes dynamiques dissipatifs ou conservatifs en dimension finie ou infinie. Application à l'analyse des comportements humains en situation de catastrophe. Université Le Havre Normandie, examiner.
- S. Bernard : Charles Rocabert, Etude de l'évolution de micro-organismes bactériens par des approches de modélisation et de simulation informatique, INSA Lyon, (examiner)

7.3. Popularization

7.3.1. *Articles and contents*

- L. Pujo Menjouet : interview dans Causette (hors série Juillet-Août 2018)
- L. Pujo Menjouet : interview dans le magazine Society (fin juillet 2018)

7.3.2. *Interventions*

- T. Lepoutre: Visite de l'inria pour les stagiaires de 3e de l'ICJ (plusieurs fois dans l'année, une matinée en général).
- T. Lepoutre: présentation de l'antenne et des équipes à deux classes lors du congrès Maths en Jeans (mars 2018)
- T. Lepoutre participation to MathaLyon interventions
- L. Pujo Menjouet : participation à Math en Jeans édition 2018 (collège de la côte Roannaise, Renaison)
- L. Pujo Menjouet : présentation de deux conférences au collège de Saint Bonnet le château le 21 juin 2018

M3DISIM Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific events organisation

10.1.1.1. General chair, scientific chair

R. Chabiniok, Organization of “MRI & Modelling workshop” related to the Inria Associate Team ToFMOD at Inria Paris-Saclay where hosting 14 international speakers from France, UK, USA, Switzerland, Chile, Czech Republic from the domains of MRI, cardiology and modelling (June 21)

R. Chabiniok, Co-chair of the section “Groupe de recherche en imagerie cardiaque” at French Congress of Radiology (Journées Francophones de Radiologie, JFR), Paris (October 12-15)

D. Chapelle, Co-chair of organising committee for VPH2020 Conference (Paris, August 2020)

D. Chapelle, Session co-chair in VPH18 Conference

M. Genet, Session co-chair at the 8th World Congress on Biomechanics, Dublin (July)

F. Clément, Session *Methodological developments for Systems Biology (A)*, ICSB 2018

P. Moireau, Session co-chair in VPH18 Conference

10.1.1.2. Member of organizing committees

M. Genet, Co-organizer of the Paris-Saclay University Biomechanics Seminar Series

A. Le Gall, Member of the organizing committee of WEARE 2018

A. Le Gall, Member of the organizing committee of the youth session of the national congress of the french society anesthesiology, intensive care, and peri-operative medicine

A. Le Gall, Member of the organizing committee of the youth days of teaching of the national congress of the french society anesthesiology, intensive care, and peri-operative medicine

P. Moireau, Member of the a organizing committee of the VPH2020 conference (Paris, August 2020)

P. Moireau, Member of the organizing committee of the Inria-Saclay teams (Poems-M3disim-Defi) scientific computing seminar

10.1.2. Scientific events selection

10.1.2.1. Reviewer

F. Clément *American Control Conference* 2019

P. Moireau, reviewer for VPH18

10.1.3. Journal

10.1.3.1. Member of editorial boards

D. Chapelle, Member of the editorial board of journal *Computers & Structures*

D. Chapelle, Member of the editorial board of journal *ESAIM: M2AN*

10.1.3.2. Reviewer - Reviewing activities

J.M. Allain, reviewer for “Acta Biomateriala”, “Journal of the Mechanical Behavior of Biomedical Materials” and “Journal of Applied Mathematics and Mechanics”

R. Chabiniok, reviewer for “Biomechanics and Modeling in Mechanobiology”, “Transactions Of Society For Modeling And Simulations” and “Journal of Imaging”

D. Chapelle, reviewer for “Biomechanics and Modeling in Mechanobiology”, “Computers & Structures”, “International Journal for Numerical Methods in Biomedical Engineering”, “Meccanica”

F. Clément, Reviewer for “Journal of Mathematical Biology”, “PLOS Computational Biology” and “Endocrinology”

M. Genet, Reviewer for “Biomechanics and Modeling in Mechanobiology”

S. Imperiale, reviewer for “Journal of Mathematical Analysis”, “Journal of Computational Acoustics”, “SIAM Journal on Scientific Computing” and “SIAM Journal on Numerical Analysis”

P. Moireau, reviewer for “AMSES” and “IEEE Control Systems Letters”

F. Robin, Reviewer for “Journal of Mathematical Biology”

10.1.4. Invited talks

J. M. Allain, invited seminar at Century institut, France.

F. Caforio, seminar tours at the School of Biomedical Engineering and Imaging Sciences, King’s College London, UK, Simula Research Laboratory, Oslo, Norway and KFU university, Graz, Austria

R. Chabiniok, seminar tours at Institute for Clinical and Experimental Medicine, Mathematical Institute of Charles University and Children’s Heart Center at Motol University Hospital, Prague, Czech Republic

R. Chabiniok, invited lectures at Journées Francophones de Radiologie diagnostique et interventionnelle), France and at International Symposium on Modeling, Simulation and Optimization of the Cardiovascular System, Lukasklause Magdeburg, Germany

D. Chapelle, invited seminars at Politecnico di Milano (MOX), and for Dassault-Systèmes’ Living Heart Project

M. Genet, invited seminar at the School of Biomedical Engineering and Imaging Sciences, King’s College London, UK

S. Imperiale, invited lecture at ICERM, Brown University, USA

P. Le Tallec, seminar tours at University of Michigan, Michigan State University, Notre Dame University and University of Wisconsin at Madison, USA

P. Le Tallec, invited lecture at Charif University, Iran

P. Moireau, invited lectures at VPH18, CEMRACS2018 Luminy and FoMICS Summer School

P. Moireau, invited seminars at MOX, Politecnico di Milano, Italy and LMT, ENS Cachan, France

F. Robin invited seminar at Institut Élie Cartan de Lorraine, Nancy

10.1.5. Leadership within the scientific community

D. Chapelle, Member of the board of directors of the VPH Institute

D. Chapelle, Member of the steering committee of the BioMedical Engineering Institute coordinated by Ecole Polytechnique

F. Clément, member of the direction and scientific board of GdR REPRO

A. Le Gall, Chair of youth committee of SFAR (French Society of Anesthesia and Reanimation)

P. Le Tallec, Director of LMS (Solid Mechanics Laboratory) Ecole Polytechnique

P. Le Tallec, President of the Mechanics department at University Paris-Saclay

P. Moireau, Member of the steering committee of Department of Mathematics of Université Paris Saclay and Jacques Hadamard Foundation

10.1.6. Scientific expertise

R. Chabiniok, Honorary medical consultant at Saint-Thomas hospital (King’s College London)

R. Chabiniok, scientific consultant for the joint project of Institute for Clinical and Experimental Medicine in Prague (IKEM) and Czech Technical University

F. Clément, Reviewer for ANR

F. Clément, expert of the BCDE (Cell Biology, Development and Evolution) ITMO (Multi Organization Thematic Institute) of the French National Alliance for Life and Health Sciences Aviesan.

F. Clément, expert for the INRA scientific prospective on predictive approaches in biology and ecology

S. Imperiale, Consultant for CEA

P. Le Tallec, Consultant for CEA

P. Le Tallec, Consultant for Michelin

P. Moireau, Reviewer for ANR

10.1.7. Research administration

J.M. Allain, Scientific Advisory Board, chair BioMecAM

R. Chabiniok, in charge of the objectives of Inria Associate team ToFMODE (with UT Southwestern Medical center Dallas, USA)

R. Chabiniok, in charge of coordination of clinical-modeling projects in the M3DISIM team, Inria Saclay

D. Chapelle, Head of Science of Inria Saclay-Ile-de-France, and member of the Inria Evaluation Committee

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Bachelor: J.M. Allain, “Introductory Projects in Physics”, 10h, (L1), École Polytechnique, France

Bachelor: J.M. Allain, “Classical Mechanics”, 32h, (L2), École Polytechnique, France

Bachelor: F. Caforio, “PEIP1 S2 M2 – Mathematical analysis in two and three dimensions, linear algebra in \mathbb{R}^n ”, 22h, (L1), Polytech Paris-Sud, France

Bachelor: F. Caforio, “Math 255 – Differential calculus for physics (mathematical analysis in two and three dimensions)”, 42h, (L2), Université Paris-Sud, France

Bachelor: M. Genet, “Continuum Mechanics I”, 40h, (L3), École Polytechnique, France

Bachelor: M. Genet, “Modeling and Simulation in Industrial Mechanics”, 36h, (L3), École Polytechnique, France

Bachelor: S. Imperiale, “MA102 – Analyse pour les EDP”, 24h, (L3), ENSTA ParisTech, France

Bachelor: F. Kimmig, “Modeling and simulation in industrial mechanics”, 32h, (L3), École Polytechnique, France

Bachelor: P. Le Tallec, “MEC 431 – Mécanique des Milieux Continus 2”, (L3), École Polytechnique, France

Bachelor: P. Le Tallec, “Continuum mechanics”, 32h, (L3), Shanghai ParisTech, China

Bachelor: P. Moireau, “MAP 431 – Analyse variationnelle”, 40 h, (L3), Ecole Polytechnique, France

Bachelor: P. Moireau, “MODAL 472 – Expérimentation numérique pour les EDP”, 40 h, (L3), Ecole Polytechnique, France

Bachelor: F. Robin, “General mathematics”, 13h, (L1), Sorbonne Universités, France

Bachelor: F. Robin, “Probability and differential equation”, 22h (L2), Sorbonne Universités, France

Bachelor: F. Robin, “Power series and integral with parameters”, 20, (L2), Sorbonne Universités, France

Master: J.M. Allain, “Projects in Mechanics”, 6h, (M1), École Polytechnique, France

Master: J.M. Allain, “Cellular motility”, 32h, (M2), École Polytechnique, France

Master: J.M. Allain, “Supervision of the Experimental Center”, 45h, (M1), École Polytechnique, France

Master: D. Chapelle: “Biomechanical Modeling of Active Tissues”, 33h, (M2), Université Paris-Saclay, France

Master: M. Genet, “Plasticity and Fracture”, 18h, (M1), École Polytechnique, France

Master: S. Imperiale, “MA2610 Calcul Scientifique – Mécanique des solides”, 4h, (M1), Centrale/Supélec, France

Master: S. Imperiale, “Simnum – Programmation C++”, 18h, (M1), ENSTA ParisTech, France

Master: P. Le Tallec, “Nuclear Energy on Continuum Mechanics”, 15h, (M2), INSTN, France

Master: P. Moireau, “Biomechanical Modeling of Active Tissues”, 12h, (M2), Université Paris-Saclay, France

Master: P. Moireau, “Méthodes et problèmes inverses en dynamique des populations”, 12h, (M2), UPMC, France

Master: P. Moireau, “AMS305 – Complétion de données et identification dans les problèmes gouvernés par des équations aux dérivées partielles”, 16h, (M2), Université Paris-Saclay, France

10.2.2. Supervision

PhD in progress: E. Berberoglu (ETHZ, Switzerland), “Image Guided Computational Cardiac Mechanics”, started February 2017, supervisors: M. Genet and S. Kozerke (ETHZ, Switzerland)

PhD in progress: F. Caforio, “Modélisation mathématique et numérique de la propagation d’ondes élastique dans le coeur”, started: Nov. 2015, supervisors: D. Chapelle and S. Imperiale

PhD in progress: C. Della Valle, “Modélisation et estimation des dynamiques d’assemblage de protéines”, supervisors: M. Doumic and P. Moireau, Université Paris Sciences et Lettres,

PhD in progress: C. Giraudet, “Cornea biomechanics”, started 10/2018; supervisors: J.M. Allain and P. Le Tallec

PhD in progress: M. Gusseva, “Cardiac Biomechanical Modeling for Chronic Ventricular Loading”, supervisors: R. Chabiniok, D. Chapelle, T. Hussain, Université Paris-Saclay, started in December 2017

PhD: U. Khristenko, Université Paris-Saclay, P. Le Tallec, defended Jan 17th

PhD in progress: F. Kimmig, “Multi-scale modeling of muscle contraction – From stochastic dynamics of molecular motors to continuum mechanics, in interaction with experimental assays”, supervisors: M. Caruel and D. Chapelle, Université Paris-Saclay, started in September 2016

PhD in progress: A. Le Gall, “Cardiac modelling for monitoring purposes during general anaesthesia and at Intensive Care Unit”, supervisors: R. Chabiniok, D. Chapelle, E. Gayat, Université Paris-Saclay, started in November 2016

PhD in progress: C. Patte, “Lung multiscale poromechanical modeling: from breathing to pulmonary fibrosis-induced chronic remodeling”, started November 2017, supervisors: M. Genet and D. Chapelle

PhD in progress: F. Robin “Multiscale modeling of the morphodynamics in ovarian follicles”, started October 2016, supervisors: F. Clément & Romain Yvinec [INRA]

PhD in progress: N. Tueni, “Multiscale modeling of cardiac mechanics”, started January 2018, supervisors: M. Genet and J.-M. Allain

PhD in progress: F. Wijanto, “Modélisation multi-échelle des fibres de collagènes”, started: Sept. 2015, supervisors: J.-M. Allain and M. Caruel

Supervision of a project research in CEMRACS 2018 “ Multiscale population dynamics : interactions between scales in developmental and reproductive biology” (F. Clément, M. Postel and R. Yvinec)

10.2.3. Juries

D. Chapelle, PhD Jury of A. Marboeuf, Ecole Polytechnique, March 8

P. Le Tallec, PhD reviewer of R. Mlika, INSA Lyon, Jan 24

P. Le Tallec, PhD Jury of Q. Pierron, ENSTA ParisTech, May 18

P. Le Tallec, PhD reviewer of L. Poirel, Inria Bordeaux, Nov 28

P. Moireau, PhD Jury of U. Khristenko, Université Paris-Saclay, Jan 17th

P. Moireau, PhD Jury of T. Kritter, Bordeaux University, Oct 1st

10.3. Popularization

J.M. Allain, Co-authored a popularization paper in the “Reflets de la Physique” journal (january-february 2018)

D. Chapelle, Interview in *Sciences et Avenir* (November issue)

M. Genet, Presentation at JeudiX—Research Days at École Polytechnique

C. Patte, Fête des Sciences day, organized by Inria. October 11th

MAMBA Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

- Jean Clairambault, with Jean-Frédéric Gerbeau, Huaxiong Huang, Benoît Perthame and Sivobal Sivaloganathan: organisers of the First Inria-Sorbonne-Université-Fields Institute international workshop on mathematics in medicine, Fields Institute, Toronto, January 31 to February 2, 2018. <http://www.fields.utoronto.ca/activities/17-18/math-medicine>
- Jean Clairambault, with Guillemette Chapuisat, Florence Hubert, Urszula Ledzewicz and Vitaly Volpert: organisers of the International 5-day workshop on Mathematical perspectives in the biology and therapeutics of cancer, CIRM Luminy, July 9-13, 2018. <https://mathscancer.sciencesconf.org/>
- Jean Clairambault, with Tomás Alarcón and Thomas Hillen: organisers of the BIRS-CMO 5-day workshop on Mathematical Challenges in the Analysis of Continuum Models for Cancer Growth, Evolution and Therapy (18w5115), Casa Matemática Oaxaca (Mexico), November 25-30, 2018. <http://www.birs.ca/events/2018/5-day-workshops/18w5115>
- Benoît Perthame, Luis Almeida, Diane Peurichard and Delphine Salort: organizers of the workshop ‘Asymptotic approaches to spatial and dynamical organizations’, July 2018, LJLL, Sorbonne Université, and organizers of the math-bio working group at LJLL, Sorbonne Université
- Diane Peurichard, Dirk Drasdo: organizers of the internal seminar ‘Open MAMBA seminar’ (<https://team.inria.fr/mamba/open-mamba-seminar/>)
- Marie Doumic, with Doron Levy (U. of Maryland, USA), M. Bergmann (Med. University of Vienna) and N. Mauser (Wolfgang Pauli Institute, Vienna) organised a workshop on “Mathematical Models in Cancer”, on July 20th and 21st, 2018.
- Marie Doumic, together with J. Haskovec (KAUST Univ., Saudi Arabia), M.-T. Wolfram (Univ. of Warwick, UK), K. Fellner (Univ. of Graz, Austria) and L. Neumann (U. of Innsbruck, Austria), organised a workshop on “Applied PDEs and kinetic equations: from physics to life sciences and beyond”, in the honor of C. Schmeiser’s 60th birthday.
- L. Almeida, B. Perthame, D. Peurichard and D. Salort have organized the international conference “Asymptotic approach to spatial and dynamical organizations”, 4-6 July 2018 (60 participants)

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

- Philippe Robert was in the PC of the conference “Stochastic Networks” held in Edinburgh 25-29 June 2018.
- Pierre-Alexandre Bliman was in the Editorial Board of the conference “European Control Conference”, Limassol, 12-15 June 2018.
- Dirk Drasdo was member of the Program committee of the SBMC 2018 (Bremen, Germany), July 4-6, 2018.

10.1.2.2. Reviewer

- Pierre-Alexandre Bliman, reviewer for the conferences IEEE Conference on Decision Control, European Control Conference, Indian Control Conference, Joint 9th IFAC Symposium on Robust Control Design and 2nd IFAC Workshop on Linear Parameter Varying Systems

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Philippe Robert is Associate Editor of the journal “Queueing Systems, Theory and Applications”.
- Benoît Perthame is co-editor in chief of *Acta Applicandae Mathematicae* (Springer).
- Dirk Drasdo is associate editorial member of *J. Theor. Biol.* and *Royal Society Open Science*.
- Luis Almeida is Associate Editor of the *Journal of Dynamics and Games* AIMS.

10.1.3.2. Reviewer - Reviewing Activities

- Jean Clairambault, reviewer for different journals in 2018: *PLoS Computational Biology*, *PLoS One*, *Integrative Biology*, *Applied Mathematical Modelling*, *Letters in Biomathematics*, *Journal of Theoretical Biology*, *Bulletin of Mathematical Biology*, *Mathematical Biosciences and Engineering*
- Pierre-Alexandre Bliman, reviewer for the journals *Automatica*, *Proceedings of the Royal Society of Edinburgh*, *Systems and Control Letters*
- Diane Peurichard: reviewer for *Journal of the Royal Society Interface*, *Processes*, *Computation*
- Marie Doumic, reviewer for *J. Math. Biol.*, *SIAM App. Math.*, *Ann. IHP*, *M2AN*, *Inverse Problems*

10.1.4. Invited Talks

- Jean Clairambault: Workshop “Computational Systems Biology for Cancer”, Paris, January 2018; Spring school “Mathematical Modelling of Tumour Growth and Therapy”, CRM, Bellaterra (UAB, Barcelona), April 2018; Workshop “Modelling Biological Phenomena from Nano to Macro Scales”, The Fields Institute, Toronto, May 2018; 4th Annual workshop on mathematics in medicine: mathematical models in cancer, Wolfgang Pauli Institut, Vienna, July 2018; Seminar, DIMEAS, Politecnico di Torino, October 2018; Mathematical and Computational Biology Workshop, Tirana, October 2018; International Conference on Applied Mathematics, Fes (Morocco), October 2018 ; Seminar on mathematical modelling of tissue growth, Les Treilles (Tourtour, France), November 2018; Workshop on Mathematical Challenges in the Analysis of Continuum Models for Cancer Growth, Evolution and Therapy, CMO, Oaxaca, November 2018 (see above: organisation of scientific events); International Program in Mathematical Biology Sep.-Dec. 2018, Institut Mittag-Leffler (Stockholm), December 2018
- Diane Peurichard: Oct 16-18 PSU-P6 workshop “Mathematics of living matter”, Penn State; Jul 23-Jul 27 11th ECMTB Conference, Lisbon, Portugal; Apr 30 May 04 Workshop “Collective dynamics and self-organization in biological sciences”, Edinburgh, Scotland.
- Marie Doumic: Keynote speaker at the BIOMATH 2018 conference, Sofia, Bulgaria, June 25-29 2018; 3h Minicourse for the Doctoral School of Vienna, Weissensee, July 2-5; Workshop “Collective dynamics and self-organisation in biological sciences”, Edinburgh, April 30-May 4
- Dirk Drasdo: Paris, France, Sanofi, 7/11, Seminar: Spatial-temporal MultiScale-multilevel modeling OF DRUG-INDUCED LIVER DAMAGE and ITS Regeneration : Steps towards a VIRTUAL Liver; Paris, France, Ecopa, 6/11, Symposium: how new experimental tools in life science challenge the 3R vision. (5/6.11): Spatial-temporal MultiScale-multilevel modeling of APAP damage and its consequence on ammonia detoxification : Steps towards a virtual Liver; Palaiseau, France, Ecole Polytechnique, 19/10, Guest lecture. Integrated and spatial-temporal multiscale modeling of liver guide in vivo experiments in healthy & chronic disease states: a blue print for systems medicine?; Rome, Italy, 10/10, Mathematics for Biomedicine, 8-11/10: Integrated and spatial-temporal multiscale modeling of liver guide in vivo experiments in healthy & chronic disease states: a blue print for systems medicine?; Pisa, Italy, 5/10, Multiscale modeling and simulations to bridge molecular and cellular scales, 1-5/10: Multi-scale and integrated mathematical modeling of liver function and regeneration: Using mathematical models to guide experiments; Heidelberg, Germany, 1/11, BIOMS-Symposium 2018, 1-2/11: Multi-scale and integrated mathematical modeling of liver function and regeneration: Using mathematical models to guide experiments; Inst. Pasteur, France

20/9, Inst. Seminar: From systems biology to systems medicine: an example: Paracetamol overdose-caused damage & its regeneration: Virtual experiments in organ micro-architectures; Paris, France, 14/4, EASL, 11-14/4: Parameterization of liver metabolism; Lyon, France : From systems biology to systems medicine: an example: Paracetamol overdose-caused damage & its regeneration: Virtual experiments in organ micro-architectures

10.1.5. Leadership within the Scientific Community

Dirk Drasdo is member of the scientific leadership board of the German flagship project LiSyM (Liver Systems Medicine) financed by BMBF (Germany)

10.1.6. Scientific Expertise

- Jean Clairambault and Dirk Drasdo: members of the ANR CES 45 (mathematics and digital sciences for health and biology) selection committee
- Jean Clairambault: member of the review committee for the German FZJ (ForschungsZentrum Jülich)-BMBF funding measure “Demonstrators for Individualised Medicine” within the Framework of the Research and Funding Concept “e:Med Ð Paving the Way for Systems Medicine”, Frankfurt, September 2018
- Jean Clairambault: member of the review committee for the German DLR (Deutsches Zentrum für Luft und Raumfahrt)-BMBF initiative “Systems medicine research consortia”, Berlin, November 2018
- Jean Clairambault: representative of Inria (until June 2018) to the expert group of the ITMO Cancer (Aviesan) and member of the steering committee of the HTE program (2016-2020)
- Diane Peurichard and Marie Doumic: Ambassadeur FSMP for Austria
- Diane Peurichard: member of the selection committee Sorbonne Université, maitre de conference position
- Diane Peurichard: member of the Inria scientific selection committee (CORDI-S PhD, post-docs, delegation)
- Benoît Perthame has been member of the “Chern Prize” committee awarded at ICM 2018 in Rio.

10.1.7. Research Administration

- Pierre-Alexandre Bliman: Coordinator of the ECOS-Nord project C17M01 “News methods for controle of dengue and arboviroses epidemics”.
- Marie Doumic: nominated in Dec. 2018 at the Scientific Council of INSMI, CNRS.
- Dirk Drasdo is member of the scientific leadership board of the German flagship project LiSyM (Liver Systems Medicine) financed by BMBF (Germany).
- Dirk Drasdo guides a research group bi-localized at Inria de Paris and IfADo, Dortmund, currently composed of 3 research engineers, 3 postdocs.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master : Philippe Robert, “Large Stochastic Networks”, 24h, M2, Sorbonne Université, France.

Master: Marie Doumic, ”Inverse problems in Biological Dynamics”, 24h, M2, Sorbonne Université, France

Jean Clairambault: teaching in Spring school “Mathematical Modelling of Tumour Growth and Therapy” (4 one-hour lectures), UAB, Barcelona, April 2018 (see above); Fall teaching (3 one-hour lectures), Politecnico di Torino, October 2018 (see above)

Licence : Pierre-Alexandre Bliman, “Calculus 3”, 90h, L2 and “Analyse”, 60h, L3, Fundação Getulio Vargas, Rio de Janeiro, Brazil

Master : Diane Peurichard, “Fondements des méthodes numériques”, 20h, “Calcul matriciel numérique” 20h

Licence : Diane Peurichard, Licence: “Introduction to Python” 20h

Master : Dirk Drasdo, “Agent-based models of tissue organization”, UPMC M2 course, Paris **24 h / yr**

10.2.2. Supervision

PhD : Wen Sun, “A study of interacting stochastic networks : large scale, long time behavior and fluctuations”, Sorbonne Université, June, 11, 2018, Philippe Robert

PhD : Veronica Quintana Rodriguez, “New Network / IT Command: Virtualized Function Performance for a Programmable Infrastructure”, Sorbonne Université, October 3, 2018, Fabric Guillemain and Philippe Robert.

PhD in progress : Gaëtan Vignoud, “Plasticity of Stochastic Neural Networks”, September 1st, 2018, Philippe Robert, Laurent Venance

Jean Clairambault: supervision of the M2 (‘mathematics of modelling’) internship of Loïs Naudin: “Modélisation du métabolisme énergétique tumoral glycolytique vs. respiratoire oxydatif” and of two groups of four students of the L3 unit 3M101: “Excitabilité cellulaire : une première approche des systèmes dynamiques” and “Étude des équations de Lotka-Volterra”

Jean Clairambault: Supervision of PhD students Camille Pouchol (with Michèle Sabbah and Emmanuel Trélat, ED 386, Sorbonne Université, thesis defence June 2018: “Analysis, control and optimisation of PDEs, application to the biology and therapy of cancer” [1] and Ghassen Haddad (ED 386, Sorbonne Université, and Université Tunis-El Manar, co-supervisor: Slimane Ben Miled), thesis defence planned in December 2018: “Optimisation du traitement du cancer”)

Internship: Supervision of Valeria Caliaro, M1 student from University of Verona (3months internship) on interacting particle networks, Diane Peurichard

Internship: Supervision of S. Zhenyu, M1 student from LJLL, Sorbonne University (3months internship) on coarse graining of a fluid filled with obstacles, Diane Peurichard

Diane Peurichard, Luis Almeida, Benoit Perthame: supervision of project CEMRACS (6weeks)

PhD defended: Noémie Boissier PhD defence in June 2018, supervision by D. Drasdo and I. Vignon-Clementel

PhD in progress: Adrian Friebel, “Software of image processing and analysis of liver tissue at histological scales”, supervision by D. Drasdo and S. Hoehme

Internship: Ismael Gonzalez Valverde, PhD student from Zaragoza by Paul Van Liedekerke and Dirk Drasdo.

10.2.3. Juries

- Ph.D thesis of C. Pouchol, defended on June 29th: participation in the committee of J. Clairambault and B. Perthame.
- Ph.D thesis of M. Strugarek, defended on September 7th: participation in the committee of M. Doumic and B. Perthame.
- Dirk Drasdo was in 2018 member of the ANR-grant selection committee for mathematical modeling in medicine and biology.

10.3. Popularization

10.3.1. Interventions

- Marie Doumic: participation in a round table on December 13th, in Forum Emploi Maths, La Villette, Paris; Participation in a round table on “Science Meets Medicine”, May 29th, in Vienna; presentation to a 12-year old class of pupils of mathematics for biology.
- Several Mamba members have taken part to the activities of the year of mathematical biology declared by European Mathematical Society.
- Dirk Drasdo on liver research and EASL: <https://www.inria.fr/centre/paris/actualites/dirk-drasdo-et-ses-recherches-sur-le-foie>

MONC Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

C. Pognard was one of the chair of the CEMRACS 2018 about "Numerical and mathematical modeling for biological and medical applications: deterministic, probabilistic and statistical descriptions"

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

S. Benzekry was in the Scientific Committee of the "Third MB2 conference (Mathematical Biology Modeling days of Besançon)" held in June 2018 in Besançon, France.

10.1.2.2. Reviewer

B. Denis de Senneville was a reviewer for the IEEE International Symposium on Biomedical Imaging (ISBI) held in April 2018 in Washington DC, USA.

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- S. Benzekry is a member of the Editorial Board of "Mathematical Biosciences and Engineering"
- C. Pognard is a member of the Editorial Board of "Discrete and Continuous Dynamical Systems-S"

10.1.3.2. Reviewer - Reviewing Activities

- S. Benzekry served as a reviewer for PLoS Computational Biology, Medical Image Analysis, Cancer Chemotherapy and Pharmacology, Oncotarget and *Applicandae Mathematica*.
- B. Denis de Senneville served as a reviewer for IEEE Transactions on Medical Imaging, Physics in Medicine and Biology and Journal of Medical Imaging.
- O. Saut served as a reviewer for PLOS One and Computational and Applied Mathematics.

10.1.4. Invited Talks

- S. Benzekry: Jan 2018, Conference on Statistics and Health, Toulouse, France
- S. Benzekry: Feb 2018, CMM-Fields-Inria Workshop on Mathematics for Medicine, Toronto, Canada
- S. Benzekry: Jun 2018, 3rd Mathematical Biology Modelling Days, Besançon, France
- O. Saut: Computational Systems Biology of Cancer, Institut Curie, France
- S. Benzekry: Jun 2018, Mathematical perspectives in the biology and therapeutics of cancer, Marseille, France
- C. Pognard: Jul. 2018, Mathematical perspectives in the biology and therapeutics of cancer, Marseille, France
- S. Benzekry: Jul 2018, Annual Workshop on Mathematics in Medicine, Wolfgang Pauli Institute, Vienna, Austria
- C. Pognard: Aug. 2018, The XIVth Franco-Romanian Conference in Applied Mathematics, Bordeaux, France
- O. Saut: Sep 2018, Virtual Physiological Human Conference (VPH), Zaragoza, Spain

- B. Denis de Senneville: Oct. 2018, Partial Differential Equations for Social and Biological Events, Osaka, Japan
- C. Poignard: Oct. 2018, Partial Differential Equations for Social and Biological Events, Osaka, Japan
- S. Benzekry: Nov 2018, Mathematical Challenges in the Analysis of Continuum Models for Cancer Growth, Evolution and Therapy, Oaxaca, Mexico

10.1.5. Leadership within the Scientific Community

- S. Benzekry was nominated expert within the scientific board of the national multi-thematic institute (ITMO) Cancer of the French alliance for health sciences (AVIESAN).

10.1.6. Scientific Expertise

- B. Denis de Senneville was a grant reviewer for the Swiss National Science Foundation.
- B. Denis de Senneville was in the selection committee for an Assistant Professor position in Bordeaux University.
- C. Poignard was in the Inria CRCN National selection committee

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence : S. Benzekry, Ordinary Differential Equations, 20h, L3, INP Bordeaux, France

Licence : C. Poignard, Undergraduate teaching in Numerical and Applied Mathematics, 80h, L3-M1, INP Bordeaux, ENSAM, France

Licence : B. Denis de Senneville, Probability and Statistics, 30h, L3, INP Bordeaux, France

Master : A. Collin, TP C++, 96h, niveau M1, INP Bordeaux, France

Master : A. Collin, Cours de maillage, 36h, niveau M2, INP Bordeaux, France

Master : A. Collin, Encadrement de projets, 30h, niveaux M1, M2, INP Bordeaux, France

Doctorat : S. Benzekry, Computational modeling in medicine, 6h, Université de Bordeaux, France

10.2.2. Supervision

PhD : T. Kritter, *Utilisation de données cliniques pour la construction de modèles en oncologie*, Université de Bordeaux, 01/10/2018, under the supervision of Olivier Saut et de Clair Poignard

PhD in progress : C. Nicolò, *Mathematical modeling of systemic aspects of cancer and cancer therapy*, 2016 - 2019, under the supervision of S. Benzekry and O. Saut

PhD in progress: S. Corridore, *Mathematical Model for Electroporation*, 2016 - 2019, under the supervision of A. Collin, C. Poignard.

PhD in progress: C. Perier, *Combining texture analysis and modeling for evaluation of therapies and clinical outcome*, under the supervision of B. Denis de Senneville and O. Saut, 2016 - 2019.

PhD in progress: A. Crombé, *Beyond radiomics for soft-tissue sarcoma*, 2017-2020, under the supervision of O. Saut.

PhD in progress: C. Vaghi, *Improving intra-tumor drug distribution of anti-cancer nanoparticles by data-informed mathematical modeling*, Nov 2017 - Nov 2020, under the supervision of S. Benzekry and C. Poignard.

10.2.3. Juries

- S. Benzekry: Committee member of the PhD thesis of A. Rodallec (Aix-Marseille University)
- A. Collin: Committee member of the PhD thesis of T. Kritter (Bordeaux University)
- B. Denis de Senneville: Committee member of the PhD thesis of C. Zachiu

- C. Poignard: Reviewer of the PhD thesis of A. Auvray (Ecole Centrale de Lyon)
- C. Poignard: Committee member of the PhD thesis of T. Ritter (Bordeaux University)
- O. Saut : Committee member of the Phd thesis of J-E Bibault (Univ. Sorbonne Paris Cité).
- O. Saut : Committee member of the PhD thesis of Alexis Arnaud (Grenoble Alpes University).

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- S. Benzekry is a member of the local Inria commission of informatical tools users (CUMI)
- C. Poignard is an elected member of Inria's national evaluation committee.

10.3.2. Interventions

- O. Saut: Fête de la Science, Cap Science, Bordeaux.

NUMED Project-Team (section vide)

REO Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. Member of the Organizing Committees

- Laurent Boudin
 - Member of the organizing committee of the 7th "Forum Emploi Maths", December 2018, Paris
 - Member of both Boards of Mathematics Licence and Master, Sorbonne Université
 - Member of the IREM (Institutes for Research on Mathematics Teaching) Scientific Committee
 - Member of the SMAI (French Society for applied and industrial mathematics) Teaching Committee.
- Céline Grandmont
 - Co-organizer of Inria-LJLL meeting in scientific computing
 - Co-organizer of the CEMRACS 2018
- Irene Vignon Clementel
 - Minisymposium with F. Van de Vosse (Eindhoven U.) at WCCB, Dublin, Ireland.
 - Minisymposium at GDR mecabio January, Toulouse, France.
 - Session to foster collaboration between scientists and medical doctors at the Inria/CentraleSupélec/APHP meeting, November 12, Paris, France.

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

- Irene Vignon Clementel
 - Steering committee, multidisciplinary workshop on surgical innovation WIC, 23-25 June, Cabourg, France
 - Programme committee member, Computational and Mathematical Biomedical Engineering Conference
 - Conference steering committee, International Conference on Engineering Frontiers in Pediatric and Congenital Heart Disease

10.1.2.2. Member of the Editorial Boards

- Jean-Frédéric Gerbeau
 - Member of the editorial board of the SIAM Journal of Scientific Computing (SISC).
 - Series editor of "SEMA SIMAI Series", Springer.
 - Member of the editorial board of Journal Advances in Computational Mathematics (ACOM), Springer
 - Member of the editorial board of International Journal for Numerical Methods in Biomedical Engineering (IJNMBE), Wiley.
 - Member of the editorial board of Communications in Applied and Industrial Mathematics, SIMAI/De Gruyter.

- Member of the editorial board of Journal for Modeling in Ophthalmology, Kugler.
- Céline Grandmont
 - Member of the editorial board of Mathematical Modelling of Natural Phenomena
- Marc Thiriet
 - Member of the editorial board of Digital Medicine
 - Member of the editorial board of Computer Methods in Biomechanics and Biomedical Engineering–Imaging and Visualization
- Irene Vignon Clementel
 - Associate Editor of the International Journal for Numerical Methods in Biomedical Engineering

10.1.3. Leadership within the Scientific Community

- Jean-Frédéric Gerbeau
 - Elected member of the Board of Directors of SMAI (French Society for Industrial and Applied Mathematics), in charge of the SMAI publications (M2AN, COCV, etc.)

10.1.4. Research Administration

- Muriel Boulakia
 - Supervisor of the teaching of mathematics at the engineer school Polytech Sorbonne
- Miguel Ángel Fernández Varela
 - Deputy Head of Science, Inria Paris
 - Member of the Scientific Positions Commission, Inria Paris
 - Member of the Inria Evaluation Committee
- Jean-Frédéric Gerbeau
 - Head of science, Inria Paris (until Sept. 2017)
 - Member of the scientific committee of Labex NUMEV, Montpellier.
 - Service activity abroad: member of the Reference Committee of the PhD program Mathematical Models and Methods in Engineering (Politecnico di Milano, Italy).
- Céline Grandmont
 - Member of the Inria Evaluation Committee
 - Member of the Inria Parity Committee
- Irene Vignon-Clementel
 - Technology grant committee (Commission de développement technologique), Inria Paris center
 - Committee member for PhD students at Inria “Commission consultative des doctorants”, since July 2016.
 - Mediator between PhD students and their supervisors for Inria Paris

10.1.5. Conferences

- Ludovic Boilevin-Kayl
 - Contributed talk in minisymposium, 13th World Congress on Computational Mechanics, July 22th – 27th, 2018, New York City, USA.
 - Seminar, Jacques-Louis Lions Laboratory In-House Day, Sorbonne Université, April 5, 2018, Paris, France.
- Laurent Boudin

- Seminar, Lab. de mathématiques appliquées du Havre, Univ. Le Havre Normandie, February 2018, Le Havre, France
- Seminar, Cemracs 2018, August 2018, Marseille, France
- Seminar of Partial Differential Equations, IRMA, Univ. Strasbourg, November 2018, Strasbourg, France
- Muriel Boulakia
 - congrès Inverse Problems, Modeling and simulation, Malta, May 2018
 - Inria-LJLL meeting in scientific computing, October 2018
- Miguel Ángel Fernández Varela
 - Keynote talk in minisymposium, 13th World Congress on Computational Mechanics, July 22-27, 2018, New York City, USA.
- Felipe Galarce Marin
 - Contributed talk in minisymposium, 8th World Congress of Biomechanics, July 8-12, 2018, Dublin, Ireland
- Jean-Frédéric Gerbeau
 - Contributed talk in minisymposium, 8th World Congress of Biomechanics, July 8-12, 2018, Dublin, Ireland
 - Keynote talk in minisymposium, 6th European Conference on Computational Mechanics, June 11-15, 2018, Glasgow, UK
- Céline Grandmont
 - Seminar EDP, Nice, Jan. 2018
 - Seminar, Nantes, May 2018
 - Colloquium, Paris 5 Univ., Nov. 2018
 - Invited Speaker, Workshop Interfaces entre mathématiques et biologie, Nancy Univ., Nov. 2018
- Florian Joly
 - Weekend d'Innovation Chirurgicale, Cabourg, Jun. 2018
 - Journées du GDR MécaBio à Montpellier, Nov. 2018
- Damiano Lombardi
 - CMM-Fields-Inria Workshop on Mathematics for Medicine, Toronto (Canada)
 - VPH 2018 Zaragoza (Spain), minisymposium of data assimilation
 - Workshop of mathematics for biomedicine, Roma (Italy)
 - Ncardia workshop, Cologne (Germany)
- Marc Thiriet
 - Invited lecture, 15th International Symposium Computer Methods in Biomechanics and Biomedical Engineering and 3rd Conference on Imaging and Visualization March 27th – 30th, 2018, Lisbon, Portugal
 - Invited lecture, 2nd International Conference on Digital Medicine, May 25–27, 2018, Guangzhou, China
 - Invited lecture, France–Taiwan Science Festival, Sept. 14, 2018, Taipei, Taiwan
- Alexandre This
 - INdAM Workshop "Mathematical and Numerical Modeling of the Cardiovascular System", April 16 - 19, 2018, Rome, Italy.

- Contributed talk in minisymposium, 8th World Congress of Biomechanics, July 8 - 12, 2018, Dublin, Ireland.
- Marina Vidrascu
 - Contributed talk in minisymposium, 13th World Congress on Computational Mechanics, July 22th – 27th, 2018, New York City, USA.
- Irene Vignon Clementel
 - Seminar (biomechanics), Ecole Polytechnique, Nov 16th, Palaiseau, France
 - Keynote lecture at the Workshop on Advanced Computational Biomechanics in Cardio-Vascular Surgery, Nov 8th, Saint-Etienne, France
 - Talk and poster, World conference of biomechanics, July 15-19 2018, Dublin, Ireland
 - Keynote, SBMC (systems biology in mammalian cells) conference, July 4-6, Brehmen, Germany
 - Invited talk, Weekend de l’innovation chirurgicale (WIC), Jun 22-24, Cabourg, France.
 - Invited talk, MRI and modeling workshop, June 22nd, Saclay, France
 - Poster presentation, EASL international conference (clinical liver conf.), April 11-15, Paris, France
 - Invited talk, GDR MecaBio (national biomechanics conference), Jan 10-12th, Toulouse, France

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Licence:

- Laurent Boudin
 - Introduction to series for signal theory, 18h, L2, UPMC
 - Calculus, 38.5h, L1, UPMC
 - Numerical methods for ODE, 53h, L3, UPMC
- Muriel Boulakia
 - Projects on differential equations, 34h, L3, Polytech Sorbonne, Sorbonne University
 - Nonlinear systems and optimization, 35h, L3, Polytech Sorbonne, Sorbonne University
 - Numerical approximation of functions, 36h, L3, Sorbonne University
- Jean-Frédéric Gerbeau
 - Control of dynamical systems, 32h, L3, Ecole Polytechnique.
- Damiano Lombardi
 - Analysis and Scientific Computing, 32h, L3, ENPC
 - Numerical Methods, 48h, L3, Polytech’Paris
 - Reduced models for problems in high dimension, 18h, ENPC, L3
- Irene Vignon Clementel
 - Numerical Methods for Ordinary Differential Equations, 24h ETD, L3, UPMC
 - Numerical simulations of blood flow, 2h30, as part of the undergraduate “continuum mechanics”, AgroParisTech

Master:

- Laurent Boudin

- Basics for numerical methods, 29h, M1, UPMC
- Student advising for orientation and professional insertion, 20h, M1, UPMC
- Muriel Boulakia
 - Preparatory course for teaching admission examination “Agrégation”, 40h, M2, Sorbonne University
- Miguel Ángel Fernández Varela
 - Modeling and numerical methods for hemodynamics, 30h, M2, UPMC
- Irene Vignon Clementel
 - MEC 550 - Biofluid Mechanics and Mass Transport, M2, 1h30, Ecole Polytechnique (engineering school), France
 - Annual ZCCE workshop, M2, 1h30, College of Engineering, Swansea University
 - Innovations thérapeutiques: du fondamental à l’appliqué, bioengineering module, M2, 1h, Paul Brousse Hospital, France
 - IFSBM (Institut de Formation Supérieure BioMédicale), M2, 1h30, Marie Lannelongue Hospital, France
 - M2 Sciences Chirurgicales de l’Université Paris Sud, 1h30, France

10.2.2. Supervision

PhD in progress: Ludovic Boilevin-Kayl, Modeling of cardiac implantable devices, since February 2016. Supervisors: J.-F. Gerbeau & M.A. Fernández Varela

PhD in progress: Alexandre This, Fusion data/simulation for the assessment of mitral regurgitation, since January 2016. Supervisor: J.-F. Gerbeau

PhD in progress: Chen-Yu Chiang, Transport on biological systems and some applications, since February 2016. Supervisor: M. Thiriet

PhD in progress: Felipe Galarce, Enhancing hemodynamics measurements with mathematical modeling, since December 2017. Supervisors: J.-F. Gerbeau & D. Lombardi.

PhD in progress: Fannie Maria Gerosa, Immersed boundary methods for fluid-structure interaction with topological changes, since January 2018. Supervisor: M.A. Fernández Varela

PhD in progress: David Michel, Mathematical analysis of fluid-kinetic coupled models, since September 2018. Supervisors: L. Boudin & A. Moussa

PhD in progress: Nicolas Golse, Contributions of anatomical and hemodynamic modeling of the liver in the anticipation, realization and teaching of liver surgery, since November 2018. Supervisors: E Vibert and I. Vignon-Clementel.

10.2.3. Juries

- Laurent Boudin
 - PhD committee: Nisrine Outada, Sorbonne Université & Caddi Ayad University, Gentien Marois, Insa Toulouse, Onera & CEA
 - HDR committee: Ayman Moussa, Sorbonne Université
- Muriel Boulakia
 - PhD committee: Pierre-Elliott Bécue, Inria Bordeaux Sud-Ouest; Guillaume Delay, Univ Toulouse (referee); Sourav Mitra, Univ. Toulouse; Josef Kolumban, Univ. Dauphine; Fabien Wahl, Inria Paris
 - Hiring committee: CDI researcher, Univ. Bordeaux
- Miguel Angel Fernández Varela

- PhD committee: Rabii Mlika, INSA Lyon (president), Guillaume Delay, Université de Toulouse (member), Karol Cascavita, ENPC (member)
- Hiring committee: Inria (DR2).
- Céline Grandmont
 - Member of the “agrégation” jury in mathematics.
 - Hiring committees: Inria Rennes (CR2), Inria CRCN.
 - PHD committee: J.-C. Casanova, Toulouse University (referee), J. Kolomban, Dauphine Univ. (president), S. Girel, Lyon Univ. (referee), C. Taing, Sorbonne Univ.
 - HDR committee: A. Moussa, Sorbonne Univ.
- Irene Vignon Clementel
 - Hiring committee: Nice University (MdC), Inria (CRCN), Inria (DR2, admission).
 - PHD committee: Clara Jaquet, ESIEE (member), Jules Dichamp, IMFT (referee) Noémie Boissier, UPMC (co-advisor) Mohamed Bekheit, U. Paris-Saclay (president).

10.3. Popularization

10.3.1. Interventions

- Céline Grandmont
 - Conference “Métier”: Master Maths students, UPMC, Oct 2018
 - Conference at "Rendez-vous des Jeunes Mathématiciennes et Informaticiennes", Inria Oct. 2018
 - High school discussion on scientific career, 18th January, Blanche de Castille, Le Chesnay, France
 - High school conference, 9th January, Blanche de Castille, Le Chesnay, France

SISTM Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

Rodolphe Thiébaud, Boris Hejblum and Marta Avalos co-organized an invited session “Predicting health outcomes from administrative claims data and electronic health records” in the 4th International Conference on Big Data and Information Analytics. Theories, Algorithms and Applications in Data Science (BigDIA). Dec 17-19, 2018, Houston (USA). The invited session was chair by Rodolphe Thiébaud.

Robin Genuer Co-organizes a reading group called Smiling in Bordeaux (<http://www.math.u-bordeaux.fr/~mchave100p/smiling/>)

Boris Hejblum organizes the Biostatistics Seminar Series at the Bordeaux Public Health Inserm Research Center

Mélanie Prague organized the "Déjeuners scientifiques" at the "Journées de la statistique française" 2018.

10.1.2. Scientific Events Selection

10.1.2.1. Chair of Conference Program Committees

Mélanie Prague was the organizer of a day on "Use of mathematical models for personalized medicine" at the International Conference « Statistics and Health: personalized medicine » - 11-12 January 2018, Toulouse Institute of Mathematics, Toulouse France

10.1.2.2. Member of the Conference Program Committees

Daniel Commenges is a member of the scientific committee of the International Biometric Conference Barcelona, July 2018 (<http://2018.biometricconference.org>)

Mélanie Prague is a member of the scientific committee of CIMI conference “Statistics in Health - personalised medicine” (<http://www.cimi.univ-toulouse.fr/mib/en/conference-statistics-and-health>), Toulouse 2018, 10-12 January

Marta Avalos was a member of the program committee of the annual meeting of the francophone Machine Learning community, CAp 2018, Rouen, June 2018 (<http://cap2018.litislab.fr/Comites-en.html>)

Rodolphe Thiébaud was a member of the scientific committee of the national conference on clinical research (EPICLIN)

Rodolphe Thiébaud is a member of the scientific committee of the IWHOD International Workshop on HIV Observational Databases since 2013 (<http://newsite.iwhod.org/Committee>)

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

Lifetime Data Analysis (Daniel Commenges)

Statistics Surveys (Daniel Commenges)

Associate editor of International journal of Biostatistics (Melanie Prague)

10.1.3.2. Reviewer - Reviewing Activities

ADAC (Robin Genuer)

AIDS (Rodolphe Thiébaud)
 Am J Public Health (Mélanie Prague)
 Biostatistics (Laura Richert)
 Biometrics (Mélanie Prague, Boris Hejblum)
 IMIA Yearb Med Inform (Marta Avalos)
 International Journal of Epidemiology (Daniel Commenges)
 Journal of Computational and Graphical Statistics (Robin Genuer)
 Journal of the Royal Statistical Society: Interaction (Mélanie Prague)
 Journal of Statistical Computation and Simulation (Boris Hejblum)
 JRSS-B (Mélanie Prague)
 Scientific Reports (Laura Richert)
 Society of clinical trial (Mélanie Prague)
 Statistical Methods in Medical Research (Robin Genuer, Mélanie Prague)
 Statistical science (Mélanie Prague)
 Trials (Laura Richert)

10.1.4. Invited Talks

Mélanie Prague gave 4 invited talks in 2018 (Montreal university, Canada; Department of evolutionary dynamics Harvard Boston USA; Dracula Inria team in Lyon France; institute Gustave Roussy Biostatistics Group Paris).

Robin Genuer gave one invited talk at the "Séminaire de Probabilités et de Statistique du Laboratoire de Mathématiques Paul Painlevé de Lille".

Boris Hejblum gave 2 invited talks in 2018 (Genotoul Biostat/Bioinfo Day in Toulouse; Section of Biostatistics, University of Copenhagen, Denmark)

Marta Avalos gave 2 invited talks at the workshop "Big Data: la revolución de la información en la investigación biomédica", 18-19th December 2018, Santiago de Chile (Chile)

10.1.5. Leadership within the Scientific Community

Rodolphe Thiébaud and Chloé Pasin are elected members of the "collège des écoles doctorales", University of Bordeaux

Daniel Commenges is President of the French Region of the International Biometric Society

Mélanie Prague is an elected member of the "Young statistician group" of SFdS (French Society of Statistics)

Mélanie Prague is in charge of the group responsible for the communication of the SFdS - in charge of organizing the sponsoring of the society by public and private companies.

Laura Richert is a member of F-CRIN Steering Committee

Marta Avalos is general secretary of the "Statistics and Sport group" of SFdS (French Society of Statistics)

10.1.6. Scientific Expertise

- Rodolphe Thiébaud is an expert for INCA (Institut National du Cancer) for the PHRC (Programme hospitalier de recherche Clinique en cancérologie) and for the PRME (Programme de recherche médico-économique en cancérologie).
- Rodolphe Thiébaud is a member of the Membre du CNU 46.04 (Biostatistiques, informatique médicale et technologies de communication).
- Rodolphe Thiébaud is a member of the Scientific Council of INSERM.

- Rodolphe Thiébaud is a member of the committee “Biologie des Systèmes et Cancer (Plan Cancer)”, a member of the Scientific Advisory Board of the “Institut Pierre Louis d’Epidémiologie et de Santé Publique” (UPMC, Dir : Dominique Costagliola), a member of the independent committee of international trials ODYSSEY and SMILE, a member of the scientific council of Muraz’s Center (Bobo-Dioulasso, Burkina Faso)
- Mélanie Prague is an expert for ANRS (France Recherche Nord&Sud Sida-HIV Hépatites) in the CSS 3 (Recherches cliniques et physiopathologiques dans l’infection à VIH) and AC 47.
- Laura Richert is an expert for the PHRC (Programme hospitalier de recherche Clinique).
- Marta Avalos is an expert for the ANSM (Agence nationale de sécurité du médicament et des produits de santé)

10.1.7. Research Administration

Daniel Commenges is the director of the Biostat-Info axis in the Inserm BPH (Bordeaux Public Health) institute.

Rodolphe Thiébaud is an elected member of the research committee (health sector) in University of Bordeaux and a member of the INSERM Scientific Council

10.2. Education

10.2.1. Teaching

In class teaching

Master : Robin Genuer, teaches in the two years of the Master of Public Health (M1 Santé publique, M2 Biostatistique) and 2nd year of the "Modélisation Stochastique et Statistique" Master, University of Bordeaux.

Master : Boris Hejblum, teaches in the two years of the Master of Public Health (M1 Santé publique, M2 Biostatistique).

Master : Rodolphe Thiébaud, teaches in the two years of the Master of Public Health, and he is head of the Epidemiology specialty of the second year of the Master of Public Health.

Master : Laura Richert teaches in the Master of Public Health at ISPED, Univ. Bordeaux, France (M2 Biostatistiques, M2 Epidémiologie).

Master : Mélanie Prague teaches in the Master of Public Health at ISPED, Univ. Bordeaux, France (M2 Biostatistiques).

Master : Marta Avalos teaches in the two years of the Master of Public Health (M1 Santé publique, M2 Biostatistique), the two years of the Master of Applied Mathematics and Statistics, and the 2nd year of the Master of “Management international : Développement pharmaceutique, Production et Qualité opérationnelle”, Univ. of Bordeaux.

Master: Chloé Pasin, Laura Villain, Hadrien Lorenzo and Louis Capitaine are teaching assistants for the two years.

Edouard Lhomme teaches in the Master of Public Health at ISPED, Univ. Bordeaux (M2 Epidémiologie) and in the Master of Vaccinology from basic immunology to social sciences of health (University Paris-Est Créteil, UPEC)

Bachelor : Laura Richert teaches in PACES and DFASM1-3 for Medical degree at Univ. Bordeaux

Edouard Lhomme teaches in PACES and DFASM1-3 for Medical degree at Univ. Bordeaux

Bachelor: Mélanie Prague and Boris Hejblum teach in the third year ingenious school ENSAI, Rennes.

Summer School: the SISTM team member teach in the ISPED Summer school.

E-learning

Marta Avalos is head of the first year of the e-learning program of the Master of Public Health, and teaches in it.

Mélanie Prague teaches in the Diplôme universitaire "Méthodes statistiques de régression en épidémiologie".

Boris Hejblum teaches in the Diplôme universitaire "Méthodes statistiques en santé".

Laura Richert teaches in the Diplôme universitaire "Recherche Clinique".

Robin Genuer is head of the Diplôme universitaire "Méthodes statistiques en santé and participated to the IdEx Bordeaux University "Défi numérique" project "BeginR" (<http://beginr.u-bordeaux.fr>).

10.2.2. Supervision

Master internship: Marie Alexandre, *PKPD modeling in pre-clinical development*, co-directed by Mélanie Prague with Nicolas Frances Roche Basel Switzerland (01/04/2018 - 31/09/2018)

Master internship (M1): Anthony Devaux, *Gene expression analysis with the R software*, directed by Boris Hejblum (01/06/2018 - 31/08/2018)

Master internship (M2): Roxane Coueron, *Sample size estimation for a microbiome study*, co-directed by Boris Hejblum with Hélène Savel, CHU Bordeaux (01/02/2018 - 31/08/2018)

Master internship: Marine Gauthier, *Variance component test for RNA-seq data analysis*, directed by Boris Hejblum (01/02/2018 - 31/07/2018)

Master internship: Julien Rouar, *PCA for absolute and relative abundance microbiota data: survey and implementation of methods*, co-directed by Marta Avalos with Cheng Soon Ong and Richard Nock, Data61, Australia (26/02/2018 - 31/08/2018)

PhD in progress: Marie Alexandre "Mechanistic modeling and optimization of vaccine response in HIV and Ebola", co-directed by Mélanie Prague and Rodolphe Thiébaud, from Oct 2018.

PhD in progress: Marine Gauthier "Methods for bulk and single-cell RNA-seq data analysis in vaccine research", co-directed by Boris Hejblum and Rodolphe Thiébaud, from Sept 2018.

PhD in progress : Soufiane Ajana "Comparison of linear and non-linear machine learning approaches to predict Age-related Macular Disease (AMD) risk in a survival framework", co-supervised by Boris Hejblum and Hélène Jacquemin-Gadda (Inserm) and Cécile Delcourt (Inserm), from Sept 2016.

PhD in progress: Perrine Soret, *Modélisation de données longitudinales en grande dimension*, from Oct 2014, directed by Marta Avalos.

PhD in progress : Wenjia Wang "Modèle de Rasch", co-directed by Daniel Commenges with Mickael Guedj CIFRE Pharnext, from Oct 2015.

PhD in progress : Edouard Lhomme, *Analyse des déterminants de la réponse immunitaire post-vaccination dans des stratégies vaccinales expérimentales*, from Oct 2016, directed by Laura Richert.

PhD in progress : Hadrien Lorenzo, *Analyses de données longitudinales de grandes dimensions appliquées aux essais vaccinaux contre le VIH et Ebola*, from Oct 2016, co-directed by Rodolphe Thiébaud and Jérôme Saracco.

PhD in progress : Louis Capitaine, *Random forests for high dimensional longitudinal data*, from Oct 2017, co-directed by Robin Genuer and Rodolphe Thiébaud.

PhD in progress : Madelyn Rojas *Self-management of injury risk and decision support systems based on predictive computer modelling. Development, implementation and evaluation in the MAVIE cohort study*, from Oct 2017, (Injury Epidemiology team, Inserm U1219, ED SP2) co-directed by Emmanuel Lagarde, David Conesa and Marta Avalos.

PhD defense on Oct 30 2018: Chloé Pasin, *Modeling and optimizing the response to vaccines and immunotherapeutic interventions: application to Ebola virus and HIV*, from Sep 2015, co-directed by Rodolphe Thiébaud and Francois Dufour.

PhD defense on Dec 13 2018: Laura Villain "Modélisation de l'effet du traitement par injection IL7", co-directed by Daniel Commenges and Rodolphe Thiébaud, from Oct 2015.

PhD defense on Nov 16 2018: Mélanie Née *Recherche et caractérisation de profils attentionnels : mieux comprendre la place de l'attention dans la survenue des accidents de la vie courante*, from Oct 2015, co-directed by Emmanuel Lagarde, Cédric Galéra (from the research center Inserm U1219) and Marta Avalos.

10.2.3. Juries

Mélanie Prague was involved in the PhD defence jury of Steven Sanche (university of Montreal).

Mélanie Prague is a member of the follow-up dissertation comity of 3 PhD students: NICOLO Chiara, Sébastien Benzkcry's PhD student (Inria Bordeaux Sud-ouest, MONC team), Marie Astrid METTEN, Jean-Francois Viel's PhD student (Universty rennes 1 Inserm U1085) and, Jonas BEAL, Sebastien Latouche's PhD student (Institut Curie Paris).

Mélanie Prague took part in the recruitment commission Inria CR Bordeaux and a postdoc recruitment committee in an European project at Pau university.

Marta Avalos is a member of the follow-up dissertation comity of 3 PhD students: Allison Singier (Pharmacoepidemiology team, Inserm U1219, ED SP2), Alexandre Conanec (Statistics, IMB, ED MI), Delphine Canzian (Education sciences, ED SP2).

Marta Avalos was involved in the PhD defence jury of Mélanie Née (University of Bordeaux).

Rodolphe Thiébaud took part in the HDR committee of Marta Avalos and the PhD defence jury of Vincent Madelain, Chloé Pasin and Laura Villain.

Daniel Commenges took part in the PhD defence jury of Laura Villain.

Laura Richert, Rodolphe Thiébaud, Robin Genuer, Boris Hejblum and Marta Avalos participated to the juries of Master in Public Health (Biostatistics, Epidemiology, Public Health)

Edouard Lhomme and Laura Richert participated to the juries of medical thesis defenses, Medical School of Bordeaux University

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Mélanie Prague is part of the Inria Commission de Développement Technologique (CDT)
- Mélanie Prague is part of the Inria commission des emplois de recherche.
- Robin Genuer is the webmaster of the publication site of the French statistical society

10.3.2. Articles and contents

- Mélanie Prague participated to an interview for Sud ouest Eco.
- Mélanie Prague made a video of presentation of SISTM team

10.3.3. Interventions

- Chloé Pasin presented "Modélisation et optimisation de la réponse immunitaire" to L3 student from ENS Lyon visiting Inria and Hadrien Lorenzo participated to research speed meetings with these students on December 6 2018.
- Melany Durand, Hadrien Lorenzo, Chloé Pasin and Mélanie Prague participated at the "Fête de la Science" and presented "D'une goutte de sang à ta prochaine visite chez le médecin : bien personnaliser ton traitement" to high school students on October 10 2018.

- Chloé Pasin participated at the "atelier Digit'elles" with the "Femmes and Sciences" organization at the "Fête de la Science" on October 9 2018.

10.3.4. Internal action

- the whole team participated in a showcase of their activity for Inria BSO 10th anniversary on September 27th, 2018 "Une goutte de sang contient-elle plus de données qu'un smartphone ?"
- Marta Avalos and Binbin Xu conducted a workshop on "Vivre la diversité à Inria Bordeaux – Sud-Ouest", within the internal workshop for the Inria BSO 10th anniversary, June 13. Participation to the SO News of June.

XPOP Project-Team

10. Dissemination

10.1. Promoting Scientific Activities

10.1.1. Scientific Events Organisation

10.1.1.1. General Chair, Scientific Chair

- Winter School **New Frontiers in high-dimensional probability and statistics**, Moscow, February 23-24, 2018
- Workshop "**Structural Inference in Inference in High-Dimensional Models**", Moscow, 5-8 September 2018

10.1.2. Scientific Events Selection

10.1.2.1. Member of the Conference Program Committees

- **NIPS 2018**
- **COLT 2018**
- **useR!2018**

10.1.3. Journal

10.1.3.1. Member of the Editorial Boards

- Stochastic Processes and their Applications
- Journal of Statistical Planning and Inference
- Journal of Computational and Graphical Statistics

10.1.4. Invited Talks

- **Analysis of adaptive stochastic gradient and MCMC algorithms**, June 2018
- **Langevin MCMC: theory and methods**, Singapour, June 2018
- **MCQMC 2018: Langevin Monte Carlo: theory and methods**, Rennes, July 2018
- **Langevin MCMC: theory and methods**, Singapour, August 2018
- **Huawei European Innovation Day, "Toward Bayesian Machine Learning"**, Roma, November 2018
- **Iberoamerican Pharmacometrics Network Congress 2018**, Guadalajara, Mexico.
- "Tests d'hypothèse et algorithmes de construction de modèle pour les modèles à effets mixtes", Toulouse, September 2018.
- **New algorithms and tools for population model building and evaluation**, Valparaiso, Chile, December 2018.

10.1.5. Leadership within the Scientific Community

- Eric Moulines is in charge of the academic supervision of the **International Laboratory of Stochastic Algorithms and High-dimensional inference**, National Research University, Higher School of Economics, funded by the Russian Academic Excellence Project.
- Eric Moulines is associate researcher of the **Alan Turing Institute**
- Eric Moulines is elected member of the French Académie des Sciences.

10.1.6. Scientific Expertise

- Marc Lavielle is member of the Scientific Committee of the High Council for Biotechnologies.

- Marc Lavielle is member of the evaluation committee of the [International Center for Mathematics \(CIMAT\)](#), Guanajuato, Mexico.
- Eric Moulines is member of the award committee of foundation "Charles Defforey".

10.1.7. Research administration

- Marc Lavielle is member of the Scientific Programming Committee (CPS) of the Institute Henri Poincaré (IHP).
- Eric Moulines is a board member of the Institut de Convergence DataIA.
- Julie Josse is elected member of the R foundation.

10.2. Teaching - Supervision - Juries

10.2.1. Teaching

Master : Julie Josse, Statistics with R, 48, M2, X-HEC

Master : Eric Moulines, Regression models, 36, M2, X-HEC

Engineering School : Eric Moulines, Statistics, 36, 2A, X

Engineering School : Eric Moulines, Markov Chains, 36, 3A, X

Engineering School : Erwan Le Pennec, Statistics, 36, 2A, X

Engineering School : Erwan Le Pennec, Statistical Learning, 36, 3A, X

Engineering School : Marc Lavielle, Statistics in Action, 48, 3A, X

10.2.2. Supervision

PhD in progress : Nicolas Brosse, September 2016, Eric Moulines

PhD in progress : Geneviève Robin, September 2016, Julie Josse and Eric Moulines

PhD in progress : Belhal Karimi, October 2016, Marc Lavielle and Eric Moulines

PhD in progress : Marine Zulian, October 2016, Marc Lavielle

PhD in progress : Wei Jiang , October 2017, Julie Josse and Marc Lavielle

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Eric Moulines is member of the Evaluation Committee of Inria.

10.3.2. Creation of media or tools for science outreach

Marc Lavielle developed and maintains the learning platform [Statistics in Action](#). The purpose of this online learning platform is to show how statistics (and biostatistics) may be efficiently used in practice using R. It is specifically geared towards teaching statistical modelling concepts and applications for self-study. Indeed, most of the available teaching material tends to be quite "static" while statistical modelling is very much subject to "learning by doing".

Julie Josse (with Nicholas Tierney and Nathalie Vialaneix) developed and maintains the website [R-miss-tastic](#), A resource website on missing data.