

*Inria*

RESEARCH CENTER  
Sophia Antipolis - Méditerranée

FIELD

Activity Report 2019

## Section Dissemination

Edition: 2020-03-21



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## AROMATH Project-Team

# 8. Dissemination

## 8.1. Promoting Scientific Activities

### 8.1.1. Scientific Events: Organisation

#### 8.1.1.1. General Chair, Scientific Chair

Laurent Busé organized a CIMPA school at Joao Pessoa, Brazil, November 4-13, on the topic "Syzygies: from theory to applications". Six courses delivered by international experts of this topic were scheduled during this school that hosted about 40 international PhD students and young researchers. For more details, see <http://www-sop.inria.fr/members/Laurent.Buse/CimpaSchoolBrazil/>.

#### 8.1.1.2. Member of the Organizing Committees

Laurent Busé co-organized with C. D'Andrea and Y. Cid Ruiz a mini-symposium on «Syzygies and Applications to Geometry » at the SIAM Conference on Applied Algebraic Geometry, Bern, Switzerland, July 9-13, 2019.

Angelos Mantzaflaris and Bernard Mourrain co-organized with E. Tsigaridas a mini-symposium on "Symbolic-numeric methods for non-linear equations: Algorithms and applications" at the SIAM Conference on Applied Algebraic Geometry, Bern, Switzerland, July 9-13, 2019.

### 8.1.2. Scientific Events: Selection

#### 8.1.2.1. Member of the Conference Program Committees

Laurent Busé was a member of the international program committee of the 2019 Symposium on Physical and Solid Modeling (SPM), Vancouver, Canada, June 17-19. He was also a member of the scientific committee from the conference "Ideals, Varieties, Applications" celebrating the influence of David Cox, Amherst, USA, June 10-14.

Angelos Mantzaflaris served in the PC of the 2019 Solid and Physical Modeling (SPM), <https://project.inria.fr/spm2019/>.

#### 8.1.2.2. Reviewer

Laurent Busé reviewed for *Symposium on Physical and Solid Modeling conference*, *SIGGRAPH conference*, *ISSAC conference* and *MEGA conference*.

Ioannis Emiris reviewed for the *Symposium of Computational Geometry*, *ICALP: Intern. Conf. Automata, Logic & Programming* and *MEGA: Méthodes Effectives en Géométrie Algébrique*.

Angelos Mantzaflaris reviewed for the *Symposium on Physical and Solid Modeling*.

Bernard Mourrain reviewed for *Symposium on Physical and Solid Modeling conference*, *ISSAC conference* and *MEGA conference*.

### 8.1.3. Journal

#### 8.1.3.1. Member of the Editorial Boards

Ioannis Emiris is editorial board member of *J. Symbolic Computation (Elsevier)* and *Mathematics for Computer Science (Springer)*.

Evelyne Hubert is on the editorial board of *Foundation of Computational Mathematics (since 2017)* and the *Journal of Symbolic Computation (since 2007)*.

Bernard Mourrain is associate editor of the *Journal of Symbolic Computation (since 2007)* and of the *SIAM Journal on Applied Algebra and Geometry (since 2016)*.

### 8.1.3.2. Reviewer - Reviewing Activities

Laurent Busé reviewed for *Graphical Models journal*, *Advances in Applied Mathematics journal*, *SIAM SIAGA journal*, *International Mathematics Research Notices*, *Journal of Algebra*, *Applicable Algebra in Engineering, Communication and Computing journal*, *Computer-Aided Design journal*, *Computer Aided Geometric Design journal*, *Journal of Computer Science and Technology*, *AMS Mathematics of Computations journal*, *Israel Journal of Mathematics* and *Journal of Symbolic Computation*.

Evelyne Hubert reviewed for *Journal für die reine und angewandte Mathematik*, *Proceedings of the American Mathematical Society*, *Advances in Applied Mathematics*, *Foundation of Computational Mathematics*, *SIAM Journal on Applied Algebra and Geometry*, *Journal of Symbolic Computation*, and *Computer Aided Geometric Design*.

Bernard Mourrain reviewed for *Annales Henri Lebesgue*, *Collectanea Mathematica journal*, *Computer-Aided Design journal*, *Computer Aided Geometric Design journal*, *Journal of Global Optimization*, *Journal of Symbolic Computation*, and *Mathematics of Computations journal*,

Angelos Mantzaflaris reviewed for *Computer Methods in Applied Mechanics and Engineering*, *Computer Aided Geometric Design*, *Computers & Mathematics with Applications*, and *Journal of Symbolic Computation*.

### 8.1.4. Invited Talks

Ahmed Blidia was an invited speaker in the minisymposium *Multivariate spline approximation and algebraic geometry* at SIAM Applied Algebraic Geometry meeting, Bern, Switzerland in June 2019.

Laurent Busé was invited to give two lectures at the "27th National School on Algebra: Graded modules over polynomial rings with applications to free divisors", Bucarest, Romania, May 19-25; he was invited to give a plenary talk at the conference "Ideals, Varieties, Applications", in honor of David Cox, Amherst, USA, June 10-14; he gave an invited course during the school "TIME2019: Curves and Surfaces, a History of Shapes", Levico Terme, Italy, Septembre 2-6.

Ioannis Emiris was an invited speaker at KAUST, Visual computing center, Saudi Arabia in February 2019, and SIAM Applied Algebraic Geometry meeting, Bern, Switzerland in June 2019.

Alvaro Fuentes Suarez gave a seminar talk in the MFX team at Inria NGE in February 2019.

Evelyne Hubert presented a series of lectures at the national conference *Equations Fonctionnelles et Interactions* (Anglet). She was invited to give talks at the  $A^3$  - *Arctic Applied Algebra* conference (Tromsø, Norway, April 2019) and the conference *A celebration of Symmetry and Computation* (Canterbury, UK). She delivered seminar talks at the University of the Arctic (Tromsø, Norway) and at the Isaac Newton Institute (Cambridge, UK).

Angelos Mantzaflaris gave an invited talk at the 4th Workshop of the ERC project CHANGE, Centro Congressi dell'Annunziata, Sestri Levante, Italy (November 2019) and at the Schloss Dagstuhl – Leibniz Center for Informatics seminar on Interactive Design and Simulation, Germany (December 2019). He also delivered a mini-symposium presentation at the annual conference on Isogeometric Analysis (IGA 2019, Munich, Germany, September 2019).

Both Angelos Mantzaflaris and Bernard Mourrain were invited at the meeting on "Isogeometric Splines: Theory and Applications" of the Banff International Research Station for Mathematical Innovation and Discovery (BIRS, February 2019), at the Oberwolfach Mini-Workshop on Mathematical Foundations of Isogeometric Analysis (July 2019), and at the Algebraic Spline Geometry Meeting in Swansea, UK (August 2019).

Bernard Mourrain was invited to give a talk at the conference  $A^3$  - *Arctic Applied Algebra* (Tromsø, Norway, April 1-4); an invited speaker of the conference MEGA (Madrid, Spain, June), to talk at the minisymposium *The algebra and geometry of tensors* of SIAM Applied Algebraic Geometry meeting, (Bern, Switzerland, June 2019), at the conference *Multivariate Approximation and Interpolation with Applications* (Vienna, Austria, Aug. 26-30), at the Italian Mathematical Union conference (Pavia, Sept. 2-5).

He was also invited to give two courses on splines at the University of Montpellier, (October 23-24, 2019).

Erick Rodriguez Bazan was an invited speaker in the minisymposium *Symmetry in algorithmic questions of real algebraic geometry* at SIAM Applied Algebraic Geometry meeting, Bern, Switzerland in June 2019.

Fatmanur Yildirim was an invited speaker in the minisymposium *Szygies and applications to geometry* at SIAM Applied Algebraic Geometry meeting, Bern, Switzerland in June 2019.

### **8.1.5. Leadership within the Scientific Community**

Ioannis Emiris is member of the Scientific Board of Hellenic Foundation for Research & Innovation (<http://www.elidek.gr>), representing Informatics and Mathematics.

Bernard Mourrain has been elected vice chair of the SIAM Algebraic Geometry group.

### **8.1.6. Scientific Expertise**

Evelyne Hubert was on the hiring committee for Junior Research Scientists at Inria NGE.

### **8.1.7. Research Administration**

Bernard Mourrain is member of the BCEP (Bureau du Comité des Equipes Projet) of the center Inria- Sophia Antipolis.

Evelyne Hubert was a member of Inria Evaluation committee (until June 2019).

Laurent Busé is a member of the administrative and scientific committee of the labex AMIES. He is also member of the CDT at Inria Sophia-Antipolis and the CPRH of the Mathematics Laboratory Jean-Alexandre Dieudonné of the University of Nice.

## **8.2. Teaching - Supervision - Juries**

### **8.2.1. Teaching**

- Licence : Ioannis Emiris, Discrete Math, 52 h (L1), NKU Athens
- Licence : Ioannis Emiris, Software development, 26 h (L3), NKU Athens
- Master : Ioannis Emiris, Geometric data science, 52 h (M2), NKU Athens
- Master : Ioannis Emiris, Structural bioinformatics, 39 h (M2), NKU Athens
- Master : Laurent Busé, Geometric Modeling, 18h (M2), engineer school of the University of Nice Sophia-Antipolis (EPU).
- Undergraduate: Angelos Mantzaflaris "Fondements mathématiques 2 (L1 - TD Partie analyse), University of Côte d'Azur, spring semester 2019.

### **8.2.2. Supervision**

- PhD in progress: Lorenzo Baldi, Structure of moment problems and applications to polynomial optimization. POEMA Marie Skłodowska-Curie ITN, started in October 2019, supervised by Bernard Mourrain.
- PhD in progress: Ahmed Blidia, New geometric models for the design and computation of complex shapes. ARCADES Marie Skłodowska-Curie ITN, started in September 2016, supervised by Bernard Mourrain.
- PhD in progress: Rima Khouja, Tensor decomposition, best approximations, algorithms and applications. Cotutelle Univ. Liban, started in November 2018, cosupervised by Houssam Khalil and Bernard Mourrain.
- PhD: Ioannis Psarros, Proximity problems for high-dimensional data. Greek scholarships foundation. Defended in Jun. 2019, NKUA, supervised by Ioannis Emiris.
- PhD in progress: Evangelos Bartzos, Algebraic elimination and Distance graphs. ARCADES Marie Skłodowska-Curie ITN, started in June 2016, NKUA, supervised by Ioannis Emiris.

- PhD in progress: Clément Laroche, Algebraic representations of geometric objects. ARCADES Marie Skłodowska-Curie ITN, started in Nov. 2016, NKUA, supervised by Ioannis Emiris.
- PhD in progress: Apostolos Chalkis, Sampling in high-dimensional convex regions, Google Summer of Code, started in June 2018, NKUA, supervised by Ioannis Emiris.
- PhD in progress: Emmanouil Christoforou, Geometric approximation algorithms for clustering, Structural Bioinformatics national infrastructure "Inspire", started in Jan. 2018, NKUA, supervised by Ioannis Emiris.
- PhD in progress: Tobias Metzloff. Multivariate orthogonal polynomials and applications to global optimization. POEMA Marie Skłodowska-Curie ITN, started in December 2019, supervised by Evelyne Hubert.
- PhD in progress: Erick Rodriguez Bazan, Symmetry in Algebraic Computations. Inria. Started in November 2017, supervised by Evelyne Hubert.
- PhD : Alvaro Fuentes Suarez defended September 2019 [1]. Modeling shapes with skeletons: scaffolds & anisotropic convolution. ARCADES Marie Skłodowska-Curie ITN, started October 2016 and supervised by Evelyne Hubert.
- PhD in progress: Thomas Laporte, Towards a 4D model of the respiratory system. Fellowship from ED SFA/UCA. Started on October 2019, co-supervised by Benjamin Mouroy (UCA) and Angelos Mantzaflaris.
- PhD in progress: Riccardo Di Dio, Building a diagnosis tool to detect broncho-constrictions, BoostUrCareer Marie Skłodowska-Curie COFUND fellowship. Started on November 2019, co-supervised by Benjamin Mouroy (UCA) and Angelos Mantzaflaris.

### 8.2.3. *Juries*

Bernard Mourrain was a member of the PhD committee of Matias R. Bender *Algorithms for sparse polynomial systems : Gröbner basis and resultants*, Sorbonne Université, Paris, June 3rd; a reviewer and member of the committee of the HDR of Frédéric Holweck entitled *On the projective geometry of entanglement and contextuality*, University Bourgogne Franche-Comté, Belfort, France, September 11th.

Evelyne Hubert was a reviewer for the Habilitation thesis of Georg Regensbuger, Johannes Kepler University (Austria): *Algebraic and algorithmic Approached to Analysis: Integro-differential equations, positive steady states, and wavelets*

Laurent Busé was a reviewer and member of the committee the PhD thesis of Navid Nemati, *Syzygies: Algebra, Combinatorics and Geometry*, Sorbonne Université, Paris, May 28; he was also a member of the PhD committee of Matias R. Bender, *Algorithms for sparse polynomial systems : Gröbner basis and resultants*, Sorbonne Université, Paris, June 3rd.

## 8.3. Popularization

### 8.3.1. *Interventions*

Ioannis Emiris was an invited speaker at "From Open Access to Science", Athens, May 2019. and "30 years celebration of ATHENA Research Center", Athens, November 2019.

## **DATASHAPE Project-Team**

# **8. Dissemination**

## **8.1. Promoting Scientific Activities**

### **8.1.1. Scientific Events: Organisation**

- F. Chazal was co-organiser of the Geometric Data Analysis conference at the Stevanovich Center for Financial Mathematics, Chicago, May 2019.
- F. Chazal was co-organiser of the conference New Horizons in Computational Geometry and Topology, Sophia-Antipolis, September 2019.

### **8.1.2. Scientific Events: Selection**

#### *8.1.2.1. Chair of Conference Program Committees*

- Steve Oudot was chair of the program committee for the Young Researchers Forum at the International Symposium on Computational Geometry (SoCG) 2019.

#### *8.1.2.2. Member of the Conference Program Committees*

- Jean-Daniel Boissonnat was a member of the Organizing Committee of the International Conference on Curves and Surfaces 2019.
- Clément Maria was a member of the Program Committee of the International Symposium on Computational Geometry (SoCG), Portland, USA, June 2019.
- David Cohen-Steiner was a member of the Program Committees of SGP'19 and SMI'19.

### **8.1.3. Journal**

#### *8.1.3.1. Member of the Editorial Boards*

Jean-Daniel Boissonnat is a member of the Editorial Board of *Journal of the ACM, Discrete and Computational Geometry, International Journal on Computational Geometry and Applications*.

Frédéric Chazal is a member of the Editorial Board of *SIAM Journal on Imaging Sciences, Discrete and Computational Geometry (Springer), Graphical Models (Elsevier), and Journal of Applied and Computational Topology (Springer)*.

Frédéric Chazal is a member of the Scientific Board of *Journal of Applied and Computational Topology (Springer)*.

Steve Oudot is a member of the Editorial Board of *Journal of Computational Geometry*.

### **8.1.4. Invited Talks**

Frédéric Chazal, Geometry of Big Data, Institute of Pure and Applied Mathematics at UCLA, Los Angeles, April 2019.

Frédéric Chazal, Workshop on Data Science, Fundação Getulio Vargas, Rio de Janeiro, April 2019.

Frédéric Chazal, SUMTOPO 2019, Topology in Data Science, Johannesburg, June 2019.

Frédéric Chazal, New Horizons in Computational Geometry and Topology, Sophia-Antipolis, September 2019.

Frédéric Chazal, Seminar@System X, Saclay, June 2019.

Clément Maria, Monash University, Australia.

Clément Maria, New Horizons in Computational Geometry and Topology, Sophia-Antipolis, September 2019.

Clément Maria, Applied Algebraic Topology Research Network Seminar, October 2019.



Clément Maria, Dagstuhl Seminar 19352 “Computation in Low-Dimensional Geometry and Topology”, August 2019.

Clément Maria, 2ème Demi-journée Pole Calcul - Topologie et Géométrie du Calcul - LIS Marseille, June 2019.

Steve Oudot, Workshop on computational applications of quiver representations: TDA and QPA, Bielefeld University, April 2019.

Steve Oudot, Minisymposium on Algebraic Geometry in Topological Data Analysis, SIAM Conference on Applied Algebraic Geometry, Bern, July 2019.

Steve Oudot, Summer Conference on Topology and its Applications, Johannesburg, July 2019.

Steve Oudot, Spires workshop: from theory to applications of TDA, Oxford, September 2019.

### **8.1.5. Leadership within the Scientific Community**

Frédéric Chazal is co-responsible, with S. Arlot (Paris-Sud Univ.), of the “programme Maths-STIC” of the Labex Fondation Mathématique Jacques Hadamard (FMJH).

Frédéric Chazal is a member of the “Comité de pilotage” of the SIGMA group at SMAI.

Steve Oudot is co-head with Luca Castelli Aleardi (École polytechnique) of the GT GeoAlgo within the GdR-IM.

### **8.1.6. Research Administration**

Marc Glisse is president of the CDT at Inria Saclay.

Steve Oudot is vice-president of the Commission Scientifique at Inria Saclay.

Clément Maria is a member of the CDT at Inria Sophia Antipolis-Méditerranée.

Clément Maria, responsable RAweb pour Datashape.

## **8.2. Teaching - Supervision - Juries**

### **8.2.1. Teaching**

Master: Frédéric Chazal and Quentin Mérigot, Analyse Topologique des Données, 30h eq-TD, Université Paris-Sud, France.

Master: Marc Glisse and Clément Maria, Computational Geometry Learning, 36h eq-TD, M2, MPRI, France.

Master: Frédéric Cazals and Frédéric Chazal, Geometric Methods for Data Analysis, 30h eq-TD, M1, École Centrale Paris, France.

Master: Frédéric Chazal and Julien Tierny, Topological Data Analysis, 38h eq-TD, M2, Mathématiques, Vision, Apprentissage (MVA), ENS Paris-Saclay, France.

Course on TDA at the Statistics with Geometry and Topology Conference 2019, 4hCM, Toulouse, France.

Master: Steve Oudot, Topological data analysis, 45h eq-TD, M1, École polytechnique, France.

Master: Steve Oudot, Data Analysis: geometry and topology in arbitrary dimensions, 24h eq-TD, M2, graduate program in Artificial Intelligence & Advanced Visual Computing, École polytechnique, France.

Undergrad-Master: Steve Oudot, Algorithms for data analysis in C++, 22.5h eq-TD, L3/M1, École polytechnique, France.

### **8.2.2. Supervision**

PhD : Alba Chiara de Vitis, Kernel Methods for High Dimensional Data Analysis [12]. Université Côte d’Azur. May 28, 2019. Jean-Daniel Boissonnat and David Cohen-Steiner.

PhD : Sergei Kachanovich, Meshing submanifolds using Coxeter triangulations [11]. Université Côte d'Azur. October 23, 2019. Jean-Daniel Boissonnat.

PhD: Yitchzak Solomon, Inverse problems in topological data analysis, Brown University. Defended in May 2019. Jeff Brock (Yale University) and Steve Oudot.

PhD in progress: Raphaël Tinarrage, Persistence and stability of nerves in measured metric spaces for Topological Data Analysis, started September 1st, 2017, Frédéric Chazal and Marc Glisse.

PhD in progress: Louis Pujol, Partitionnement de données cytométriques, started November 1st, 2019, Pascal Massart and Marc Glisse.

PhD in progress: Bertrand Beauflis, Méthodes topologiques et apprentissage statistique pour l'actimétrie du piéton à partir de données de mouvement, Frédéric Chazal and Bertrand Michel (Ecole Centrale de Nantes).

PhD in progress: Vincent Divol, statistical aspects of TDA, started September 1st, 2017, Frédéric Chazal and Pascal Massart (LMO).

PhD in progress: Etienne Lasalle, TDA for graph data, started September 1st, 2019, Frédéric Chazal and Pascal Massart (LMO).

PhD in progress: Alex Delalande, Measure embedding with Optimal Transport and applications in Machine Learning, started December 1st, 2019, Frédéric Chazal and Quentin Mérigot (LMO).

PhD in progress: Owen Rouillé, started September 2018, co-advised by C. Maria and J-D. Boissonnat.

PhD in progress: Nicolas Berkouk, Categorification of topological graph structures, started November 1st, 2016, Steve Oudot.

PhD in progress: Théo Lacombe, Statistics for persistence diagrams using optimal transport, started October 1st, 2017. Marco Cuturi (ENSAE & Google Brain) and Steve Oudot.

### **8.2.3. Juries**

Clément Maria was a member of the jury attributing the Gilles Kahn PhD award, from the SIF and the Academy of Science, Nov. 2019.

Steve Oudot was reviewer and committee member for the PhD defence of Hannah Schreiber, October 2019.

## **8.3. Popularization**

### **8.3.1. Interventions**

- Frédéric Chazal, Un exemple de dispositif dédié aux études cliniques. Seminar on AI, Haute Autorité de Santé, September 2019.

## **Kairos Project-Team**

# **10. Dissemination**

## **10.1. Promoting Scientific Activities**

### **10.1.1. Scientific Events: Organisation**

#### *10.1.1.1. General Chair, Scientific Chair*

- F. Mallet was Track Scientific Chair for DATE2019 organized in Firenze in March 2019.
- E. Madelaine is Chair of the Steering Committee of the Formal Aspects of Component Systems (FACS) conference.
- J.Deantoni was Chair of the first international workshops on “Multi-Paradigm Modeling for Cyber-Physical Systems” and “Modeling Language Engineering and Execution”.
- J.Deantoni was Chair of “Computational Science” track of the RIVF 2019 conference.

### **10.1.2. Scientific Events: Selection**

#### *10.1.2.1. Chair of Conference Program Committees*

- F. Mallet was Program Co-Chair of the 10th Workshop on Formal Techniques for Safety Critical Systems (FTSCS), organized as a satellite event of ICFEM 2019, in Shenzhen, Chine, in November 2019.
- F. Mallet was Program Co-Chair of ICTERI 2019 organized in Kherson, Ukraine, in May 2019.

#### *10.1.2.2. Member of the Conference Program Committees*

- J.Deantoni was in the program committee of: CoSim-CPS’19 and DSD’19
- F. Mallet was in the program committees of SEFM’19, DATE’19, FDL’19, DSD’19, Model-sward’19.
- D. Potop-Butucaru was in the program committee of FDL’19 and ACSD’19

#### *10.1.2.3. Reviewer*

- E. Madelaine is reviewer for the Formal Aspects of Component Systems (FACS), and industrial Formal Methods (iFM) conferences.
- L. Liquori and Claude Stolze reviewed for the conference FOSSACS/ETAPS.

### **10.1.3. Journal**

#### *10.1.3.1. Member of the Editorial Boards*

- F. Mallet is now in the editorial board of Springer journal Software-Intensive Cyber-Physical Systems (SICS) dedicated to all topics around software in embedded and cyber-physical systems.
- F. Mallet was guest editor for a special issue of Elsevier Science of Computer Programming dedicated to the Theoretical Aspects of Software Engineering.

#### *10.1.3.2. Reviewer - Reviewing Activities*

- E. Madelaine was reviewer for the Journal of Systems and Software (JSS), and for Science of Computer Programming (SCP).
- L. Liquori and Claude Stolze reviewed for Fundamenta Informaticae.
- F. Mallet was reviewer for IEEE Transactions on Software Engineering (TSE) and Elsevier Journal on Microprocessors and Microsystems (MICPRO).

#### **10.1.4. Invited Talks**

- J.Deantoni was invited for a talk in the Danang University during the RIVF conference.
- J.Deantoni was invited for a talk during the “Computer Automated Multi-Paradigm Modelling 2019” meeting in Bellairs.
- F. Mallet was invited as a keynote speaker to the 11th IEEE TASE 2019 organized in Guilin, Chine (July 2019).
- L. Liquori is invited for a talk at the Bamberg University, Jan 2020.

### **10.1.5. Scientific Expertise**

- F. Mallet is an elected member of the Conseil National des Universités (CNU) for section 27.
- F. Mallet has made an expertise of projects for the Belgium Agency of Research (FNRS).

### **10.1.6. Research Administration**

- F. Mallet is Deputy Director of UMR I3S Laboratory and as such, member of its "comité de direction" and "conseil de laboratoire", together with the steering committee of the graduate school (EUR) DS4H.
- Sid Touati is member of the direction committee of I3S laboratory.
- M.A Peraldi-Frati is member of the I3S Laboratory council. She has been recently appointed member of UCA Academic Council.
- Luigi Liquori is member of the IFIP working group WG1.6 on Rewriting.

## **10.2. Teaching - Supervision - Juries**

### **10.2.1. Teaching**

Licence : Sid TOUATI, Fondement machine, 75 heures eq TD, L1 informatique, Université Côte d’Azur.

Licence : Sid TOUATI, Architecture machine, 45 heures eq TD, L3 informatique, Université Côte d’Azur.

Licence : Sid TOUATI, Compilation, 33 heures eq TD, L3 informatique, Université Côte d’Azur.

Master: Sid TOUATI, Architectures et logiciels hautes performances, 81 heures eq TD, Master 1 informatique, Université Côte d’Azur.

Master international: Sid TOUATI, Advanced operating systems, 30 heures eq TD, Master 1 informatique, Université Côte d’Azur.

International Master: Frédéric Mallet, Safety-Critical Systems, 32h.

Master: Frédéric Mallet, Software Engineering, 32h.

Master : Robert de Simone, Formal Methods for NoC-based design, 36 heures eq TD, M2 International Ubinet, Université Côte d’Azur.

License: Marie-Agnès Peraldi-Frati teaches Web security (20h eq TD), Security of connected objects (20h eq TD), IoT Infrastructure deployment (20 H) and Large scale platform for IoT (20h eq TD) in a licence cursus dedicated to Internet of Objects, Infrastructure and Applications.

Master: Marie-Agnès Peraldi Frati, Web Security and IoT Platform, 20h eq TD, Master 2 SICOM, Univ Avignon.

Master : Luigi Liquori, Peer-to-peer systems, 32 eq TD, Université Côte d’Azur.

Master: Luigi Liquori, Rewriting Systems and Pattern Matching, 12 eq TD, Université de Lorraine.

Ph.D.: Winter School on Theoretical Foundations of Computer Science, 4-9 February 2019, Georgia. Luigi Liquori. Peer-to-peer and related systems, International Black Sea University and Shota Rustaveli National Science Foundation of Georgia.

Ph.D.: 12th International School on Rewriting (ISR) July 2020, Spain. Luigi Liquori. Pattern matching  $\lambda$ -calculi.

Master: Julien Deantoni, Finite State Machine, 54h eq TD, Polytech'Nice.

Master: Julien Deantoni, Multi Paradigm Programming in C++, 54h eq TD, Polytech'Nice.

Master: Julien Deantoni, Domain Specific Languages, 32h eq TD, Polytech'Nice.

Master: Julien Deantoni, Language Interpreter, 32h eq TD, Polytech'Nice.

Master: Julien Deantoni, Micro-controller programming, 8h eq TD, Polytech'Nice.

Master: Dumitru Potop-Butucaru, A synchronous approach to the design of embedded real-time systems, 30h, EPITA Engineering School, Paris.

Master: Dumitru Potop-Butucaru, Real-time embedded systems, 42h, EIDD (École d'Ingenieur Denis Diderot), Paris

### 10.2.2. Supervision

- HDR : Julien Deantoni, *Towards Formal System Modeling: Making Explicit and Formal the Concurrent and Timed Operational Semantics to Better Understand Heterogeneous Models*, Université Côte d'Azur, Juillet 2019 [13]
- PhD : Claude Stolze, Combining union, intersection and dependent types in an explicitly typed lambda-calculus, Université Côte d'Azur, Dec 16th 2019, Luigi Liquori. [14]
- PhD in progress : Carsten BRUNS, Performance analysis and optimisation of C++ applications, Université Côte d'Azur, 2021, Sid TOUATI.
- PhD in progress : Giovanni Liboni, Coordination of discrete (Cyber) Models, Université Cote d'Azur, end 2021, Frédéric Mallet, Julien DeAntoni.
- PhD in progress : Joelle Abou Faysal, A Formal Language for Ensuring Safety Scenarios in Autonomous Vehicules, Université Cote d'Azur, 2022, Frédéric Mallet.
- PhD: Keryan Didier, Contributions to the safe and efficient parallelisation of hard real-time systems. Sorbonne University, September 19, 2019, Dumitru Potop-Butucaru.
- PhD in progress : Hugo Pompougnac, Sorbonne University, 2022, Dumitru Potop-Butucaru.

### 10.2.3. Juries

- Frederic Mallet was president of the PhD Jury of Ines Array, Université Cote d'Azur, March 2019.
- Eric Madelaine was member of the PhD jury of Frédéric Lemoine (CNAM, Paris), July 2019.
- Frederic Mallet was reviewer for the PhD Jury of Frédéric Giroudot (ISAE, Toulouse), December 13th 2019.
- Frederic Mallet was reviewer for the PhD Jury of Ngo Minh Thang NGUYEN (Centrale Supélec/CEA), December 16th 2019.
- Dumitru Potop-Butucaru was a member of the PhD jury of Lina Marssó (Univ. Grenoble-Alpes, Inria, CNRS, GrenobleINP), December 10, 2019.
- Dumitru Potop-Butucaru was a member of the PhD jury of Pierre Donat-Bouilloud (Sorbonne University), December 6, 2019.
- Luigi Liquori was member of the PhD jury of Claude Stolze, Université Côte d'Azur, December 2019.

## 10.3. Popularization

### 10.3.1. Interventions

Luigi Liquori. Table ronde: "Journée Internationale du m-Tourisme 2019. Blockchain for Tourism", M-Tourism Day, Telecom Valley, Panel, Cannes, 2019.

## PRIVATICS Project-Team

# 8. Dissemination

## 8.1. Promoting Scientific Activities

### 8.1.1. Scientific Events Organisation

#### 8.1.1.1. General Chair, Scientific Chair

Antoine Boutet: Workshop on data transparency, 10/10/2018, Lyon, France.

Claude Castelluccia: *AI & Information Disorder* as part of the Global Forum on AI for Humanity forum, October 2019, Paris, France.

#### 8.1.1.2. Member of the Organizing Committees

Antoine Boutet: Workshop on data transparency, 10/10/2019, Lyon, France.

Antoine Boutet: Winter School on Distributed Systems and Networks 2019, 4-8/02/2019, Sept Laux, France.

Antoine Boutet: SRDS 2019, 01-04/10/19 Lyon, France.

Daniel Le Métayer: Panel *Influence or manipulation? What protections in the digital world?*, CPDP 2019, 30/01/2019, Brussels, Belgium.

Claude Castelluccia, *Building trust in AI, building trust with AI*, Global Science Week, 01/06/2019, Grenoble, France.

### 8.1.2. Scientific Events Selection

#### 8.1.2.1. Member of the Conference Program Committees

Antoine Boutet: Social Network Analysis and Mining 2019, Nature 2019, MDPI 2019, IEEE Transactions on Services Computing 2019, APVP 2019, Compas 2019, Location Privacy Workshop 2019.

Mathieu Cunche: ACM WiSec 2019, APVP 2019, AlgoTel 2019, IEEE WCNC 2019.

Claude Castelluccia: APF 2019.

Cédric Lauradoux: ACM CCSW 2019, Prix Gilles Kahn.

Daniel Le Métayer: XAI 2019, IWPE 2019, CPDP 2019, APF 2019.

Vincent Roca: SPACOMM 2019.

### 8.1.3. Invited Talks

Claude Castelluccia, *A Risk Analysis Framework for Facial Recognition Applications*, MIAI chair on AI&Ethics (T. Menissier), 04/12/2019, Grenoble, France.

Claude Castelluccia, *Cognitive security, closing the regulatory gap for consumer neurotechnology* workshop, Brocher Fondation, 25-27/11/2019, Geneva, Switzerland.

Claude Castelluccia, *Influence or manipulation ? What protections in the digital world? (panel)*, CPDP 2019, 30/01/2019, Brussels, Belgium.

Cédric Lauradoux, *Subject Access Request and Proof of Ownership*, SoSySec Seminar, 25/10/2019, Rennes, France.

Cédric Lauradoux, *Influence or manipulation ? What protections in the digital world? (panel)*, CPDP 2019, 30/01/2019, Brussels, Belgium.

Cédric Lauradoux, *Y-aura-t-il un Cambridge Analytica de nos data santé ? (panel)*, FUTUR.E.S, 13/06/2019, Paris, France.

Cédric Lauradoux, *Pseudonymisation*, École de Cybersécurité de l'Université de Nice, 09/07/2019, Nice, France.

Cédric Lauradoux, *Subject Access Right*, Laboratoire d'Innovation Numérique de la CNIL, 12/07/2019, Paris, France.

Cédric Lauradoux, *Subject Access Request and Proof of Ownership*, CyberAlps Workshop on GDPR, 09/10/2019, Grenoble, France.

Daniel Le Métayer, *Inaugural session: How to promote a responsible design and usage of decision making systems ?*, Center for Internet and Society, 27/09/2019, Paris, France.

Daniel Le Métayer and Clément Hénin *Social Responsibility of Algorithms*, SRA 2019, 12/12/2019, Paris, France.

Daniel Le Métayer, *HumanAI*, workshop on transparency and accountability for algorithmic decision systems, 11/09/2019, Montreal, Canada.

Mathieu Cunche, *Mécanismes anti-traçage dans les réseaux sans-fil*, journées nationales du GDR sécurité 2019, 12/06/19, Paris, France.

Vincent Roca, *Vers un habitat intelligent... mais fortement indiscret : la maison connectée sous l'angle de la vie privée*, Séminaire "Vie privée, mobile et sécurité", Festival des Libertés Numériques, 06/02/2019, Rennes, France.

## 8.2. Teaching - Supervision - Juries

### 8.2.1. Teaching

Master : Antoine Boutet, *Security and Privacy*, 14h, INSA-Lyon, France.

Master : Antoine Boutet, *Security and Privacy 16h*, Polytech Annecy, France.

Undergraduate course: Antoine Boutet, *System and Network*, 160h, L3, INSA-Lyon, France.

Master: Antoine Boutet, *Network*, 24h, Polytech Annecy, France.

Undergraduate course : Mathieu Cunche, *Introduction to computer science*, 120h, L1, INSA-Lyon, France.

Master : Mathieu Cunche, *Wireless Security*, 6h, M2, INSA-Lyon, France.

Undergraduate course : Mathieu Cunche, *On Wireless Network Security*, 10h, L1, IUT-2 (UPMF - Grenoble University) , France.

Undergraduate course : Mathieu Cunche, *Security & Privacy*, 21h, L3, INSA-Lyon, France.

Master : Mathieu Cunche, *Privacy and Data protection*, 14h, M2, INSA-Lyon, France.

Master : Mathieu Cunche, *Cryptography and Communication Security*, 18h, M1, INSA-Lyon, France.

Master : Cédric Lauradoux, *Advanced Topics in Security*, 20h, M2, Ensimag/INPG, France.

Master : Cédric Lauradoux, *Systems and Network Security*, 30h, M1, Ensimag, France.

Master : Cédric Lauradoux, *Internet Security*, 12h, M2, University of Grenoble Alpes, France.

Master : Cédric Lauradoux, *Cyber Security*, 3h, M2, Laws School of University of Grenoble Alpes, France.

Master : Claude Castelluccia, *Advanced Topics in Security*, 15h, M2, Ensimag/INPG, France.

Master : Claude Castelluccia, *Cyber Security*, 6h, M2, Laws School of University of Grenoble Alpes, France.

Master : Claude Castelluccia, *Data Privacy*, 6h, M2, Laws School of University of Grenoble Alpes, France.

Master : Daniel Le Métayer, *Privacy*, 12h, M2 MASH, Université Paris Dauphine, France.

Master : Daniel Le Métayer, *Privacy*, 12h, M2, Insa Lyon, France.

Master : Vincent Roca, *On Wireless Communications*, 12h, M1, Polytech' Grenoble, France.

Undergraduate course : Vincent Roca, *On Network Communications*, 44h, L1, IUT-2 (University of Grenoble Alpes), France.

Undergraduate course : Vincent Roca, *On Security and Privacy in smartphones*, 3h, L-Pro, University of Grenoble Alpes, France.

Undergraduate course : Vincent Roca, *C-Language Programming*, 24h, L-Pro, University of Grenoble Alpes, France.

Master : Vincent Roca, *On Security and Privacy in smartphones*, 3h, M2, France.

### 8.2.2. E-learning

#### MOOC "Protection de la vie privée dans le monde numérique:"

Nataliia Bielova, Cédric Lauradoux, Vincent Roca, Session 3, (open during 2 months), FUN-MOOC, Inria, public targeted: around 30000 for the three sessions since 2018, <https://www.fun-mooc.fr/courses/course-v1:inria+41015+session03/about>.

### 8.2.3. Supervision

- PhD in progress : Victor Morel, *IoT privacy*, September 2016, Daniel Le Métayer and Claude Castelluccia.
- PhD in progress : Mathieu Thiery, *IoT privacy*, April 2017, Vincent Roca with Arnaud Legout (DIANA Inria team).
- PhD in progress : Guillaume Celosia, *Wireless Privacy in the Internet of Things*, November 2017, Mathieu Cunche and Daniel Le Métayer.
- PhD in progress : Supryia Adhatarao, *Privacy of E-learning systems*, March 2018, Cédric Lauradoux.
- PhD in progress : Coline Boniface, *Cyberweapons: from bug bounties to zero days*, March 2018, Cédric Lauradoux.
- PhD in progress : Raoul Kerkouche, *Privacy-Preserving Processing of Medical Data*, January 2018, Claude Castelluccia.
- PhD in progress : Clement Henin, *Explainable AI*, September 2018, Claude Castelluccia et Daniel Le Métayer.
- PhD in progress: Théo Jourdan, *Privacy-preserving machine learning in medical domain, October 2018, Antoine Boutet.*
- *PhD in progress : Michale Toth, Privacy protection of Web users and compliance with GDPR and ePrivacy Regulations, December 2019, Natallia Bielova and Vincent Roca.*
- *Intern (M2): Michael Toth, Analyse et présentation accessible aux utilisateurs de Chartes de Vie Privée dans le contexte du RGPD, Vincent Roca.*
- *Intern (M2): Piyush Patil, Privacy Leak Analysis in the Context of Smart Homes, Vincent Roca.*
- *Intern (M1): Jan Aalmoes - Understanding how location data influences personalized content in the mobile context, Antoine Boutet.*
- *Intern (M1): Vincent Prax - Privacy Analysis of Email Providers, Cédric Lauradoux.*
- *Intern (L3): Félix Fonteneau - Activity recognition using federated learning, Antoine Boutet.*
- *Intern (L3): Hilaire Bouaddi - Analysis of mobility traces, Antoine Boutet.*
- *Intern (L3): Amine Bahi - Privacy-preserving and scalable machine learning using homomorphic encryption, Antoine Boutet.*

### 8.2.4. Juries



HDR: Carole Frindel, *Approche computationnelle de l'imagerie médicale : application en neurosciences*, INSA Lyon, France, 13/12/2019, Claude Castelluccia.

PhD: Pieter Robyns, *Explicit and Implicit Information Leakage in Wireless Communication*, 11/12/19, Hasselt University, Belgium, Mathieu Cunche (reviewer).

PhD: Timothy CLAEYS, *Security for the Internet of Things: A bottom-up approach to the secure and standardized Internet of Things*, 19/12/19, Université de Grenoble Alpes, France, Mathieu Cunche (examiner).

PhD: Antoine Vastel, *Tracking versus security: investigating the two facets of browser fingerprinting*, Université de Lille, France, 23/10/2019, Daniel Le Métayer.

PhD: Julien Loudet, *Distributed and privacy-preserving personal queries on personal clouds*, Université Paris-Saclay, thèse préparée à Université de Versailles Saint-Quentin-en-Yvelines, 24/10/2019, France, Vincent Roca (reviewer).

## 8.3. Popularization

### 8.3.1. Hearings

- Claude Castelluccia: *audition at the Council of Europe on AI & Human Rights*, European Parliament, 05/2019, Paris, France.

### 8.3.2. Internal or external Inria responsibilities

- Claude Castelluccia is co-leader of the Workpackage 5 (data governance and privacy) of the Grenoble Data Institute.
- Claude Castelluccia is co-leader of Grenoble CyberAlps (cybersecurity institute of Grenoble).
- Claude Castelluccia is a member of the Grenoble AI institute (MIAI)
- Daniel Le Métayer is a member of the European Commission Multistakeholder expert group to support the application of General Data Protection Regulation (GDPR).
- Daniel Le Métayer is Chair of the CNIL-Inria privacy award.
- Daniel Le Métayer is a member of the steering committee of APVP (Atelier Protection de la Vie Privée).
- Daniel Le Métayer is a member of the steering committee of the chair « Transformation de l'action publique » of Sciences Po Lyon.
- Antoine Boutet is the communication manager of CITI laboratory.
- Antoine Boutet is the manager the Cybersecurity and privacy option of the 5th year of computer science at INSA-Lyon.
- Cédric Lauradoux is a representative of Inria ethical committee COERLE at Inria Grenoble Rhone-Alpes.
- Cédric Lauradoux is a member of the scientific committee of the research action "Cyber-Physical System" of Labex Persyval (Grenoble).
- Cédric Lauradoux is a member of the ethics committee of ComUE Université Grenoble Alpes.
- Cédric Lauradoux is a member of Inria Grenoble Rhône-Alpes committee for technological development.
- Vincent Roca is the PRIVATICS Team Leader (since Nov. 2020).
- Vincent Roca is the co-chair of the NWCRG ("Coding for Efficient Network Communications" Research Group), Internet Research Task Force (IRTF) / IETF.
- Vincent Roca is the ANR 2017 DAPCODS/IOTics project leader.
- Vincent Roca is the chair of the CUMI ("Commission des Utilisateurs des Moyens Informatiques") of Inria Grenoble Rhone-Alpes.

- Vincent Roca is a member of Inria ethical committee COERLE.
- Vincent Roca is co-editor (with Ludovic Mé and Steve Kremer) of a series of articles dedicated to cybersecurity on the Blog Binaire, Le Monde.

### 8.3.3. *Articles and contents*

- Antoine Boutet et Mathieu Cunche: *Souriez, vous êtes géolocalisés !*, "Tout compte fait", 06/05/2019
- Antoine Boutet: *L'algorithme : cette formule arbitraire, miroir de l'intention humaine*, En Vue (INSA Lyon newsletter), 18/12/2019 .
- Claude Castelluccia: *Manipulation informationnelle et psychologique*, Le blog binaire du Monde, 05/2018.
- Mathieu Cunche: *Des chercheurs français découvrent des fuites d'informations sensibles sur les appareils Apple*, Science et Avenir.fr, 16/12/2019.
- Mathieu Cunche, *Vers une reconnaissance faciale généralisée*, Techniques de l'ingénieur, 05/12/2019.
- Cédric Lauradoux, *Bientôt un identifiant numérique pour tous*, Les Echos, 07/05/2019.
- Cédric Lauradoux, *Facebook, mon fil d'actu, ma bataille*, Mediapart, 05/12/2019.
- Daniel Le Métayer and Claude Castelluccia: *Algorithmic decision making : risks and opportunities for society*, Inria Interview, 25/06/2019.
- Daniel Le Métayer: *Interview about algorithmic decision systems.*, Atlantico, 21/09/2019.
- Vincent Roca and Cédric Lauradoux: *Prêts à tout pour protéger leurs données*, 01NET, 02/10/2019.
- Vincent Roca: *Suite au Livre Blanc Inria sur la cybersécurité : L'ordinateur quantique est une menace pour une partie des techniques de chiffrement actuellement utilisée*, L'Hebdo, BFM Business, 09/02/2019.
- Vincent Roca: *Les objets connectés nous espionnent-ils ?*, "Les Idées Claires", France Culture, 12/03/2019.
- Vincent Roca: *Rencontre Sciences et Politique : Cybersécurité*, Académie des sciences - Académie nationale de médecine - Office parlementaire d'évaluation des choix scientifiques et technologiques (OPECST), Sénat, 19/06/2019.
- Vincent Roca: *Objets connectés et vie privée*, Les Echos, 20/03/2019.
- Vincent Roca: *Nouvelles technologies : tous espionnés*, Journal de 20 Heures, France 2, 12/04/2019.
- Vincent Roca: *Vie privée et maison intelligente*, Café des Sciences, 14/05/2019, Grenoble, France.

### 8.3.4. *Education*

- Nataliia Bielova: *Animation du forum du MOOC Protection de la vie privée dans le monde numérique*, May-June 2019.
- Antoine Boutet: Contest of data anonymization between three different groups of INSA students (from Lyon and Bourges), 25-26/11/19.
- Cédric Lauradoux: *Action vie privée*, Maison pour la science, 14/02/2019, Grenoble, France.
- Cédric Lauradoux: *Protéger sa vie privée*, DIU EIL (enseignant d'informatique au lycée), 12/04/2019, Grenoble, France.
- Cédric Lauradoux: *Animation du forum du MOOC Protection de la vie privée dans le monde numérique*, May-June 2019.
- Vincent Roca: *Animation du forum du MOOC Protection de la vie privée dans le monde numérique*, May-June 2019.

### 8.3.5. *Interventions*

- Mathieu Cunche: *Cybersécurité: Protéger ses objets physiques*, Pint of science, 22/05/2019, Lyon, France.
- Cédric Lauradoux: *Procès du robot 42*, Festival TRANSFO, 24/01/2019, Grenoble, France.
- Cédric Lauradoux: *Challenges de cryptologie*, Printemps du numérique, 08/04/19, Die, France.
- Cédric Lauradoux: *Challenges de cryptologie*, MathC2+ internship, 25/06/19, Grenoble, France.
- Cédric Lauradoux: *Atelier cryptographie*, Fête de la Science, 10/10/2019, Grenoble, France.
- Cédric Lauradoux: *Procès du robot 42*, Fête de la Science, 12/10/2019, Grenoble, France.
- Cédric Lauradoux: *Les données en question*, Festival Imaginascience, 16/10/2019, Annecy, France.
- Cédric Lauradoux: *Le Numérique nous menace-t-il ?*, Telecom Saint Etienne, 03/12/2019, Saint Etienne, France.
- Cédric Lauradoux: *Vie privée et Liberté dans le monde numérique*, Collège Les Dauphins, 03/12/2019, Saint Jean de Soudain, France.
- Cédric Lauradoux: *Challenges de cryptologie*, Cité scolaire Jean PREVOST, 12/12/2019, Villard de Lans, France.
- Cédric Lauradoux: *Avoir un usage Internet éclairé*, UIAD, 18/12/2019, Grenoble, France.
- Vincent Roca: *Maison intelligente : le point de vue du respect de la vie privée*, Café des Sciences, 14/05/2019, Grenoble, France.
- Vincent Roca: *Habitat intelligent, service de vélo partagé et vie privée*, Fête de la Science, 12/10/2019, Grenoble, France.

### **8.3.6. Internal action**

- Cédric Lauradoux: *Formation Éthique*, Inria Paris, 26/01/2019, Paris, France.
- Cédric Lauradoux: *Formation Éthique*, Inria Saclay, 25/04/2019, Saclay, France.
- Cédric Lauradoux: *Formation Éthique*, Inria Grenoble - Rhône-Alpes, 13/05/2019, Lyon, France.
- Cédric Lauradoux: *Rules of Cyber Engagement*, Inria JSI, 07/06/2019, Lyon, France.
- Cédric Lauradoux: *Privacy: Understanding the GDPR*, Inria Grenoble - Rhône-Alpes, 15/10/2019, Grenoble, France.
- Vincent Roca: *Sécurité numérique : technique, éthique, juridique : qui s'y frotte s'y pique (moderator)*, Inria JSI, 07/06/2019, Lyon, France.

## STAMP Project-Team

# 8. Dissemination

## 8.1. Promoting Scientific Activities

### 8.1.1. Scientific Events: Organisation

#### 8.1.1.1. Member of the Organizing Committees

Yves Bertot and Maxime Dénès organized the Coq User and Developer workshop in Sophia Antipolis, June 3–7, 2019.

### 8.1.2. Scientific Events: Selection

#### 8.1.2.1. Member of the Conference Program Committees

Enrico Tassi was a member of the PC for PADL and LFMTP. Benjamin Grégoire was a member of the PC for latincrypt and PriSC. Cyril Cohen was a member of the PC for CICM. Yves Bertot was a member of the PC for ITP.

#### 8.1.2.2. Reviewer

Benjamin Grégoire: Conference on Computer and Communication Security (CCS), Certified Programs and Proofs (CPP), Interactive Theorem Proving (ITP). Cyril Cohen: LICS.

### 8.1.3. Journal

#### 8.1.3.1. Reviewer - Reviewing Activities

Laurent Théry: Journal of Automated Reasoning, Science of Computer Programming, Formal Aspects of Computing. Cyril Cohen: MSCS (Journal on Mathematical Structures in Computer Science), Journal of Automated Reasoning, Theoretical Computer Science, Information Processing Letters.

### 8.1.4. Invited Talks

Enrico Tassi gave talks at the Coq developer Working Group on the migration of the package index from opam v1 to opam v2 and at the Coq workshop on the improvements to SSReflect in Coq 8.10 (with E. Martin-Dorel from the University of Toulouse). He also gave a talk in the seminar of the Inria Parsifal project-team on synthesizing proved equality tests.

Benjamin Grégoire gave an invited talk at PriSC (Principles of Secure Compilation) in January 2019.

Cyril Cohen gave a talk at the *Lean Together* meeting in 2019, on using unification hints.

### 8.1.5. Scientific Expertise

Yves Bertot is a member of the steering committee for the Inria-Nomadic Labs collaboration.

Yves Bertot is a member of the steering committee for the ITP series of conferences.

Yves Bertot was a member of the hiring committee for an associate professor at ENSIIE (Ecole Nationale Supérieure d'Informatique pour l'Industrie et l'Entreprise) in Evry, France.

### 8.1.6. Research Administration

Benjamin Grégoire is a member of the CUMI committee facilitating communication between IT services, administrative services, and researchers at Inria.

Yves Bertot was coordinator for the evaluation of the theme “Proof and verification” in March 2019. This work involved polling 13 heads of Inria project teams for names of international experts, selecting an appropriate panel, and attributing a small group of experts to each project-team.

## 8.2. Teaching - Supervision - Juries

### 8.2.1. Teaching

Master : Yves Bertot, “Proofs and reliable programming using Coq”, 21hours ETD, Sept-Nov 2019, Université Nice Côte d’Azur, France.

Doctorat : Benjamin Grégoire, “EasyCrypt and Jasmin”, 14 ETD, summer school on Formal Techniques, Menlo College, California, USA, 18–25 May 2019.

Doctorat : Benjamin Grégoire, “Formal verification of masked implementations” Summer school on security of software/Hardware interfaces, 3 ETD, 8–12 July 2019, Inria, France.

Doctorat : Yves Bertot “Coq introductory course”, EUTypes summer school, 6 ETD, Ohrid, Aug. 30–Sep. 4, 2019, North Macedonia.

### 8.2.2. Supervision

PhD: Damien Rouhling, *Formalization Tools for Classical Analysis – A Case Study in Control Theory*, Université Côte d’Azur, September 2019, supervised by Yves Bertot and Cyril Cohen [1].

Yves Bertot and Laurence Rideau supervise the doctoral thesis of Sophie Bernard.

Yves Bertot and Benjamin Grégoire supervise the doctoral thesis of Cécile Baritel-Ruet.

Benjamin Grégoire and Tamara Rezk (Indes) supervise the doctoral thesis of Mohamad El Laz.

### 8.2.3. Juries

Yves Bertot was a member of the Jury for the Habilitation to direct research of Guillaume Melquiond.

Laurent Théry was a member of the thesis committee for David Braun (University of Strasbourg).

Laurent Théry was an external reviewer for a PhD at ANU (Australia, anonymity rules apply).

Enrico Tassi was a member of the Jury for the PhD defense of Ulysse Gérard (Inria Saclay).

Yves Bertot was a member of the Jury with report duties for the thesis of Florian Faissole (University of Paris-Saclay).

Yves Bertot was a member of the Jury with report duties for the thesis of Armaël Guéneau (University of Paris Diderot).

Yves Bertot was a member of the Jury for the thesis of Gaëtan Gilbert (Institut Mines Télécom Atlantique, Nantes).

## 8.3. Popularization

### 8.3.1. Internal action

- Yves Bertot gave a talk on Coq in the *Café-In* series of seminars for all publics of Inria personnel.
- Yves Bertot gave a general presentation on Coq in the *Doctoral seminar* of Inria Sophia Antipolis Méditerranée.

## ACUMES Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

#### 9.1.1.1. General Chair, Scientific Chair

- P. Goatin is member of the the scientific committee of the annual seminar CEA-GAMNI “*Numerical fluid-mechanics*”.
- P. Goatin was member of the scientific committee of the CIRM conference “*Crowds: models and control*”, Marseille (France), 2019.

#### 9.1.1.2. Member of the Organizing Committees

- R. Duval and A. Habbal are members of the Organizing Committee for the FGS French-German-Swiss Conference on Optimization, Nice, September 2019.
- A. Habbal co-organized the mini-symposium *Game Theory Approaches in Inverse Problems and Control*, French-German-Swiss Conference on Optimization, Nice, September 2019.
- P. Goatin co-organized the mini-symposium “*Numerical methods for traffic flow problems*”, WON-APDE 2019 - 6th Chilean Workshop on Numerical Analysis of Partial Differential Equations, Concepcion (Chile), 2019 (with L.M. Villada).
- P. Goatin was member of the organizing committee of the IPAM (UCLA) workshop “*Autonomous Vehicles*”, Los Angeles (USA), 2019.
- P. Goatin and E. Rossi co-organized the mini-symposium “*Non Local Balance Laws and their applications*”, ICIAM2019 - 9th International Congress on Industrial and Applied Mathematics, Valencia (Spain), 2019.

### 9.1.2. Scientific Events: Selection

#### 9.1.2.1. Member of the Conference Program Committees

A. Habbal was program committee member of The 3rd International Conference on Information Technology & Electrical Engineering - ITEE'19 El Jadida - Morocco, 2019. (<http://www.ucd.ac.ma/ITEE19/>)

#### 9.1.2.2. Reviewer

- M. Binois reviewed for the following conferences: AISTATS 2020, NeurIPS 2019, and Winter Simulation Conference 2019.
- P. Goatin reviewed for the 11th IFAC Symposium on Nonlinear Control Systems.
- A. Habbal reviewed for the FGS French-German-Swiss Conference on Optimization, Nice, September 2019.

### 9.1.3. Journal

#### 9.1.3.1. Member of the Editorial Boards

- P. Goatin is Managing Editor of *Networks and Heterogeneous Media*.
- P. Goatin is Guest Editor for the special issue “*Mathematical Modeling with Measures*” of *Mathematical and Bioscience Engineering*.

#### 9.1.3.2. Reviewer - Reviewing Activities

- M. Binois is a reviewer for the following international journals: Aerospace Science and Technology, Annals of Applied Statistics, Journal of Aerospace Engineering, Computational Optimization and Applications, Computational Statistics and Data Analysis, Informs Computing, International Journal on Artificial Intelligence Tools, Integrating Materials and Manufacturing Innovation, Optimization and Engineering, The Computer Journal
- R. Duvigneau is reviewer for the following international journals: Computers & Fluids, International Journal for Numerical Methods in Fluids, Journal of Fluid & Structures, Computer Methods for Applied Mechanics Engineering, Computer Aided Geometric Design, Applied Mathematics & Mechanics, Engineering Optimization, Ocean Engineering
- P. Goatin reviewed for the following international journals: Acta Applicandae Mathematicae; Communications of the Korean Mathematical Society; ESAIM: Mathematical Modelling and Numerical Analysis; IEEE Transactions on Automatic Control; Nonlinear Differential Equations and Applications NoDEA; SIAM Journal on Mathematical Analysis; Transportmetrica A: Transport Science.
- J.-A. Désidéri has made reviews for: Mathematical Problems in Engineering; Numerical Algorithms; Algorithms; Operations Research and Decisions; Journal of Computational Design and Engineering; AIAA Journal.
- A. Habbal is a reviewer for the AMS Math Reviews, and for the following international journals: SIAM Scientific Computing ; Eur. Journal of Operation Research ; Systems & Control Letters.

#### 9.1.4. Invited Talks

- M. Binois: Séminaire LJK-Probabilités & Statistique, Grenoble (France), April 2019.  
Invited talk: “*Heteroskedastic Gaussian Processes for Simulation Experiments*”.
- M. Binois: SRC 2019 - 2019 IMS/ASA Spring Research Conference, Blacksburg (VA, USA), May 2019.  
Invited talk: “*Sequential Learning of Active Subspaces*”.
- M. Binois: ICIAM 2019 - 9th International Congress on Industrial and Applied Mathematics, Valencia (Spain), July 2019. Mini-symposium: “*Mathematical Optimization for Industrial and Scientific Applications*”.  
Invited talk: “*Bayesian Optimization and Dimension Reduction with Active Subspaces*”.
- P. Goatin: Program on “*Data Assimilation: Theory, Algorithms, and Applications*”, Montreal (Canada), May 2019.  
Workshop “*Data Assimilation: Methodology and Applications*”.  
Invited talk: “*Data driven traffic flow models*”.
- P. Goatin: Workshop “*Nonlinear Hyperbolic Problems: modeling, analysis, and numerics*”, Mathematisches Forschungsinstitut, Oberwolfach (Germany), May 2019.  
Invited talk: “*Regularity results for the solutions of a non-local model of traffic flow*”.
- P. Goatin: “*30 Years of SIMAI: status and perspectives of applied and industrial mathematics in Italy and in Europe*”, Milano (Italy), July 2019.  
Invited talk: “*Traffic management by macroscopic models: present and future challenges*”.
- P. Goatin: ICIAM 2019 - 9th International Congress on Industrial and Applied Mathematics, Valencia (Spain), July 2019. Mini-symposium: “*Modelling and calibration in pedestrian dynamics: analysis and numerics*”.  
Invited talk: “*Non-local macroscopic models for crowd motion*”.
- P. Goatin: Workshop “*Resilient Control of Infrastructure Networks*”, Politecnico di Torino (Italy), September 2019.  
Invited talk: “*Macroscopic traffic flow models on road networks*”.
- A. Habbal: ICIAM 2019 - 9th International Congress on Industrial and Applied Mathematics, Valencia (Spain), July 2019. Mini-symposium: “*Geometric inverse problems and parameter estimation*”.  
Invited talk: “*Fractional Flow Reserve in a stenosed coronary artery*”.

- A. Habbal: MYRPAM 2019 - First Maghrebien Young Researchers in Pure and Applied Mathematics, Hammamet (Tunisia), December 2019. Plenary talk: “*Game Strategies to Solve and Model PDE-constrained Problems*”.

### 9.1.5. Scientific Expertise

- P. Goatin is member of the advisory board of DISMA Excellence Project of Politecnico di Torino (2018-2022).
- A. Habbal was member of the evaluation panel of the SiRIC CURAMUS Project (Integrated Research in Cancerology) <https://curamus-cancer.fr/>

### 9.1.6. Research Administration

- P. Goatin is member of the board of the Doctoral School of Fundamental and Applied Sciences (ED SFA) of Université Côte D’Azur.
- P. Goatin was vice-president of the local selection committee for Inria Sophia Antipolis competitive selection of young graduate scientists (CRCN) (2019).
- R. Duvigneau is member of CSD (“Comité Suivi Doctoral) at Inria Sophia Antipolis Méditerranée.
- R. Duvigneau is head of the Scientific Steering Committee of Platforms (cluster and immersive space) at Inria Sophia Antipolis Méditerranée.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Master: M. Binois, Design of experiments, 6 hrs, M2, Ecole Nationale Supérieure des Mines de Saint-Étienne, Saint-Étienne.

Master: R. Duvigneau, Advanced Optimization, 40 hrs, M2, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis.

Master: R. Duvigneau & A. Habbal, Numerical Methods for Partial Differential Equations, 66 hrs, M1, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis.

Master: J.-A. Désidéri, Multidisciplinary Optimization, 22.5 hrs, joint *Institut Supérieur de l’Aéronautique et de l’Espace* (ISAE Supaéro, "Complex Systems") and M2 (Mathematics), Toulouse.

Master: A. Habbal, Optimization, 66 hrs, M1, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis.

Master: A. Habbal, Stochastic Processes, 24 hrs, M1, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis.

Master: A. Habbal, Combinatorial optimization, 15 hrs, M1, Mohammed VI Polytechnic University, Morocco.

Licence (L3): A. Habbal, Implement and Experiment PSO, 48 hrs, L3 Semester Project, Ecole Polytechnique Universitaire (EPU), Nice Sophia Antipolis.

### 9.2.2. Supervision

PhD in progress: S. Pezzano, *Isogeometric analysis with moving grids*, Univ. Nice Sophia-Antipolis. Supervisor: R. Duvigneau.

PhD defended in September 2019: Nicolas Laurent-Brouty (ENPC), *Macroscopic traffic flow models for pollution estimation and control*, September 2016. Supervisor: P. Goatin.

PhD defended in October 2019: Nikodem Dymski (Maria Curie Skłodowska University & Université de Nice Sophia Antipolis), *Conservation laws in the modeling of collective phenomena*, October 2016. Supervisors: P. Goatin and M.D. Rosini (UMCS).



PhD defended in December 2019: Felisia Angela Chiarello (Université de Nice Sophia Antipolis), *Conservation laws with non- local flux*, October 2016. Supervisor: P. Goatin.

PhD in progress: S. Chabbar, *Modeling and simulation of tumor growth ; the case of prostate cancer*, Jan 2019, Supervisors: A. Habbal, Rajae Aboulaich (LERMA, EMI, Rabat), A. Ratnani (UM6P, Benguerir, Morocco).

PhD in progress: Marwa Ouni, *Solving inverses problems in fluid mechanics with game strategies*, October 2016, Supervisors: A. Habbal, Moez Kallel (LAMSIN, ENIT, Tunis).

PhD defended in December 2019: Rabeb Chamekh, *Game strategies to solve some inverse problems*, Jan 2015, Supervisors: A. Habbal, Moez Kallel (LAMSIN, ENIT, Tunis).

PhD defended in December 2019: Keltoum Chahour, *Modeling coronary blood flow using a non newtonian fluid model : fractional flow reserve estimation*, Nov 2015, Supervisors: A. Habbal, Rajae Aboulaich (LERMA, EMI, Rabat).

### 9.2.3. Juries

- R. Duvigneau was member of the committee of David Gaudrie's PhD thesis "*High-dimensional multi-objective Gaussian optimization*", Ecole des Mines de St Etienne, October 28th, 2019.
- P. Goatin was reviewer of D. Inzunza's PhD thesis "*Implicit-explicit methods for nonlinear and nonlocal convection-diffusion-reaction problems*", Universidad de Concepción, December 2019.

## 9.3. Popularization

### 9.3.1. Articles and contents

- "On the optimal shape of a wing", R. Duvigneau, *Interstices*, September 2019.
- A.S. Ackleh, R.M. Colombo, P. Goatin, S. Hille and A. Muntean, *Mathematical modeling with measures*, *Nieuw Archief voor Wiskunde*, Part 20 n. 3, September 2019.

### 9.3.2. Interventions

- R. Duvigneau gave three talks on "Modeling and simulation: when engineering becomes numerical" at Lycée Jules Ferry, Cannes, March 2019.
- P. Goatin gave the talk "*Le trafic routier en équations*" in Biot (Alpes Maritimes, France) on January 31, 2019, as part of the conference cycle "Science pour Tous 06".
- A. Habbal contributed to Cafe'In talks on "*Tumoral Angiogenesis*", June 2019.

## ECUADOR Project-Team

# 7. Dissemination

## 7.1. Promoting Scientific Activities

### 7.1.1. Scientific Events: Organisation

#### 7.1.1.1. Member of the organizing committees

- Laurent Hascoët is on the organizing committee of the EuroAD Workshops on Algorithmic Differentiation (<http://www.autodiff.org>).
- Laurent Hascoët was on the organizing and program committees of the workshop “Program Transformations for Machine Learning” at NeurIPS2019, Vancouver Canada, December 14th.

#### 7.1.2. Invited Talks

Laurent Hascoët was invited to give a talk on AD for the “GdR Calcul”, at “Institut de Physique du Globe”, Paris, January 24th.

#### 7.1.3. Scientific Expertise

Alain Dervieux is Scientific Director for the LEMMA company.

## FACTAS Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

- L. Baratchart gave an oral communication at NCMIP 2019 in Cachan,
- V. L. Coli gave oral communications at the 2nd “Journée Matériaux UCA”, Sophia Antipolis, September, and at the workshop “Céramiques imprimées de Méditerranée occidentale. Matières premières, productions, usages” of the ANR CIMO, Nice, France, March, <http://www.cepam.cnrs.fr/sites/cimo/>.
- D. Martinez Martinez gave an oral communication at «Journées Nationales des Microondes», Caen, France and at «European microwave Conference (EuMC) 2019», Paris, France.
- F. Seyfert was invited to give a lecture at the Technical University of Cartagena University (Spain) and gave an invited talk at the workshop «Rational approximation for Electrical Engineering», Moscow, Russia sponsored by Huawei.

### 9.1.1. Scientific Events: Selection

#### 9.1.1.1. Member of the Conference Program Committees

L. Baratchart was on the program committee of “Applied Inverse Problems” (AIP) 2019, Grenoble, France <http://www.aip2019-grenoble.fr>.

### 9.1.2. Journal

#### 9.1.2.1. Member of the Editorial Boards

L. Baratchart is on the editorial board of the journals “Computational Methods and Function Theory” and “Complex Analysis and Operator Theory”.

#### 9.1.2.2. Reviewer - Reviewing Activities

- J. Leblond was a reviewer for the journals *Engineering with Computers*, *Inverse Problems*.
- F. Seyfert was a reviewer for IEEE Transactions on Microwave Theory and Techniques

### 9.1.3. Invited Talks

- L. Baratchart gave an invited address at the conference “One-Dimensional Complex Analysis and Operator Theory” in Saint Petersburg, May 13-17, <https://sites.google.com/view/sft2019/home/conference>. He was an invited speaker at the workshop «Rational approximation for Electrical Engineering», Moscow, Russia, sponsored by Huawei, and lectured at the Macao university of sciences and techniques, in April. Macao University of Sciences and Technology in April.
- L. Baratchart and J. Leblond were invited to give talks at AIP 2019, Grenoble, France, July, <http://www.aip2019-grenoble.fr>.
- S. Chevillard was invited to give a talk at a NFS-sponsored workshop on magnetic imaging organized outside the American Geophysical Union meeting (December 7-8).
- J. Leblond was an invited speaker at the final workshop of the ANR FastRelax, Lyon, France, May, <http://fastrelax.gforge.inria.fr/FastRelax2019.html>.

### 9.1.4. Scientific Expertise

- L. Baratchart was a member of selection panel 40 (Mathematics) of the Agence Nationale de la Recherche (ANR).

- J. Leblond was an external reviewer for a promotion evaluation process at Chapman University (Orange, CA, USA).
- F. Seyfert was a reviewer for the National Science Centre of Poland

### 9.1.5. Research Administration

- J. Leblond is a member of the “Conseil Scientifique” and of the “Commission Administrative Paritaire” of Inria.
- M. Olivi is a member of the CLDD (Commission Locale de Développement Durable) and in charge, with P. Bourgeois, of coordination.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

**Colles:** S. Chevillard has given “Colles” (oral examination preparing undergraduate students for the competitive examination to enter French Engineering Schools) at Centre International de Valbonne (CIV) (2 hours per week) until June 2019.

### 9.2.2. Supervision

PhD in progress: K. Mavreas, *Inverse source problems in planetary sciences: dipole localization in Moon rocks from sparse magnetic data*, since October 2015, advisors: S. Chevillard, J. Leblond; defense scheduled January 31, 2020.

PhD in progress: G. Bose, *Filter Design to Match Antennas*, since December 2016, advisors: F. Ferrero, F. Seyfert and M. Olivi.

PhD in progress: S. Fueyo, *Cycles limites et stabilité dans les circuits*, since October 2016, advisors: L. Baratchart and J.-B. Pomet (Inria Sophia, McTao).

PhD in progress: P. Asensio, *Inverse source estimation problems in EEG and MEG*, since November 2019, advisors: L. Baratchart, J. Leblond.

PhD in progress: M. Nemaire, *Inverse potential problems with application to quasi-static electro-magnetics*, since October 2019, advisors: L. Baratchart, J. Leblond, S. Kupin (IMB, Univ. Bordeaux).

Post-doc. in progress: V. L. Coli, *Multiscale Tomography: imaging and modeling ancient materials*, since March 2018, advisors: J. Leblond, L. Blanc-Féraud (project-team Morpheme, I3S-CNRS/Inria Sophia/iBV), D. Binder (CEPAM-CNRS, Nice).

### 9.2.3. Juries

L. Baratchart was a reviewer of the “Mémoire d’habilitation” of Moncef Mahjoub, ENIT, Tunis, September 2.

J. Leblond was a member of the PhD committees of I. Santos (Univ. Paul Sabatier, Toulouse, February), S. Amraoui and K. Maksymenko (Univ. Côte d’Azur, December).

M. Olivi was a member of the HdR committees of F. Seyfert (Univ. Côte d’Azur, February 6), C. Poussot-Vassals (Univ. Toulouse, July 12) and of the PhD committees of D. Martinez Martinez (Univ. Limoges, June 20) and P. Kergus (Univ. Toulouse, October 18)

F. Seyfert was a member of the PhD committee of Johan Sence (Univ. Limoges, November 15) and D. Martinez Martinez (Univ. Limoges, June 20).

## 9.3. Popularization

### 9.3.1. Internal or external Inria responsibilities

M. Olivi was responsible for Scientific Mediation and president of the Committee MASTIC (Commission d’Animation et de Médiation Scientifique) <https://project.inria.fr/mastic/> until October 30.

### 9.3.2. Articles and contents

M. Olivi wrote a review of the book “Algorithms: la bombe à retardement” by C. O’Neil for Interstice <https://interstices.info/sciences-du-numerique-et-impact-sur-la-societe/>

### 9.3.3. Education

“La fête des Maths de l’ESPE Nice-Liégeard” (March 5 and 26): M. Olivi animated two half-day workshop sessions “jouons avec des expériences scientifiques” <https://pixees.fr/jouons-avec-des-experiences-scientifiques/> for primary school students.

### 9.3.4. Interventions

- “Fête de la science: Mouans-Sartoux fête les sciences du quotidien” (October 10-11 for scholars: 8 classes, October 12 for public: 1000 people): M. Olivi animated the activity “jouer à transmettre des images” in collaboration with the “espace de l’art concret” <https://www.espacedelartconcret.fr/>.
- “Stage MathC2+” (June 19-22): M. Olivi animated a workshop session on “How to analyze sounds with mathematical functions”.
- V. L. Coli gave a talk “Archéologie et mathématiques : algorithmes pour l’identification des gestes des premiers potiers”, and participated to the organization of the exhibition of the ANR project CIMO, Forum des Sciences, 80 years of CNRS, October, CIV, Valbonne.
- Fabien Seyfert gave a pitch on Factas activities during the visit of the company SICAME (March 27) and Martine Olivi gave a pitch on Factas activities for the celebration of InriaTech 10th birthday (April 3)

### 9.3.5. Internal action

- S. Chevillard gave a talk “Réchauffement climatique : où en est-on ? où va-t-on ?” at the c@fé-in of the Research Center, November.
- V. L. Coli gave a talk “Archéologie et mathématiques : algorithmes pour l’identification des gestes des premiers potiers” at the c@fé-in of the Research Center, October. She also participated to the organization of the “1er Colloque doctoral préhistoire, paléoenvironnement, archéosciences”, November, MSHS, Nice, <https://www.cepam.cnrs.fr/evenement/1er-colloque-doctoral-prehistoire-paleoenvironnement-archeosciences/>, where she gave a talk “Approches mathématiques pour la caractérisation des poteries néolithiques”.
- M. Olivi co-organized about 10 “cafés scientifiques” (c@fé-in’s and cafés Techno, 30 to 80 participants each) <https://project.inria.fr/mastic/category/cafein/>

### 9.3.6. Creation of media or tools for science outreach

M. Olivi co-supervised the creation of new scientific wooden objects by SNJ AZUR (funds from APOCS region): pixel art and transmission of images <https://pixees.fr/jouer-a-transmettre-des-images/>, IA machine. She also co-supervised the creation of videos by Thibaut Ehlinger (internship) and Gregory Casala (apprenti), funds from Class’Code and the national network, see <https://pixees.fr/pause-ta-science-une-chaine-pour-decrypter-les-objets-scientifiques/>.

## MCTAO Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

- J.-B. Caillaud has been chair (with Didier Auroux, Castor team) of the 19th French-German-Swiss conference, held in Nice from September 17 to 19, 2019. The conference gathered around 150 researchers in optimization. More information on [fgs-2019.sciencesconf.org](http://fgs-2019.sciencesconf.org)
- L. Giraldi together with M. Chaves (Biocore) organized an invited session at the Conf. Decision and Control (Nice, France).

#### 10.1.1.2. Member of the Organizing Committees

J.-B. Caillaud has been member of the organizing committee of **PGMO days** held in Paris Saclay from December 3 to 4, 2019.

### 10.1.2. Journal

#### 10.1.2.1. Reviewer - Reviewing Activities

The team members are regular reviewers for the leading journal in control (SIAM J. Control, ESAIM COCV...) and, more generally, for journals of pure and applied mathematics.

### 10.1.3. Invited Talks

- L. Rifford gave a plenary talk at the *2nd International Conference of Mathematics in Erbil* (Iraq), .
- L. Rifford was a keynote speaker at the *1st International MIPAnet Conference on Science and Mathematics* (Parapat, Indonesia), .
- L. Rifford gave a talk during the workshop *Real and Complex Singularities in Cargèse* at the IESC (Cargèse, France). .
- B. Bonnard gave the seminar "*Techniques Géométriques pour le Contrôle Optimal des Réacteurs Chimiques*" at the Department of Mathematics of the Université de Genève, October 2019.
- L. Dell'Elce was a keynote speaker at the *4th International Workshop on Key topics in orbit Propagation Applied to Space Situational Awareness* (Logrono, Spain), .
- L. Dell'Elce gave the seminar "*Multi-Phase Averaging of Time-Optimal Low-Thrust Transfers*" at the Surrey Space Center in the University of Surrey, October 19.
- J.-B. Caillaud gave an invited talk at the *Learning week* of Air France, in Sophia Antipolis, December 2019.

### 10.1.4. Scientific Expertise

L. Giraldi is reviewer for DFG the Deutsche Forschungsgemeinschaft (German Research Foundation).

### **10.1.5. Research Administration**

J.-B. Caillau is

- member of the Scientific Council of CNRS GdR Calcul Scientifique
- member of the Scientific Council of Programme Gaspard Monge pour l'Optimisation (PGMO)
- member of the Scientific Council of Institut de Mécanique Céleste et de Calcul des Ephémérides (Observatoire de Paris)
- member of the Scientific Council of 3IA

Jean-Baptiste Pomet is

- a member of the steering committee of the Center for Planetary Origin (C4PO),
- a member of the scientific council of Académie 2 "Complex system", both for Université Côte d'Azur (UCA),
- an elected member of Commission d'Évaluation (Inria permanent evaluation committee).

## **10.2. Teaching - Supervision - Juries**

### **10.2.1. Teaching**

Master in Astrophysics Université Côte Azur (MAUCA): Lamberto Dell'Elce, Build a Nanosatellite (Attitude Determination and Control System), 6 hours TH, niveau M1, Université Côte Azur, France.

Engineering school: J.-B. Caillau has a full teaching duty of Professor at L3, M1 and M2 level of the Applied Math. department of Polytech Nice Sophia. (He is the head of the department since September 2018.)

Licence : L. Giraldi, Colles de mathématiques, 90h (2h en MPSI et 2h en MP par semaine), MPSI-MP, Lycée internationale de Valbonne, France.

Master : L. Giraldi, Natation à bas nombre de Reynolds, 6h, Master 2 Recherche, Université de Srasbourg, France.

### **10.2.2. Supervision**

PhD in progress : Sébastien Fueyo, "Testing stability of nonlinear amplifier by frequency-domain methods", started October, 2016, co-supervised by J.-B. Pomet and L. Baratchart (FACTAS team).

PhD in progress : Yacine El alaoui-faris, "modeling magneto-elastic micro-robot from theory to experiment", started October, 2017, co-supervised by L. Giraldi, J.-B. Pomet and Stephane Régnier (Univ. Paris Sorbonne).

PhD in progress : Clément Moreau, "Contrôlabilité de systèmes en dimension finie ou infinie issus du vivant", started September, 2017, co-supervised by L. Giraldi, Pierre Lissy and J.-B. Pomet.

PhD in progress : Agustín Yabo, "Optimal control of microbial cells", started October, 2018, co-supervised by J.-L. Gouzé (Biocore team) and J.-B. Caillau.

### **10.2.3. Juries**

L. Giraldi is member of the jury of agrégation de mathématiques.

L. Giraldi was examiner of the PhD Thesis of Fatima Tani (supervised by A. Rapaport).

J.-B. Pomet sat in the jury for Armand Koenig's PhD (Université côte d'Azur).

J.-B. Caillau sat in the PhD jury of Isabelle Santos (Toulouse), HDR jury of Max Cerf (Paris). He is member of the jury of agrégation de mathématiques.

## **10.3. Popularization**

### ***10.3.1. Internal or external Inria responsibilities***

J.-B. Caillau belongs to the MASTIC initiative at Inria Sophia.

### ***10.3.2. Interventions***

Lamberto Dell'Elce is involved in the PoBot challenge promoted by MEDITES. Specifically he supervises a class in the College Emile Roux in Cannes.

J.-B. Caillau has given several talks at high-school level in Nice and Sophia on application of mathematics in social choice.



## NACHOS Project-Team

## 9. Dissemination

### 9.1. Promoting Scientific Activities

#### 9.1.1. Scientific Events: Organisation

##### 9.1.1.1. General Chair, Scientific Chair

- Stéphane Lanteri has chaired the second workshop of the PHOTOM (PHOTOvoltaic solar devices in Multiscale computational simulations) project that took place at Inria Sophia Antipolis-Méditerranée, France, Jan 28-Feb 01, 2019.
- Stéphane Lanteri has chaired the third workshop of the CLIPhTON (advanCed numerical modelIng for multiscale and multiphysics nanoPhoTONics) network that took place at Inria Sophia Antipolis-Méditerranée, France, October 24-25, 2019.

#### 9.1.2. Journal

##### 9.1.2.1. Reviewer - Reviewing Activities

- Théophile Chaumont-Frelet: ESAIM Math. Model. Numer. Anal., NUMA, NME
- Yves D'Angelo: Nanotechnology, Journal of Geophysical & Astrophysical Fluid Dynamics
- Claire Scheid: SIAM J. Numer. Anal., SIAM J. Sci. Comput.
- Stéphane Lanteri: J. Comput. Phys., Comp. Meth. Appl. Mech. Engrg.

#### 9.1.3. Invited Talks

- Théophile Chaumont-Frelet, Journées Ondes Sud-Ouest, MIOS, France , January 2019.
- Théophile Chaumont-Frelet, Séminaire LJAD, Nice, France , November 2019.
- Théophile Chaumont-Frelet at University of Basel, Switzerland, December 11-13, 2019.
- Théophile Chaumont-Frelet at University of Bath, UK, November 11-15, 2019.
- Théophile Chaumont-Frelet at the Basque Center for Applied Mathematics, Spain, May 1-3, 2019.

#### 9.1.4. Scientific Expertise

Stéphane Lanteri is a member of the Scientific Committee of CERFACS.

#### 9.1.5. Research Administration

- Yves D'Angelo is the head of the "Laboratoire J.A. Dieudonné" (LJAD, UMR 7351).
- Stéphane Descombes is the head of the "Maison de la Modélisation, de la Simulation et des Interactions" (MSI) of Université Côte d'Azur
- Stéphane Lanteri is a member of the Project-team Committee's Bureau of the Inria Sophia Antipolis-Méditerranée research center.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

License: Yves D'Angelo, *Analyse des Séries de Fourier* , 30 h, L3, Univ. Côte d'Azur

License: Claire Scheid, *Fondements 2* , 24 h, L1, Univ. Côte d'Azur

Master: Yves D'Angelo, *Modélisation et Simulation Numérique* , 48 h, M1, Univ. Côte d'Azur

Master: Yves D'Angelo, *Modélisation de la Turbulence fluid* , 30 h, M2, Univ. Côte d'Azur

Master: Claire Scheid, *Analyse, Lecture and practical works* , 27 h, M2, Univ. Côte d'Azur  
 Master: Claire Scheid, *Méthodes numériques en EDP, Lectures and practical works* , 63 h, M1, Univ. Côte d'Azur  
 Master: Claire Scheid, *Option Modélisation, Lectures and practical works* , 48 h, M2, Univ. Côte d'Azur  
 Master: Claire Scheid, *Soutien Analyse Fonctionnelle et Espace de Hilbert* , 18 h, M1, Univ. Côte d'Azur  
 Master: Stéphane Descombes, *Introduction aux EDP* , 30 h, M1, Univ. Côte d'Azur  
 Master: Stéphane Descombes, *ACP et reconnaissance de caractères* , 9 h, M2, Univ. Côte d'Azur  
 License: Stéphane Descombes, *Travaux dirigés de mathématiques pour l'économie*, 18 h, L1, Univ. Côte d'Azur  
 Engineering: Stéphane Lanteri, *High performance scientific computing*, , 24 h, MAM5, Polytech Nice Sophia

### 9.2.2. Supervision

PhD in progress: Alexis Gobé, Multiscale hybrid-mixed methods for time-domain nanophotonics, vNovember 2016, Stéphane Lanteri  
 PhD in progress: Georges Nehmetallah, Efficient finite element type solvers for the numerical modeling of light transmission in nanostructured waveguides and cavities, November 2017, Stéphane Descombes and Stéphane Lanteri  
 PhD in progress: Zakaria Kassali, Multiscale finite element simulations applied to the design of photovoltaic cells, November 2019, Théophile Chaumont-Frelet and Stéphane Lanteri  
 PhD in progress: Massimiliano Montone, High order finite element type solvers for the coupled Maxwell-semiconductor equations in the time-domain, December 2019, Stéphane Lanteri and Claire Scheid

### 9.2.3. Juries

Yves D'Angelo: Basile Radisson, IRPHE Marseille, France, Avril 2019, Rapporteur.  
 Claire Scheid: Pierre Mennuni, Lille, France, November 2019, Examinatrice.  
 Claire Scheid: Wesley Da Silva Peireira, LNCC, Petropolis, Brazil, September 2019, Examinatrice.  
 Stéphane Lanteri: Aurélien Citrain, Inria Pau, December 2019, Rapporteur.  
 Stéphane Lanteri: Nicolas Lebbe, CEA LETI, Grenoble, Novembre 2019, Examineur.  
 Stéphane Lanteri: Matthieu Patrizio, ISAE, Toulouse, Mai 2019: Examineur.

## TOSCA Team

## 9. Dissemination

### 9.1. Promotion of Mathematics in the industry

- A. Lejay is member of the board of AMIES (Agence Mathématiques en Interactions avec l'Entreprise et la Société). A. Lejay is editor of the *success stories* project.
- D. Talay continued to serve as a member of the Scientific Committee of the AMIES National Agency aimed to promote interactions between Mathematics and Industry.
- D. Talay continued to serve as the Vice-President of the Fondation d'Entreprise Natixis which aims to contribute to develop research in quantitative finance. He also serves as a member of the Scientific Committee of the Foundation.

### 9.2. Promoting Scientific Activities

#### 9.2.1. Scientific Events: Organisation

- C. Fritsch organizes with Pascal Moyal (Univ. de Lorraine) the weekly Seminar of Probability and Statistics of IECL, Nancy.
- C. Fritsch organized with Constantin Morarescu (CRAN) a scientific day of the *Fédération Charles Hermite* about multiscale models. (IECL, Nancy, 21 June 2019)

##### 9.2.1.1. Member of the Organizing Committees

- N. Champagnat is member of the organizing committee of the conference *Mathematical Models in Evolutionary Biology*, part of the Thematic Month on Mathematical Issues in Biology (CIRM, Luminy, 10–14 Feb. 2020).
- N. Champagnat was member of the organizing committee of the conference *ReaDiNet 2019 Mathematical Analysis for Biology and Ecology* (Inria Nancy – Grand Est, 23–25 Sep.).
- N. Champagnat and U. Herbach organized the workshop *Modélisation de l'hétérogénéité tumorale et thérapies ciblées* (IECL, Univ. Lorraine, 21–22 Oct.).
- C. Fritsch was member of the organizing committee of the conference *51es Journées de Statistiques* (Nancy, 3–7 June).
- A. Lejay organized the conference *TRAG 2019* (Nancy, 9–11 Oct.).
- E. Tanré and R. Veltz organized the workshop on *Mean-field approaches to the dynamics of neuronal networks* (EITN, 3–4 April).

##### 9.2.1.2. Member of the Conference Program Committees

- M. Bossy is member of the SMAI2019 Conference Scientific Committee and MASCOT NUM 2020 Conference.
- D. Talay is serving as a member of the scientific committee for MasterKesm (Masterclass from kinetic equations to statistical mechanics) summer school to be held in Saint Jean de Monts in 2020.

#### 9.2.2. Journal

##### 9.2.2.1. Member of the Editorial Boards

- A. Lejay is one of the three editors of the *Séminaire de Probabilités* and *Mathematics and Computers in Simulation* (MATCOM).
- N. Champagnat serves as an associate editor of *Stochastic Models*.

- N. Champagnat serves as co-editor-in-chief with Béatrice Laurent-Bonneau (IMT Toulouse) of *ESAIM: Probability & Statistics*.
- D. Talay serves as an Area Editor of *Stochastic Processes and their Applications*, and as an Associate Editor of *Journal of the European Mathematical Society*, *Probability, Uncertainty and Quantitative Risk*, *ESAIM Probability and Statistics*, *Stochastics and Dynamics*, *Journal of Scientific Computing*, *Monte Carlo Methods and Applications*, *SIAM Journal on Scientific Computing*, *Communications in Applied Mathematics and Computational Science*, *Éditions de l'École Polytechnique*. He also served as Co-editor in chief of *MathematicS in Action*.

#### 9.2.2.2. Reviewer - Reviewing Activities

- N. Champagnat wrote reviews for *Stochastic Processes and their Applications* (three times this year), *Electronic Journal of Probability* and *Frontiers of Mathematics in China*.
- C. Fritsch wrote reviews for *PCI Ecology*.
- C. Henry wrote reviews for *Annals of Nuclear Energy*, *Aerosol Science and Technology*, *Building and Environment* and *Journal of Aerosol Science*.
- A. Lejay wrote reviews for *Annals of Institut Henri Poincaré*, *Statistical Inference for Stochastic Processes*, *Journal of Computational and Applied Mathematics*, *Physical Review E*, *Bernoulli*, *Electronic Journal of Probability*, *ESAIM PS*, *Journal Theoretical Probability*, *SIAM Journal on Control and Optimization*, *Applied Probability Journals*, *Journal of Functional Analysis*.
- E. Strickler wrote reviews for *Stochastic Models* and *Stochastic Processes and their Applications*.
- E. Tanré wrote reviews for *The Annals of Applied Probability*, *Electronic Journal of Probability*, *ESAIM PS*, *The Bulletin of the London Mathematical Society*, *Finance and Stochastics*, *The Journal of Mathematical Neuroscience*, *Stochastic Processes and their Applications*.
- E. Tanré serves as a permanent reviewer of *Mathematical Reviews of the American Mathematical Society (MathSciNet)*.
- D. Villemonais wrote reviews for *Markov processes and related fields*, *Electronic communication in Probability* (twice), *The Annals of Applied Probability*, *Stochastic processes and Applications*, *Journal of Statistical Physics* and *Electronic Journal of Probability*.
- D. Talay reported on applications to the Swiss National Science Foundation (SNSF).
- D. Talay reported on applications to the Research Grants Council (RGC) of Hong Kong.

#### 9.2.3. Invited Talks

- M. Bossy has been invited to give talks at the conference *Simulation and Optimization for Renewable Marine Energies*, at Roscoff in July.
- N. Champagnat has been invited to give a Colloquium talk at the Department of Mathematics and Computer Science of the University of Technology in Eindhoven in February.
- N. Champagnat gave a talk at the Journée Charles Hermite *Modélisation fine versus outils d'analyse et simulation, un problème d'échelle* in Nancy in June.
- Q. Cormier has been invited to give a talk at the workshop on *Mean-field approaches to the dynamics of neuronal networks* at EITN in April.
- Q. Cormier and P. Helson have presented posters at the *International Conference on Mathematical Neuroscience* in Copenhagen in June.
- Q. Cormier and E. Tanré have been invited to give talks at the workshop "Nonlinear Processes and their Applications" in St. Etienne in July.
- C. Fritsch has been invited to give a talk at the workshop of the *MAMOVI* group in September.
- C. Fritsch gave a talk at the *Journées de Statistiques* in Nancy in June and at the *Mathematical Models in Ecology and Evolution* conference in Lyon in July.

- V. Hass presented a poster at the conference ReaDiNet 2019 *Mathematical Analysis for Biology and Ecology* in Nancy in September.
- U. Herbach has been invited to give talks at the Journée Charles Hermite *Méthodes et Modèles pour comprendre les réseaux biologiques* in January, at the spring school of chaire MMB (*Modélisation Mathématique et Biodiversité*) in Aussois in May, at the *Journée du RIS (Réseau Interdisciplinaire autour de la Statistique)* in Paris in September and at the workshop *Modélisation de l'hétérogénéité tumorale et thérapies ciblées* in Nancy in October.
- U. Herbach gave seminar talks at the *Séminaire de probabilités et statistiques de l'IECL* in Nancy in April, at the *Groupe de travail Maths-Bio* in Orléans in May, at the *Séminaire CIML (Centre d'immunologie de Marseille-Luminy)* in Marseille in May, at the *Groupe de travail du LBMC (Laboratoire de Biologie et Modélisation de la Cellule)* in Lyon in November, at the *Séminaire de probabilités* in Grenoble in November and at the *Groupe de travail Maths-Bio* in Grenoble in November.
- U. Herbach presented a poster at the conference *Probabilistic Modeling in Genomics* in Aussois in October.
- A. Lejay have been invited to give a mini-talk *A short introduction to Rough Paths* at Ritsumeikan University (Kyoto, Japan) in February.
- A. Lejay gave a talk at the conference *TRAG 2019* (Nancy) in October.
- E. Strickler gave seminar talks at the *Séminaire de probabilités* in Toulouse in October and at the *Séminaire de probabilités et statistiques de l'IECL* in Nancy in November.
- D. Villemonais gave seminar talks at the *Séminaire de Probabilités* of Univ. Paris 13 in April and at the *Probability Seminar* of Zurich Univ. in March.
- D. Villemonais has been invited to give talks at the *Journées du réseau A2* (Paris-Sorbonne Univ.) in October and at the *Conference ReaDiNet 2019* (Inria Nancy – Grand Est) in September.
- E. Soret has given an invited talk at ICMNS in Copenhagen in June.
- D. Talay was an invited speaker at the Conference in Honor of Philip Protter, Columbia University, New York, USA, September 2019.
- D. Talay was an invited speaker at the Conference in Honor of Nicole El Karoui, Sorbonne University, Paris, 21-24 May 2019.
- D. Talay was an invited speaker at the 'Stochastic Analysis and Related Topics' International Conference, Bucarest, Romania, 6-9 May 2019.
- D. Talay chaired a session at the 'Journées de l'Académie des Sciences en région', Nice and Sophia Antipolis, 2-21 June 2019.
- D. Talay gave a seminar talk at École des Ponts ParisTech on 27 November 2019.

#### 9.2.4. Leadership within the Scientific Community

- M. Bossy was serving as a vice president of the Inria Evaluation Committee until September 2019.
- A. Lejay is head of the Probability and Statistics team of Institut Élie Cartan de Lorraine.
- D. Talay continued to chair the Scientific Council of the French Applied Math. Society SMAI.
- D. Talay is a member of the scientific committee of the 'Institut Mathématiques de la Planète Terre' project supported by INSMI-CNRS.
- D. Talay served as a member of the scientific council of the Complex System academy of the Université Côte d'Azur Idex.
- D. Talay is serving as a member of the CMUP Advisory Commission (University of Porto).
- D. Talay is a member of the Comité National Français de Mathématiciens.

#### 9.2.5. Scientific Expertise

- N. Champagnat evaluated a research project submitted to the ANR.
- C. Fritsch is member of the Ph.D. monitoring committee of Léo Darrigade (INRA).
- D. Talay served as a member of the committee for positions in Applied Mathematics at the Ecole Polytechnique.
- D. Talay chaired the HCERES evaluation committee for the Toulouse Mathematics Institute (IMT).
- D. Talay is serving as a member of the evaluation committee of the Charles University (Prague, Czech Republic).

### 9.2.6. Research Administration

- N. Champagnat is a member of the *Comité de Centre*, the *COMIPERS* and the *Commission Information Scientifique et Technique* of Inria Nancy - Grand Est, *Responsable Scientifique* for the library of Mathematics of the IECL, member of the *Conseil du laboratoire* of IECL (as *responsable scientifique* of the library). He is also local correspondent of the COERLE (*Comité Opérationnel d'Évaluation des Risques Légaux et Éthiques*) for the Inria Research Center of Nancy - Grand Est.
- C. Fritsch is member of the *Commission du Développement Technologique* of Inria Nancy - Grand Est, of the *Commission du personnel* and the *Commission Parité-Égalité* of IECL. She is the local Raweb correspondent for the Inria Research Center of Nancy - Grand Est.
- A. Lejay is member of the Executive board of *LUE Impact project digitrust* (Univ. Lorraine), of the Conseil de Pôle AM2I (Univ. Lorraine) and of the CUMI (Inria NGE).
- D. Villemonais is responsible of the “Ingénierie Mathématique” cursus of École des Mines de Nancy and is elected member of the conseil de l'École des Mines de Nancy.

## 9.3. Teaching - Supervision - Juries

### 9.3.1. Teaching

Master: N. Champagnat, *Introduction to Quantitative Finance*, 18h, M1, École des Mines de Nancy, France.

Master: N. Champagnat, *Introduction to Quantitative Finance*, 13.5h, M2, École des Mines de Nancy, France.

Master: N. Champagnat, *Problèmes inverses*, 22.5h, M1, École des Mines de Nancy, France.

Master: C. Fritsch, *Probability theory*, 40h, L3, École des Mines de Nancy, France.

Master: A. Lejay, *Probabilités*, 9h, 1st year Mines de Nancy, France.

Master: A. Lejay, *Simulation des marchés financiers*, 29h, M2, Master PSA, Université de Lorraine, France.

Master: E. Tanré (courses and exercices), *Advanced Numerics for Computational Finance*, 30h (20h + 10h), M2, Univ. Côte d'Azur (Mathmods Erasmus Mundus), France.

Master: E. Tanré, *Mathematical Methods for Neurosciences*, 20h, M2, ENS - Master MVA / Paris 6 - Master Maths-Bio, France.

Master: E. Tanré (courses) *Stochastic models in neurocognition*, 15h (7h30 + 7h30), M2, Univ. Côte d'Azur (Master 2), France.

Master: D. Talay *Invariant measures of diffusion processes*, 18h, M2 Probabilité et Applications, Université Paris 6, France.

### 9.3.2. Supervision

HdR: Denis Villemonais, *Convergence exponentielle vers une distribution quasi-stationnaire et applications*, Université de Lorraine, 28/11/2019.

PhD in progress: Alexis Anagnostakis, *Étude du mouvement brownien collant*, Université de Lorraine, Octobre 2018, A. Lejay and D. Villemonais.

PhD in progress: Lorenzo Campana, *Stochastic modeling of non-spherical particles transport and deposition by turbulent flow*, Université Côte d'Azur, December 2017, M. Bossy.

PhD in progress: Quentin Cormier, *Biological Networks of Spiking Neurons*, September 2017, E. Tanré and R. Veltz (MATHNEURO Inria team).

PhD in progress: Vincent Hass, *Individual-based models in adaptive dynamics and long time evolution under assumptions of rare advantageous mutations*, Université de Lorraine, October 2018, N. Champagnat.

PhD in progress: Pascal Helson, *Plasticity in networks of spiking neurons in interaction*, October 2016, E. Tanré and R. Veltz (MATHNEURO Inria team).

PhD in progress: Rodolphe Loubaton, *Caractérisation des cibles thérapeutiques dans un programme génique tumoral*, Université de Lorraine, October 2018, N. Champagnat and L. Vallat (CHRU Strasbourg).

### 9.3.3. Juries

- M. Bossy served as a referee for the Ph.D. thesis of Pierre Antoine Joulin, *Modélisation à fine échelle des interactions entre parcs éoliens et météorologie locale* at Institut National Polytechnique de Toulouse, December 2019.
- M. Bossy served as an examiner for the Ph.D. theses of Victor Marx, *Diffusive processes on the Wasserstein space: Coalescing models, Regularization properties and McKean-Vlasov equations*, Université Côte d'Azur, November 2019, and Sebastian Reyes Riffo, *Méthodes mathématiques pour l'extraction d'énergie marine*, PSL University November 2019.
- N. Champagnat will serve as an examiner for the habilitation thesis of Nicolas Gast, *Refinements of Mean Field Approximation*, Univ. de Grenoble, 30/01/2020.
- N. Champagnat served as a referee for the Ph.D. thesis of Paulien Jeunesse, *Estimation non paramétrique du taux de mort dans un modèle de population générale : théorie et applications*, Univ. Paris Dauphine, 08/01/2019.
- N. Champagnat served as an examiner for the Ph.D. theses of Frédérique Robin, *Modeling and analysis of cell population dynamics: application to the early development of ovarian follicles*, Univ. Paris Saclay, 26/09/2019, William Oçafrain, *Quasi-stationarité avec frontières mobiles*, Univ. Toulouse 3, 4/07/2019, Martin Andrade-resptrepo, *Mathematical modeling and evolutionary processes*, Univ. Paris 7, 26/06/2019 and Edouard Strickler, *Persistence de processus de Markov déterministes par morceaux*, Univ. Neuchâtel, 21/03/2019.
- A. Lejay served as an examiner for the habilitation thesis of Nicolas Marie, *Quelques contributions à la contrainte et à la statistique des équations différentielles dirigées par le mouvement brownien fractionnaire ainsi qu'à la sélection de modèle*, Université Paris Nanterre, November 2019.
- A. Lejay served as an examiner for the Ph.D. thesis of Carlo Bellingeri, *Itô formulae on stochastic heat equation via regularity structures and rough paths*, Sorbonne Université, July 2019.
- D. Talay served as a referee for the Ph.D. thesis of Grégoire Ferré, *Large Deviations Theory in Statistical Physics: Some Theoretical and Numerical Aspects*, Université Paris Est and École des Ponts ParisTech, 27 November 2019.
- D. Talay served as a referee for the habilitation thesis of Adrien Richou, *Quelques Résultats sur les Equations Différentielles Rétrogrades et les Principes de Grandes Déviations pour les Estimateurs de Paramètres de Diffusions*, université de Bordeaux, 4 November 2019.

## 9.4. Popularization

### 9.4.1. Interventions

C. Henry gave a presentation at the Inria Café In on the topic of breakup of elongated particles such as spaghetti.

### 9.4.2. Creation of media or tools for science outreach

- A. Lejay is editor of the project *Success Stories* (AMIES and FSMP) dedicated to create 2-page sheets to present successful interactions between industry and academia.

## ABS Project-Team

# 7. Dissemination

## 7.1. Promoting Scientific Activities

### 7.1.1. Scientific Events: Organisation

#### 7.1.1.1. General Chair, Scientific Chair

– Frédéric Cazals:

- F. Cazals co-organized, with P. Alliez and F. Chazal, the conference *New Horizons in Computational Geometry and Topology*, held at Sophia Antipolis (September 5-6, 2019) in honor of J-D. Boissonnat. See <https://project.inria.fr/jdb2019/en/>.

### 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 Computational Geometry
- Symposium On Geometry Processing
- International Conference on Computational Systems-Biology and Bioinformatics:
- Intelligent Systems for Molecular Biology (ISMB), PC member of Protein Interactions & Molecular Networks

#### 7.1.2.2. Reviewer

– Frédéric Cazals reviewed for the following journals:

- Bioinformatics
- Discrete and applied mathematics
- PLOS Computational Biology
- PLOS One

### 7.1.3. Invited Talks

– Frédéric Cazals gave the following invited talks:

- *Multiscale molecular flexibility analysis: novel insights*. MPI Frankfurt, July 2019.
- *Multiscale molecular flexibility analysis: novel insights*. Conference of the Polish Bioinformatics Society, Torun, June 2019.
- *Bio-molecules: on the role of geometry in the tryptic structure - dynamics -function*. Meeting of the French Academy of Sciences, French Riviera, June 2019.
- *Leveraging structural data by decoupling structure, thermodynamics and dynamics*, Challenges in large scale biomolecular simulation, Inst. Etudes Sc. de Cargese, France, May 2019
- *Mining molecular flexibility: novel tools, novel insights*, University College, London, April 2019.
- *Novel structural parameters of IG-Ag complexes yield a quantitative description of interaction specificity and binding affinity*, Journées scientifiques de la SFHI (Soc. Fr. d'histocompatibilité et d'immunogénétique), Paris, Mars 2019.



### 7.1.4. 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.
- 2017-2019. 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/>).

### 7.1.5. Scientific Expertise

– Frédéric Cazals:

- 2019: reviewer for ERC consolidator grants.

### 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:

- 2019-.... Head of *Commission Mastic* (Médiation et Animation des MATHématiques, des Sciences et Techniques Informatiques et des Communications), Inria Sophia Antipolis - Méditerranée.
- 2016-2019. Member of the *Comité de Centre*, Inria Sophia Antipolis - Méditerranée.
- 2018-2019. 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, 23h30 TD, niveau M1, École Polytechnique de l'Université Nice Sophia Antipolis, filière Sciences Informatiques, France.
- Bachelor : Dorian Mazauric, Langages Formelles et Automates, 24h TD, niveau L3, École Polytechnique de l'Université Nice Sophia Antipolis, filière Sciences Informatiques, France.
- Bachelor : Dorian Mazauric, Algorithmique, 3h de cours et 8 heures de TD, niveau licence, Université Côte d'Azur, Diplôme interuniversitaire (formation des enseignants de lycée), Sophia Antipolis, France.

### 7.2.2. Supervision

- **PhD, 4th year:** Augustin Chevallier, *Random walks for estimating the volume of convex bodies and densities of states in high dimensional spaces*. Defended on the 08/04/2019. Université Côte d'Azur.
- **PhD in progress, 3rd 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, 2nd 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, 2nd 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:

- Maria Elisa Ruiz Echartea, Université de Lorraine, December 2019. Rapporteur on the PhD thesis *Multi-component protein assembly using distance constraints*. Advisors: David W. Ritchie - Marie-Dominique Devignes.
- Alba Chiara De Vitis, Université Côte d'Azur, May 2019. Committee member. *Kernel Methods for High Dimensional Data Analysis*. Advisors: D. Cohen-Steiner, J-D. Boissonnat.
- Juraj Michalik, Ecole Polytechnique, March 2019. Rapporteur on the PhD thesis *Non-redundant sampling in RNA bioinformatics*. Advisors: Yann Ponty and H el ene Touzet.

## 7.3. Popularization

This part mainly concerns Dorian Mazauric.

### 7.3.1. Internal or external Inria responsibilities

- 2019-.... Head of *Commission Mastic* (M ediation et Animation des MATH ematiques, des Sciences et Techniques Informatiques et des Communications), Inria Sophia Antipolis - M editerran ee.
- 2019-.... Coordinator of *Terra Numerica – vers une Cit e du Num erique*.
- 2018-2019. Member of the *Conseil d'Administration de l'association les Petits D ebrouillards*.
- 2018-2019. Coordinator of *projet de m ediation Gal ejade : Graphes et ALgorithmes : Ensemble de Jeux   Destination des Ecoliers...* (mais pas que).

### 7.3.2. Articles and contents

See <https://galejade.inria.fr> and <http://terra-numerica.org/>.

### 7.3.3. Education

- 26/10/2019. Animation d'ateliers de GALEJADE au weekend d'initiation   la culture num erique organis e par Class'Code MED. Graphes, algorithmes et magie des math ematiques et de l'informatique.
- 03/06/2019. Formation d'enseignants   Draguignan ( ESP E de l'Acad emie de Nice). Graphes et algorithmes.
- 05/04/2019. Coordination d'ateliers Galejade anim s par des enseignants et des parents d' l eves de l' cole Pasteur du Cannet (suite   une formation Galejade quelques mois plus t t). Ateliers Galejade.
- 22/03/2019. Formation d'enseignants de REP+   l' ESP E de l'Acad emie de Nice (site de St phen Li geard).
- 26/02/2019. Formation des  tudiants de l' ESP E de l'Acad emie de Nice (site de St phen Li geard)   l'animation d'activit s informatiques et math ematiques. En collaboration avec l'Inspection Acad mique. Dans le cadre de la semaine des math ematiques. Graphes, algorithmes, jeux et magie des math ematiques.

### 7.3.4. Interventions

- National events:
  - 19-20/10/2019. Ateliers au village des sciences et de l'innovation au Palais des Congr s d'Antibes Juan-les-Pins. Voyage en train au pays des graphes, des algorithmes et de l'intelligence artificielle.
  - 06/10/2019. Atelier au village des sciences de Nice. F te de la Science 2019. Le plus grand r seau de tri humain du monde.

- 05/10/2019. Ateliers et conférence au village des sciences de Villeneuve-Loubet. Fête de la Science 2019. Algorithmes grandeur nature ? La magie des graphes et du binaire.
- 4/10/2019. Conférence à la maison des associations de Nice (114 élèves de première et terminal). Fête de la Science 2019. Pas besoin de réfléchir, les ordinateurs calculent tellement vite ?
- 03/10/2019. Deux conférences et ateliers au collège de la Vésubie-Jean Salines à Roquebillière. Fête de la Science 2019. La magie des graphes et du binaire ? Algorithmes grandeur nature ? Pas besoin de réfléchir, les ordinateurs calculent tellement vite ? Théorie des graphes et algorithmique pour les réseaux.
- 26/03/2019. Fête des maths à l'ÉSPÉ de l'Académie de Nice (site de Stéphen Liégeard). Graphes et Algorithmes.
- 26/02/2019. Formation des étudiants de l'ÉSPÉ de l'Académie de Nice (site de Stéphen Liégeard) à l'animation d'activités informatiques et mathématiques. En collaboration avec l'Inspection Académique. Dans le cadre de la semaine des mathématiques. Graphes, algorithmes, jeux et magie des mathématiques.
- Public exhibitions (Futurs en Seine,...)
  - 24/05/2019. Présentation du projet Galéjade à l'AFINEF'Tour Sophia Antipolis (avec EducAzur).
  - 18/05/2019. Semaine du Numérique à Valbonne. Algorithmes pour toute la famille.
  - 27-28/04/2019. Atelier et conférences au festival Les Souffleurs d'Avenir. La magie des graphes, des algorithmes et du binaire.
- In educational institutions
  - 11/01/2019. Conférence au lycée Léonard de Vinci d'Antibes (deux classes de terminale). Pas besoin de réfléchir, les ordinateurs calculent tellement vite ? Théorie des graphes et algorithmique pour les réseaux ? Présentation du métier de chercheur.
  - 11/10/2019. Deux conférences au collège la Chênaie à Mouans Sartoux. La magie des graphes et du binaire ? Jeux combinatoires.
  - Année scolaire 2019/2020. Projets dans le cadre de MATH.en.JEANS au collège Jean Rostand de Nice. Avec Olivier Ginola.
  - 03/10/2019. Deux conférences et ateliers au collège de la Vésubie-Jean Salines à Roquebillière. Fête de la Science 2019. La magie des graphes et du binaire ? Algorithmes grandeur nature ? Pas besoin de réfléchir, les ordinateurs calculent tellement vite ? Théorie des graphes et algorithmique pour les réseaux.
  - 26/03/2019. Conférence au collège Jules Romains de Nice (classes de sixième). La magie des graphes, des algorithmes et du binaire.
  - 13/03/2019. Conférences et ateliers au collège Alphonse Daudet de Nice (deux classes de sixième et deux classes de cinquième). Magie mathématique et jeux combinatoires.
  - 05/04/2019. Coordination d'ateliers Galejade animés par des enseignants et des parents d'élèves de l'école Pasteur du Cannet (suite à une formation Galéjade quelques mois plus tôt). Ateliers Galejade.
- Welcoming of schoolchildren or the general public in an Inria center: MathC2+ internship, open days,...
  - Semaine du 16 décembre 2019. Accueil de 12 stagiaires de troisième à Inria Sophia Antipolis - Méditerranée.
  - 28/06/2019. Activité pour une quarantaine d'étudiants de classes préparatoires scientifiques de Sophia Antipolis. Algorithmes de tri.

- 14/06/2019. Activité pour une quarantaine de lycéens des Alpes-Maritimes (accueillis à Inria Sophia Antipolis - Méditerranée durant 4 jours dans le cadre du stage MathC2+). Algorithmes grandeur nature.
- 26/04/2019. Visite d'une dizaine de jeunes de la mission locale de Grasse à Inria Sophia Antipolis - Méditerranée. La magie des graphes, des algorithmes et du binaire.

### **7.3.5. Internal action**

- Internal meetings such as Café des sciences
  - 29/04/2019. Café-in à Inria Sophia Antipolis - Méditerranée (séminaire interne pour tous les membres du centre de recherche : chercheurs, ingénieurs, administratifs...). Ateliers Galejade.
- Training of colleagues on new contents or media (activités débranchées, Poppy Ergo, Tensor-Flow,...)
- Training follow-up (Media Training, new media such as Poppy ergo, with SIF, etc.)
- Science outreach towards services (DPEI, STIP...)

### **7.3.6. Creation of media or tools for science outreach**

See <https://galejade.inria.fr> and <http://terra-numerica.org/>.

## ATHENA Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

#### 9.1.1.1. Member of the Organizing Committees

- M. Zucchelli is one of the organizer of the summer school on Brain Connectomics at the University of Verona, September 2019.

### 9.1.2. Scientific Events: Selection

#### 9.1.2.1. Member of the Conference Program Committees

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

#### 9.1.2.2. 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 (GRETSI, ICIP, ISBI, ICASSP, VISAPP).

### 9.1.3. Journal

#### 9.1.3.1. Member of the 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
- M. Clerc, R. Deriche and T. Papadopoulo serve as Guest Editor for the special issue on Non-invasive brain imaging of the Journal of Neural Engineering.

#### 9.1.3.2. 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 (Pattern Recognition, NeuroImage, Frontiers in Neuroscience, Brain Topography, Journal of Neural Engineering).
- S. Deslauriers-Gauthier serves several international journals (NeuroImage, IEEE Transactions on Biomedical Engineering, Journal of Neural Engineering).
- M. Zucchelli serves several international journals (NeuroImage, BioMedical Engineering OnLine).

### 9.1.4. Invited Talks

- M. Clerc gave a talk in front of the French Academy of Sciences on June 21 2019.
- M. Clerc gave a keynote talk at the INCF conference in Warsaw on Sep 2, 2019.

- M. Clerc gave a keynote talk at the ACM Multimedia HealthMedia workshop in Nice on October 21, 2019.
- R. Deriche gave an invited keynote speech at Hassan II Academy of Sciences and Technology, Kingdom of Morocco (Feb. 27, 2019).

### 9.1.5. Leadership within the Scientific Community

- M. Clerc is vice-president of the CORTICO association <https://www.cortico.fr>
- M. Clerc is vice-president of the NeuroMod institute of Université Côte d'Azur

### 9.1.6. Scientific Expertise

- M. Clerc is member of the COERLE and CERNA committees.
- R. Deriche serves several international institutions in reviewing applications : ERC Grants, Swiss National Science Foundation, EPFL, the Netherlands Organisation for Scientific Research (NWO).
- T. Papadopoulo serves several international (Cordis-H2020 for FET-OPEN), national (ANR) and local (NeuroMod in Nice, iSite NEXt in Nantes) institutions in reviewing applications.

### 9.1.7. Research Administration

- M. Clerc was appointed director of the Inria Sophia Antipolis research Center in November 2019.
- M. Clerc was president of the CRCN hiring committee at Inria Bordeaux in 2019.
- M. Clerc was vice-president of the Inria Evaluation committee from September to October 2019.
- 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 (<https://www.olea-medical.com/en>).

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

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

M. Clerc teaches Functional Brain Imaging in the MSc Mod4NeuCog of Université Côte d'Azur (30 hours).

M. Clerc gave two lectures in a summer school on Brain Connectomics at the University of Verona, September 2019.

M. Zucchelli gave one lecture and one hands-on session in a summer school on Brain Connectomics at the University of Verona, September 2019.

### 9.2.2. Supervision

PhD defended on May 7th, 2019: Thinhinane Megherbi, "HARDI & High Order Tensors", 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 defended on Dec. 19th, 2019: Kostiantyn Maksymenko, "Inverse problem in EEG/MEG/SSEG: towards a better consideration of anatomo-functional constraints", Université Côte d'Azur, Supervisors: Théodore Papadopoulo and 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.

PhD in progress: Côme Le Breton, "Non invasive analysis of epileptogenetic networks and their response to neurofeedback", started June 2019. Supervisors: Maureen Clerc and Théodore Papadopoulo.

PhD in progress: Joan Belo, "Electroencephalography analysis of auditory attention when listening to music", started June 2019. Supervisors: Maureen Clerc and Daniele Schön.

### 9.2.3. *Juries*

- M. Clerc participated in the PhD Jury of Maria-Carla Piastra at University of Genova in March 2019.
- M. Clerc participated in the PhD Jury of Jelena Mladenovic at University of Bordeaux in September 2019.
- R. Deriche participated in the PhD Jury of L. El Gueddari at University Paris Saclay on Dec. 13th, 2019.
- R. Deriche participated in the PhD Jury of A. Mendoza Quispe at Ecole Normale Supérieure Paris-Saclay on Feb. 5th, 2019.
- R. Deriche participated in the PhD Jury of T. Megherbi at USTHB (Algiers) on May 7th, 2019.
- R. Deriche participated as a reviewer in the PhD Jury of M. Kchaou at ENIT (Tunis) defended on July, 2019.
- T. Papadopoulo participated as a reviewer in the PhD Jury of L. Uro at Sorbonne University Paris 6 on Nov. 25th, 2019.
- T. Papadopoulo participated as a reviewer in the HDR Jury of S. Bonnet at CEA Clinatec, Grenoble on Dec. 2nd, 2019.
- T. Papadopoulo and M. Clerc participated in the PhD Jury of K. Maksymenko at Université Côte d'Azur on Dec. 19th, 2019.

## 9.3. Popularization

- Demonstration of the P300 speller and of the subject adapted dry EEG cap to the local and national instances, M. Clerc, T. Papadopoulo, F. Turi, S. Guebba.
- Participation to the Cybathlon BCI Series, Graz. September 2019 [36].

### 9.3.1. *Articles and contents*

- An article mentioned the BCI projects of Athena in a special issue from magazine Le Point [https://www.lepoint.fr/sante/connecter-son-cerveau-a-un-ordinateur-pour-quoi-faire-18-03-2019-2301895\\_40.php](https://www.lepoint.fr/sante/connecter-son-cerveau-a-un-ordinateur-pour-quoi-faire-18-03-2019-2301895_40.php)

### 9.3.2. *Interventions*

- National events: Brain Awareness Week, two wide audience talks in Biot, Mouans Sartoux, and demonstration of Brain-Computer interfaces, M. Clerc, T. Papadopoulo.

## 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 was the Co-Chair of the Dycops-CAB conference (CAB 2019 Florianópolis, Brazil, 23rd-26th April).

O. Bernard was the head of the academic scientific committee for the AlgaeEurope conference (Paris, France, 3rd-5th December).

#### 10.1.1.2. Special sessions

M. Chaves together with Laetitia Giraldi (from team McTao, Inria) organized an invited session at the Conf. Decision and Control (Nice, France).

J.-L. Gouzé organized an invited session about control and biology at the FGS Conference (Nice, France).

#### 10.1.1.3. Member of the Organizing Committees

O. Bernard was in the organizing committee of the workshop "Growing microalgae for aquaculture in a Nordic climate : opportunities and challenges" (Trondheim, Norway, 28th-29th May).

### 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.

O. Bernard is area chair (Biosystems and Bioprocesses) for the IFAC World Conference (Berlin, Germany, 12nd-17th July).

M. Chaves was on the PC of the following conferences: JOBIM (Nantes, France), FOSBE (Valencia, Spain), and CSBio (Nice, France).

J.-L. Gouzé is a member of the program committee for the International Conference on Positive Systems, and CSBio (Nice, France).

#### 10.1.2.2. Reviewer

All BIOCORE members have been reviewers for the major 2019 conferences in our field: CDC, ECC, IFAC Congress, FOSBE,...

### 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, Algal Research, 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 workshop MADEV19, (“Mathématiques Appliquées à des questions de DEVELOPPEMENT”) (Dakar, November, 25th-27th).

O. Bernard was invited at the workshop “Control engineering concepts in systems- and synthetic biology” (Stavanger, Norway 20th-21st May).

P. Bernhard gave invited presentations at the “Rencontre interdisciplinaire: Théorie des jeux: concept mathématique et applications en économie”, University of Nice (November 2019).

M. Chaves gave a seminar on dynamics and feedback architectures in gene-metabolic pathways at the center for Modeling, Simulation and Interactions (MSI), Université Côte d’Azur (June 2019).

M. Chaves was invited to give a presentation at the Minisymposium on Modeling signal transduction/gene regulatory networks organized by T. Gedeon at the 9<sup>th</sup> International Congress on Industrial and Applied Mathematics (Valencia, Spain, July 2019).

M. Chaves was invited to give a presentation at the Symposium on Modeling approaches for cancer therapy, at Université de Lille (PHLAM) (September 2019).

Jean-Luc Gouzé was invited to give presentations at Autrans (IBIS seminar), Ifremer Nantes, Inria Paris (Kaist seminar with South-Korea).

S. Touzeau was invited to present works of the EPITAG associate team at the AgriNumA’2019 Symposium on “Digital agriculture in Africa”, Dakar, Senegal (April 30th, 2019) [43].

#### 10.1.5. Scientific Expertise

O. Bernard is a member of the scientific committee of the companies Inalve and BioEnTech.

M. Chaves was a member of the Selection Committee for a Maitre de Conference position at the Univ. Rennes.

J.-L. Gouzé was in several evaluation committees or juries: FWO, NWO, FNRS...

#### 10.1.6. 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 and W. Djema are members of the CLDD of Inria Sophia Antipolis (local committee for sustainable development).

M. Chaves is a member of the Education Board 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.

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 INRA metaprogramme on "Plant Health", a follow-up of the SMaCH metaprogramme (since 2016).

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Licence: F. Grogard (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: O. Bernard (18h ETD), "Automatic Control applied to biotechnological processes", M2, Ecole CentraleSupélec, Saclay, 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: F. Grogard (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: F. Grogard (45h ETD), "Elements of mathematical modelling", M1, MSc in Environmental Hazards and Risks Management, Université Côte d'Azur, 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

PhD: M. Haond. "Impact de la capacité de charge de l'environnement sur les dynamiques d'expansions de métapopulations. Théories et applications à un système expérimental hôte-parasitoïde", 2015-2019, Université Côte d'Azur. Supervisors: E. Vercken (UMR ISA), L. Mailleret and L. Roques (UR BioSP). Defended on 03/26/2019.

PhD: C. Martinez von Dossow. "Modélisation, analyse et contrôle de la croissance microalgale en cultures à haute densité", 13 May 2019, Sorbonne Université. Supervisors: O. Bernard, F. Mairet and A. Sciandra.

PhD: L. Gomes Pereira "Modeling cell response heterogeneity to pro-apoptotic ligands", 26 November 2019, Univ. Côte d'Azur. Supervisors: M. Chaves and J. Roux (IRCAN, Nice).

PhD in progress: I. Tankam Chedjou. "Modeling, analysis and control of plantain plant-parasitic nematodes", University of Yaoundé I, Cameroon, since December 2015. Supervisors: J.-J. Tewa (Univ. Yaoundé I), F. Grogard, L. Mailleret, S. Touzeau.

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: 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: Y. Fotso Fotso. “Modeling, analysis and control of coffee berry borers”, University of Dschang, Cameroon, since January 2017. Supervisors: B. Tsanou (Univ. Dschang), S. Bowong (Univ. Douala), F. Grogard, S. Touzeau.

PhD in progress: M. Gachelin. “Selection pressure to improve lipid productivity of microalgae”, since March 2017, UPMC. 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, Univ. Côte d’Azur. Supervisors: 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 (team 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 (team Valse, Inria Lille).

PhD in progress: B. Assis Pessi. “Modelling and Control of outdoor microalgal processes”, since November 2019, Université Côte d’Azur. Supervisors: O. Bernard and L. Giraldi (team McTao).

PhD in progress: C. Djuikem. “Modelling and control of perennial plant phytopathogens”, Université Côte d’Azur, since October 2019. Supervisors: F. Grogard, S. Touzeau, S. Bowong (Univ. Douala).

PhD in progress: M. Péré. “Modeling cancer drug response heterogeneity using experimental tumor single-cell dynamics and transcriptomics”, since October 2019, Univ. Côte d’Azur. Supervisors: M. Chaves and J. Roux (IRCAN, Nice).

### 10.2.3. Master thesis and internships

PFE: L. Guitou, EPU MAM, supervisors J.-L. Gouzé et V. Baldazzi.

M1: L. Guitou, EPU MAM, supervisors J.-L. Gouzé et V. Baldazzi.

M1: V. Tapissier, EPU MAM, supervisors J.-L. Gouzé et J. A. Sepulchre (UCA).

M2: L. Etienne. “Combinaison de microhabitats artificiels et de ressources alimentaires pour des acariens agents de lutte biologique”, Université de Montpellier & Montpellier SupAgro, supervisors: C. Bresch (ISA), L. van Oudenhove (ISA) and L. Mailleret.

M2: B. Louis. “Modélisation individu-centrée pour optimiser l’introduction de populations et Applications en biologie de la conservation et lutte biologique”. Université Côte d’Azur, supervisor: L. Mailleret.

M2: L. Plaza Alvarez, “Microalgae growth limited by light, nitrogen, and phosphorus”. Universidad Técnica Federico Santa María, Valparaiso. Supervisors: C. Martinez von Dossow and O. Bernard.

Other: O. Bernard supervised a project involving 4 students from CentraleSupélec (first year of engineering school), 4 months, to design a system for microalgae growing under biofilm forms.

### 10.2.4. Juries

O. Bernard was referee for the jury of the PhD thesis of Angela La, “Process development for symbiotic culture of *Saccharomyces cerevisiae* and *Chlorella vulgaris* for in situ CO<sub>2</sub> mitigation”. University Paris-Saclay (May, 22nd 2019).

M. Chaves was in the HDR jury of Eugenio Cinquemani as reviewer (November, Univ. Grenoble Alpes).

M. Chaves was in the PhD juries of: Mohamed Ladjimi (as reviewer; September, Univ. Lille), Hugues Mandon (as examiner; November, Univ. Paris-Saclay), Luis Pereira (as advisor; November, Univ. Côte d’Azur).

J.-L. Gouzé was reviewer of the PhD thesis of Fatima-Zahra Tani, November, University of Montpellier.

## 10.3. Popularization

### 10.3.1. Articles and contents

- A popularization article has been published in the book "Chimie verte et IAA - Vers une bioéconomie durable" [69].

### 10.3.2. Interventions

- O. Bernard gave two general public conferences on the topic "Will we drive cars powered by microalgae in 2030" (Saint Etienne de Tinée, 21st September and MAMAC, Nice, November, 13th).
- P. Bernhard did several interventions for a general audience in the Alpes-Maritimes (at Biot, Saint-Vallier and Sospel).
- L. Chambon participated in MASTIC activities in the school Emile Roux (5 June 2019).
- Several members of Biocore hosted schoolchildren to show them the team's research topics.

### 10.3.3. Internal action

- M. Chaves gave a presentation at the local PhD Seminars organized by the students, on modeling the interactions between mammalian cell cycle and circadian clock.

## BIOVISION Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events

- Bruno Cessac was a member of the Local Committee of the Conference NeuroFrance 2019 <https://www.neurosciences.asso.fr/V2/colloques/SN19/> (22-24 May 2019) one of the most important congress organised by the Société des Neurosciences with 1260 registrations: researchers, medical doctors, students, industrials, from France and from 26 foreign countries.
- Bruno Cessac has co-organized the parallel topical meetings and plenary sessions "Nonlinear waves in biology" in the international conference "Waves Cote d'Azur" <http://wavescotedazur.org/> Nice, France, 4-7 June 2019.
- Hui-Yin Wu was in the Program Chair of the 8th Eurographics Workshop on Intelligent Cinematography and Editing, Genoa, Italy
- Hui-Yin Wu was member of the conference program committees IEEE Conference on Games, London, UK
- Hui-Yin Wu was member of the 3rd Conference on Computing Systems and Applications, Algiers, Algeria
- Bruno Cessac has co-organized the 1st meeting of the NeuroMod Institute, Frejus, 1-2 July 2019

### 10.1.2. Scientific Events: Organisation

- MOMI 2019 (Le MONde des Mathématiques Industrielles) was a two-day workshop on applied and industrial mathematics. The workshop took place on the 25th and 26th of February, 2019 at the Inria Sophia Antipolis-Méditerranée research center with a focus on Big Data and Machine Learning. It was supported and financed by Inria, by the Maison de la Modélisation, de la Simulation et des Interactions – MSI of Université Côte d'Azur, by the Graduate School "Digital Systems for Humans" (EUR project ANR-17-EURE-004 from the "Programme Investissements d'Avenir"), by the Agence pour les Mathématiques en Interaction avec l'Entreprise et la Société (AMIES) and by the companies OLEA Medical, Thales Alenia Space and Wildmoka. In total, 3 keynote speakers, 7 industrial speakers and 90 participants (researchers, PhDs, postdocs and engineers) attended MOMI 2019. Finally, a company fair was organized to promote networking and identify future opportunities and collaborations. Selma Souihel and Evgenia Kartsaki have actively participated to the organizing committee. Their duties involved writing funding proposals, budget handling, communication and traveling arrangements for the keynote speakers, company fair and social event organization.
- E. Kartsaki and S. Souihel are participating to the organization of the PhD Seminars of Inria Sophia Antipolis - Méditerranée, 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 have been members of the organizing committee during the academic year 2018/2019 (Evgenia Kartsaki is still an ongoing member). Both have been involved in the scheduling, communication and diffusion of the seminars. These tasks include calls for presentations, calendar planning and promotion of each seminar. Finally, they were also involved in the organization of the MOMI 2019 conference.

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

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

#### 10.1.3.2. Reviewer - Reviewing Activities

- A. Calabrèse has served as a peer-reviewer for the following international journals (IF):
  - Scientific Reports (4.644)
  - Investigative Ophthalmology and Vision Science (3.683)
  - PLoS ONE (3.344)
  - Acta Ophthalmologica (3.206)
  - Translational Vision Science and Technology (2.399)
  - Journal of Vision (2.141)
- Bruno Cessac has been reviewer for J. Math. Neuro (IF 2.091)
- Hui-Yin Wu has been reviewer for Multimedia Tools and Applications. (IF: 2.101)

#### 10.1.4. Invited Talks

- E. Karstaki, The Rank Prize Funds - Symposium on The retinal processing of natural signals, Jun 2019, Grasmere, United Kingdom. Probing retinal function with a multi-layered simulator.
- E. Karstaki, First meeting of the NeuroMod Institute, Jul 2019, Fréjus, France. Probing retinal function with a multi-layered simulator.
- B. Cessac, D. Karvouniari, L. Gil, O. Marre., Multiscale dynamics in retinal waves, LACONEU 2019 Conference, Valparaiso, Chile, January 18th, 2019.
- B. Cessac, S. Souihel, "Anticipation in the retina and the primary visual cortex : towards an integrated retino-cortical model for motion processing", Workshop on Visuo-motor Integration, EITN, Paris, 6-7 Jun 2019. <https://visuomotor.sciencesconf.org/>.
- B. Cessac, M. Mantegazza (IPMC) "Modelling of physiological and pathological states in neuroscience: exchanges among theoreticians and experimentalists", First meeting of the NeuroMod Institute 1-2 July 2019, Fréjus.
- B. Cessac, S. Souihel, "Motion anticipation in the retina", Neurostic Conférence, Sophia Antipolis, 14-15 October 2019, <http://www.gdr-isis.fr/neurostic/?p=452>.
- Hui-Yin Wu, "Thinking Like a Director: Film Editing Patterns for Virtual Cinematographic Storytelling", 8th Eurographics Workshop on Intelligent Cinematography and Editing, Genoa, Italy. May 2019.
- Hui-Yin Wu, "Interactive and Multimedia Storytelling", PhD Seminars, UCA Inria. November 2019.

#### 10.1.5. Research Administration

Bruno Cessac is a member of the scientific council of the Institut NeuroMod de "Modélisation en Neurosciences et Cognition".

Bruno Cessac is a member of the "Bureau" of the Institut NeuroMod de "Modélisation en Neurosciences et Cognition".

Bruno Cessac was a member of the Groupe de Travail for the creation of the Inria project team FACTAS.

Bruno Cessac was a member of the Groupe de Travail for the creation of the Inria project team ATLANTIS.

Pierre Kornprobst has been an elected member of the Academic Board of UCA (*Conseil Académique*, from Nov. 2015 to Aug. 2019).

Pierre Kornprobst has been a member of the Comité de Suivi Doctoral (CSD) since March 2017.

Pierre Kornprobst has been an elected member of the Academic Council of UCA (*Conseil d'Administration*, since Dec. 2019).

## 10.2. Teaching - Supervision - Juries

### 10.2.1. 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 F. Lavigne), *Introduction to Modelling in Neuroscience*, 40 hours, Master Mod4NeuCog, Université Nice Sophia Antipolis, France.

### 10.2.2. Supervision

- PhD defended on December 18th, 2019. 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.

### 10.2.3. Juries

Pierre Kornprobst was member of the Comité de suivi de thèse of Alexandre Montlibert, from CERCO, Toulouse, France.

Pierre Kornprobst was reviewer of the PhD of Erwan David, entitled "L'impact des troubles du champ visuel sur les dynamiques spatio-temporelles de l'observation de scènes naturelles", from Université de Nantes, France.

Bruno Cessac was member of the Comité de suivi de thèse of Matthieu Sarazin from Paris VI and Halgurd Taher from EDSFA Nice.

## CAMIN Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

Christine Azevedo, Jessica Rose (Univ. Stanford, USA), Kelly Greves (Cincinnati Children's Hospital Medical Center, USA) organized an Instructional course during the EACD Conference (May, 23rd, 2019) in Paris : "Multichannel Neuromuscular Stimulation: NMES-assisted gait for children with cerebral palsy".

#### 9.1.1.1. Member of the Conference Program Committees

- Daniel Simon is member of the ICINCO conference program committee

#### 9.1.1.2. Reviewer

- Daniel Simon was reviewer for the RTNS, IEEE SYSTOL and IFAC ICINCO conferences
- Christine Azevedo was reviewer for IEEE EMBC, IROS, IFESS conferences

### 9.1.2. Journal

#### 9.1.2.1. Member of the Editorial Boards

- David Guiraud is member of the Editorial Board of Journal of Neural Engineering (JNE) and Medical and Biological Engineering and Computing (MBEC).
- David Guiraud is Associate Editor of Theme 6 (Neurorehabilitation) at IEEE EMBC conference.
- Christine Azevedo is member of the Editorial Board of Neuroprosthetics as Review Editor for Frontiers in Neurology and Frontiers in Neuroscience
- Christine Azevedo is member of ERCIM News' Editorial Board as Inria representant.

#### 9.1.2.2. Reviewer - Reviewing Activities

- Daniel Simon was reviewer for Simulation: Transactions of the Society for Modeling and Simulation International.

### 9.1.3. Invited Talks

- Daniel Simon gave a talk on "Feedback schedulers in practice A video decoder example" at the 40th International Summer School of Automatic Control Grenoble, France, September 9th, 2019.
- Daniel Simon gave a talk on "Dynamic simulation of a hand under electrical stimulation" at the "Modeling human through robotics, neuroscience, and ergonomics" AIST workshop, Montpellier, France, October 24th, 2019.
- François Bonnetblanc gave a talk on "Awake neurosurgery and electrophysiological spreading in the human brain: towards clinical applications through brain mapping? A new insight in brain connectivity" at the "Modeling human through robotics, neuroscience, and ergonomics" AIST workshop, Montpellier, France, October 24th, 2019.
- David Guiraud gave a talk on "Bidirectional control of hand prosthesis for amputees. A new breakthrough with sensory feedback to the brain" at the "Modeling human through robotics, neuroscience, and ergonomics" AIST workshop, Montpellier, France, October 24th, 2019.
- Christine Azevedo gave a talk on "FES-assisted grasping" at the "Modeling human through robotics, neuroscience, and ergonomics" AIST workshop, Montpellier, France, October 24th, 2019.
- Christine Azevedo gave a talk on "Interest of IMU sensors in various FES usages" at Lyon CyberBike event (<https://lcb2019.sciencesconf.org/>), September 9th, 2019.
- Christine Azevedo gave a talk on "Restoring a sport activity by stimulating paralyzed muscles" during Inria Scientific Days (June 2019).

### 9.1.4. Leadership within the Scientific Community

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



### 9.1.5. Scientific Expertise

- Christine Azevedo is member of LIRMM CNU 61 commission
- Christine Azevedo was member of the selection committee for a Lecturer position at ISIR laboratory (Université Pierre et Marie Curie), (April 15th, 2019)
- Christine Azevedo was member of the selection committee of Researcher Competition at Inria Bordeaux (May 2019)

### 9.1.6. Research Administration

Christine Azevedo was member of Inria Evaluation Committee (CE). She participated in the competitive examinations for junior researcher recruitment in Inria Bordeaux Center (April 2019) and Inria Grenoble Center (May 2018).

Christine Azevedo is member of Inria Ethical Committee (COERLE).

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Master Neuroprothèses : Daniel Simon, "Control basics", 6.5h, M2, Université de Montpellier, France

Master Neuroprothèses : François Bonnetblanc, "Neurophysiologie", 8h, M2, Université de Montpellier, France

### 9.2.2. Supervision

PhD : Maxence Blond, "Optimisation de la propulsion d'un véhicule sous-marin à propulseurs azimutaux", University of Montpellier, April 17th 2019, Daniel Simon

PhD : Anthony Boyer, "Électrophysiologie cérébrale associée à la chirurgie éveillée des tumeurs lentes : Couplage de l'ECOG et de la SED pour les investigations peropératoires et analyse de l'EEG postopératoire", University of Montpellier, September 24th 2019, François Bonnetblanc.

PhD in progress : XinYue Lu, "Cardiorespiratory Monitoring by Microphone via Tracheal Sounds in the Context of Implanted Phrenic Nerve Stimulation", University of Montpellier - Inria - NeuroResp, April 2017-March 2020, Christine Azevedo, Thomas Similowski, Serge Renaux

PhD in progress : Lucie William, "Selective implanted neural stimulation to recover the prehension for quadriplegic", University of Montpellier-Inria-NEURINNOV, october 2019-september 2022, supervised by David Guiraud and Christine Azevedo

PhD in progress : Hélène Moron, MD, "Jitter of MUAP measured through needle EMG used as a biomarker of the Botulin toxin effect", University of Montpellier-Inria, october 2019-september 2022, supervised by David Guiraud and Arnaud Dupeyron.

### 9.2.3. Juries

Christine Azevedo was external examiner for the PhD thesis of Sean Doherty (UCL, London, France) "Investigation of transcutaneous neuromodulation techniques and development of a wearable device for control of the bladder following spinal cord injury." (April 30th 2019).

Christine Azevedo was examiner for the PhD thesis of Osama Mazhar (University of Montpellier, LIRMM, France) "Recognition of human gestures based on vision for the human-robot interaction." (October 24th 2019).

Christine Azevedo was examiner for the PhD thesis of Andrii Shachykov (University of Lorraine, LORIA, France) "Neural modeling of human motor coordination inspired by biological signals aiming for parkinsonian gaits." (December 17th 2019).

## 9.3. Popularization

- Christine Azevedo presented FREEWHEELS project at Sport Unlimitech event in Lyon <https://sportunlimitech.com/> (September 2019)
- CAMIN team was present (demonstration and masterclass lecture) at FUTURES festival in Paris <https://futures.paris/> (June 13th 2019)
- CAMIN team was present (demonstration and lecture) during the visit of the Secretary of State for Persons with Disabilities at Inria Paris Center (November 19th 2019)

### **9.3.1. Education**

- Christine Azevedo was mentor (2018-2019) for one Savanturiers project with Saussan school (CM1/CM2 level) <https://savanturiersdelahightech.wordpress.com/category/projets-2018-2019/ecole-elementaire-joseph-deteil/>
- Christine Azevedo is mentor (2019-2020) for one Savanturiers project with Montbazin school (CE1/CE2 level) <https://savanturiers-projects.cri-paris.org/projects/NhbsL7Uz/blogentries>
- Christine Azevedo organized initiation sessions to informatics using Thymio robot at École Valfalis (Montbazin, France) in CP, CE1, CE2, CM1 and CM2 levels, 5 sessions of 1 hours per level (March-June 2019).
- Christine Azevedo participated to a 1-day of training future trainers in robotics at school (DANE) (March 2019).

### **9.3.2. Interventions**

- CAMIN team welcomed 1 week internships of 3 schoolchildren this year (4e, 3e)

## CASTOR Project-Team

## 6. Dissemination

### 6.1. Promoting Scientific Activities

#### 6.1.1. Journal

##### 6.1.1.1. Member of the Editorial Boards

- J. Blum is member of the editorial board of the Journal Scientific Computing.
- F. Rapetti is member of the editorial board of the Advances in Computational Mathematics (ACOM) journal by Springer
- C. Boulbe is managing editor of the SMAI Journal of Computational Mathematics

##### 6.1.1.2. Reviewer - Reviewing Activities

- H. Guillard has been reviewer for the Journal of Computational physics, Computers and Fluids and International Journal for Numerical methods in Fluids.

#### 6.1.2. Invited Talks

- F. Rapetti: Keynote speaker at the Enumath conference (Egmond aan Zee), oct 2019, "High-order Whitney forms on simplices"

#### 6.1.3. Leadership within the Scientific Community

- H. Guillard is coordinator of the topic "Turbulence and transport of edge plasma" within the Fédération FR-FCM

## 6.2. Teaching - Supervision - Juries

### 6.2.1. Teaching

Licence : F. Rapetti, Mathématiques 2,30h équivalent TD, L2, Université Cote d'Azur, France

Master : F. Rapetti, Méthodes numériques, 70h équivalent TD, M1, Université Cote d'Azur, France

Ecole d'ingénieur, C. Boulbe, Analyse Numérique 2, 45 équivalent TD, niveau L3, Université Cote d'Azur

Ecole d'ingénieur, C. Boulbe, Analyse numérique 1, 71h équivalent TD, niveau L3, Université Cote d'Azur

Ecole d'ingénieur, C. Boulbe, Algèbre linéaire et Scilab, 26h équivalent TD, Université Cote d'Azur

Ecole d'ingénieur, C. Boulbe, Projet 1, 41h équivalent TD, Université Cote d'Azur

Licence: A. Sangam, Mathématiques Fondements 1, 60h, Semestre 1 de la Licence, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Méthodes Mathématiques - Approche Continue, 30h, Semestre 1 de la Licence, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Mathématiques Compléments 1, 5h, Semestre 1 de la Licence, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Mathématiques Fondements 2, 6h, Semestre 2 de la Licence, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Analyse 2, 2h, L2, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Analyse Numérique, 70h, L3, Université Nice Sophia Antipolis, France

Licence: A. Sangam, Calcul Différentiel, 20h, L3, Université 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

### **6.2.2. Supervision**

PhD : Xiao Song, Model-based Control-oriented Scenario Construction in Tokamaks, Université Cote d'Azur, 6 décembre 2019, Blaise Faugeras, Holger Heumann

PhD in progress : Ali Elarif, "Simulation numérique des instabilités magnétohydrodynamique dans les Tokamaks", October 2017, Hervé Guillard

### **6.2.3. Juries**

- Hervé Guillard has been part of the jury for the Phd defence of Corentin Prigent, "Etude numérique et modélisation du modèle d'Euler bi-température : point de vue cinétique", Bordeaux University, 24/10/2019.
- Hervé Guillard was referee for the Phd jury of Clément Colas, "Formulation intégrale implicite pour la modélisation d'écoulements fluides en milieux encombrés", AMU University, 14/11/2019.
- Hervé Guillard has been part of the jury for the Phd defence of Quentin Carmouze, "Modélisation et simulation numérique des écoulements diphasiques denses et dilués", Nice University, 28/12/2019.
- F. Rapetti: Juan Antonio Soler Vasco, Univ. Aix-Marseille, Sep. 2019.
- F. Rapetti: Anouk Nicolopoulos-Salle, Univ. Sorbonne Paris, Déc. 2019.
- B. Faugeras, H. Heumann, H. Guillard and J. Blum: Xiao Song, Université Cote d'Azur, Dec. 2019

## COFFEE Project-Team

## 8. Dissemination

### 8.1. Promoting Scientific Activities

#### 8.1.1. Journal

##### 8.1.1.1. Member of the Editorial Boards

Thierry Goudon is Co-Ed. in Chief SMAI J. Comput. Math.

##### 8.1.1.2. Reviewer - Reviewing Activities

The team members serve regularly as reviewers for journals in applied mathematics, scientific computing, numerical analysis, mathematical analysis.

#### 8.1.2. Scientific Expertise

T. Goudon has been chair of the international panel of experts for the evaluation of all the Research Units of Mathematics in Portugal, nominated by the **Fundação para a Ciência e a Tecnologia**. Not only the panel had to write an assessment (see <https://www.fct.pt/apoios/unidades/avaliacoes/2017/docs/Mathematics.pdf>) on the scientific production and activities of the research units, but it was also in charge of the attribution of the funding, PhD and postdoc fellowships, for a total amount of 5.5 MEUR (see [https://www.fct.pt/apoios/unidades/avaliacoes/2017/docs/Mathematics\\_table.pdf](https://www.fct.pt/apoios/unidades/avaliacoes/2017/docs/Mathematics_table.pdf)).

T. Goudon is Scientific Officer at the Ministry of Research.

T. Goudon is member of the scientific boards of CIRM and FSMP.

### 8.2. Teaching - Supervision - Juries

#### 8.2.1. Teaching

Florent Berthelin, Master2 Mathématiques fondamentales, Université Côte d'Azur, 120h.

Florent Berthelin, Chair of the Master 2 Mathématiques fondamentales, Université Côte d'Azur.

Florent Berthelin, Analysis, L2, Université Nice Sophia Antipolis, 72h.

Laurent Monasse, Numerical analysis, L3, Université Nice Sophia Antipolis, 40h.

Thierry Goudon is President of the national competition to hire teachers (agregation de mathématiques).

#### 8.2.2. Supervision

- PhD: Giulia Lissonni, DDFV methods and domain decomposition: applications in fluid mechanics, 04 October 2019, Stella Krell and Thierry Goudon.
- 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: 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.

#### 8.2.3. Juries

T. Goudon has been reviewer for the PhD theses:

- Z. Karaki, "Équations cinétiques avec champ magnétique", Nantes, Dec. 2019.
- M. Mezache, "Processus oscillatoires lors de l'agrégation et la fragmentation des fibres amyloïdes", Sorbonne Univ., Dec. 2019.

## **EPIONE Project-Team**

# **9. Dissemination**

## **9.1. Promoting Scientific Activities**

### **9.1.1. General Chair, Scientific Chair**

- X. Pennec organized the **Geometric Statistics workshop** in Toulouse from August 30 to September 5 2019, in the framework of the Associated team GeomStats with Stanford, the ERC G-Statistics and the thematic semester "Statistics with Geometry and Topology" of the CIMI Labex of Toulouse. The workshop featured 6 hours courses by Susan Holmes and Xavier Pennec and talks by Nina Miolane and Yann Thanwerdas.
- N. Ayache organized the scientific program of the conference "The Académie des Sciences in Nice and Sophia Antipolis" in June 20-21 2019.

### **9.1.2. Member of the Organizing Committees**

- X. Pennec was a co-chair of the **MICCAI 2019 Workshop on Mathematical Foundations of Computational Anatomy (MFCA 2019)**, which was held in Shenzhen in October 2019 [57].
- M. Sermesant was a co-chair of the MICCAI 2019 Workshop Statistical Atlases and Computational Models of the Heart (STACOM 2019), which was held in Shenzhen, October 2019.
- H. Delingette co-organized the meeting on "Digital Sciences & Technologies" on April 3rd as well as the meeting on "Digital Sobriety" on Dec. 2nd as part of the scientific animation of the UCA Academy of Excellence on Digital Sciences. He was also member of the organizing committee of the 2019 SophIA summit in Sophia Antipolis that was held in Sophia Antipolis from Nov. 20-22nd.

### **9.1.3. Scientific Events Selection**

#### *9.1.3.1. Member of the Conference Program Committees*

- X. Pennec was a program committee member and session chair of the Geometric Sciences of Information conference GSI' 2019 at ENAC in Toulouse.

#### *9.1.3.2. Reviewer*

- M. Lorenzi was a reviewer for the conferences Neural Information Processing Systems (NeurIPS 2019), International Conference on Machine Learning (ICML 2019), Medical Image Computing and Computer Aided Intervention (MICCAI 2019), International Conference on Learning Representations (ICLR 2020), Information Processing in Medical Imaging (IPMI 2019).
- M. Sermesant was a reviewer for Medical Image Computing and Computer Aided Intervention (MICCAI 2019), the MICCAI workshop STACOM and the Computing in Cardiology conference.
- X. Pennec was a reviewer for Medical Image Computing and Computer Aided Intervention (MICCAI 2019) and for Information Processing in Medical Images (IPMI 2019), the 35th Annual Symposium on Computational Geometry (CG Week 2019).
- H. Delingette was a reviewer for the International Symposium on Biomedical Imaging (ISBI' 19), the international conference on computer-aided interventions (IPCAI' 19), the International Conference on Computer Vision and Pattern Recognition (CVPR 2019).

### **9.1.4. Journal**

#### *9.1.4.1. Member of the Editorial Boards*

- H. Delingette is a member of the editorial board of the journal Medical Image Analysis (Elsevier).

- 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).
- X. Pennec is a member of the editorial board of the journal Medical Image Analysis (MedIA, Elsevier), of the International Journal of Computer Vision (IJCV, Springer), and of the Journal of Mathematical Imaging and Vision (JMIV, Springer).
- 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).
- I. Stobant is editorial coordinator for Medical Image Analysis, Elsevier (since october 2001).

#### 9.1.4.2. 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.
- X. Pennec was a reviewer for the Journal of Computational Dynamics, Annals of Statistics, Communications in Statistics - Simulation and Computation, Linear Algebra and its Applications, Information geometry, Medical Image Analysis, IEEE Transactions on Medical Imaging.
- M. Sermesant was a reviewer for the following journals: Journal of Machine Learning Research, 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, Pattern Recognition, and Computer Vision and Image Understanding.

#### 9.1.5. Invited Talks

- **M. Lorenzi** was invited to give a lecture to: Nice Genomic Winter School, Dec 18th; Imaging-Genetics Winter School, University of Verona, Nov 25th-29th; SophIA Summit of Sophia Antipolis, Nov 19th; International Tau Workshop, Geneva University Hospital, Nov 11th; International Meeting "The future of Medicine Starts Now", Menarini Foundation, Genoa, Italy, Sep 27th; European Glaucoma Society Meeting, Bordeaux, Aug 30th; Big@UCA Summer School, Nice, Jun 26th; Lacassagne Hospital, Jun 20th; VUmc Hospital, Amsterdam, May 23rd; Collège de France, Paris, Apr 23rd; UCA Maison de la Simulation, Apr 18th; International Conference ISBI 2019, Venice, Apr 9th; UPF University, Barcelona, Feb 7th;
- **H. Delingette** was a keynote speaker at the University of Twente (NL) seminar on Nov 6th, at the regional Otolaryngology meeting "ORL PACA" on June 15th 2019, and at the Machine Learning Meets Medical Imaging workshop in Shenzhen, China, on Oct 13th.
- **X. Pennec** gave the following plenary invited talks:
  - IPAM program on Geometry and Learning from Data in 3D and Beyond (Los Angeles, USA, 02/04).
  - CARS 2019 conference in Rennes (19/06).
  - the Academie des Sciences en région in Nice and Sophia Antipolis (21/06).

He also gave invited lectures and seminars at: Copenhagen University (DK 18/03); the Institut Mathématique de Toulouse (27/05); the ENUMATH 2019 conference held in Egmond aan Zee (NL, 04/10); LJK-Deterministic Models and Algorithms: EDP-AIRSEA-CVGI Seminar, Univ Grenoble (16/12).

- **M. Sermesant** was an invited speaker at the European Heart Rhythm Association conference (18/03), eHealth Monaco (27/03), Cardiac Electromechanics workshop (15/04), EuroCMR (03/05), CVPR Medical Imaging workshop (16/05), Innovation Alzheimer summer school (26/06), Académie de Médecine working group on AI & Healthcare (10/09), Inria/SIMULA workshop (26/09), SOPH.I.A Summit (20/11) and TRM Forum (10/12).
- **N. Ayache** gave the following plenary invited talks:
  - AI for Healthcare: Hope & Challenges. Global Forum on AI for Humanity, Paris, 2019.
  - AI for Medical Imaging & Digital Twins, Keynote Lecture, Shezhen University, China 2019.
  - AI for e-medecine, 5th International Symposium on Multi-disciplinary Computational Anatomy, Fukuoka, Japan 2019.
  - Le jumeau numérique: images, modèles et IA. Académie nationale de médecine, Paris, 2019.
  - Intelligence Artificielle et médecine. Académie des Sciences, Nice, 2019.
  - La Santé à l'ère numérique, Institut de l'ENS, 2019.
  - Imaging in Cancer - Multimodal Analysis, iBV, Nice, 2019

#### 9.1.6. Leadership within the Scientific Community

- **H. Delingette** is a member of the MICCAI Society Board of Directors.
- **H. Delingette** is elected as MICCAI Society's Fellows.

#### 9.1.7. Scientific Expertise

- **M. Lorenzi** was reviewer of the funding agency ANR (Agence Nationale de la Recherche, France). He is providing scientific consulting for the company MyDataModels and Flexper through an Inria Tech research contract.
- **X. Pennec** was a reviewer for the funding agency Israel Science Foundation (ISF).
- **M. Sermesant** was an evaluator for the Wellcome Trust (UK), the NSF (USA) and the Netherlands research council.
- **H. Delingette** is a member of the scientific committee of the institute 3IA Côte d'Azur and was reviewer of the funding agency ANR (Agence Nationale de la Recherche, France).
- **N. Ayache** is a member of the following scientific committees:
  - 2016 -: Scientific advisory committee for Région Ile de France (20 members),
  - 2015 - 2019: 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.

#### 9.1.8. Research Administration

- **N. Ayache** is the scientific director of the 3IA Côte d'Azur since its creation in April 2019.
- **Marco Lorenzi** 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.
- **Xavier Pennec** is co-director of the Ecole doctorale STIC of Université Côte d'Azur. He is a member of the committee of EDSTIC, of the Doctoral follow-up Committee (CSD) at Inria Sophia Antipolis, and participated to the PhD fellowship granting committees of EDSTIC, Cofund at UCA, CORDI at Inria. He is a member of the "Comité de la Recherche Biomédicale en Santé Publique (CRBSP)" of the Nice University Hospital (CHU). At University Côte d'Azur / IDEX-JEDI, 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. He was elected member of the Evaluation Committee of Inria (Sep. 2019 to Aug. 2023) and participated to the promotion commission for CRCN, DR1, DR0.



- **M. Sermesant** is an elected member of the Inria Sophia Antipolis research centre committee.
- **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 director of the Academy of excellence on “Networks, Information and Digital Society” at the Université Côte d’Azur. He is the deputy director 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 Saclay, France.

Master: H. Delingette and X. Pennec, Medical Image Processing, 30h course, M2 Data Science & AI, Univ. Côte d’Azur, France.

Master: H. Delingette, Data Visualization, 6h course, M1 Data Science & AI, Univ. Côte d’Azur, France.

Master: M. Lorenzi, Bayesian Learning, 30h course, Master Data Science, Univ. Côte d’Azur, France.

Master: M. Lorenzi, Model Selection and Resampling Methods, 30h course, Master Data Science, Univ. Côte d’Azur, France.

X. Pennec is a member of the pedagogical council of the Computational biology master QCSBD, Univ. Côte d’Azur, France.

### 9.2.2. Theses Defended

- Qiao Zheng, Deep learning for cardiac image analysis, Université Côte d’Azur. Started in January 2016. Co-directed by N. Ayache and H. Delingette. Defended on March the 27<sup>th</sup>, 2019.
- 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. Defended on November the 15<sup>th</sup>, 2019.
- 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. Defended on November the 29<sup>th</sup>, 2019.
- 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. Defended on December the 18<sup>th</sup> 2019.

### 9.2.3. PhD in progress

- 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.
- 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.
- 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.

- 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.
- 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.
- Nicolas Cedilnik, Personalised Modeling for Ventricular Tachycardia Ablation Planning, Université Côte d'Azur. Started in 2017. Co-directed by M. Sermesant and H. Cochet.
- Florent Jousse, Analyse statistique de forme, de déformations et d'apparences de surfaces anatomiques pour l'aide à la dermatologie et à la chirurgie plastique. Started in 2019. Cifre fellowship with Quantificare. Co-directed by X. Pennec and H. Delingette.
- Buntheng Ly, Cardiac Image Analysis for Sudden Cardiac Death Prediction, Université Côte d'Azur. Started in 2019. 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.
- Yann Thanwerdas, Statistical Dimension Reduction in Non-Linear Manifolds for Brain Shape Analysis, Connectomics & Brain-Computer Interfaces, Université Côte d'Azur. Started in 2019. Directed by 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.
- Zihao WANG, Cochlear Implantation Modeling, Planning & Evaluation. Started in 2018. Directed by H. Delingette.
- Hind Dadoun, AI-Based Real Time Diagnosis of Abdominal Ultrasound, Université Côte d'Azur. Started in December 2019. Co-directed by N. Ayache and H. Delingette.
- Paul Tourniaire, AI-based selection of imaging and biological markers predictive of therapy response in lung cancer, Université Côte d'Azur. Started in 2019. Co-directed by N. Ayache and H. Delingette.

#### 9.2.4. *Juries*

- Marco Lorenzi was invited jury member for the PhD defense of Remi Domingues (EURECOM, Sophia Antipolis).
- Xavier Pennec was reviewer and member of the jury for the PhDs of: Line Kuhnel, Univ. Copenhagen, DK, feb. 2019; Maxime Louis, UPMC, Sorbonne Universités, Paris, sep. 2019; Emilie Buessler, Univ. Grenoble-Alpes, Dec. 2019. He was President of the PhD jury of Emmanuelle Poulain, Univ. Cote d'Azur, Oct. 2019, and President of the HDR jury of Olivier Commowick, Univ. Rennes, Jun. 2019.
- Maxime Sermesant was a reviewer for the PhD of Kenny Rumindo (Lyon).
- Hervé Delingette was a reviewer and member of the jury in the PhD thesis committee of H. Bertrand (ENST), defended on Jan. 8th 2019, of H. Oliveri (ENS LYon) defended on May 28th 2019.

### 9.3. Popularization

#### 9.3.1. *Interventions*

- Maxime Sermesant did three 45 minutes interventions on Mathematics and Healthcare at the Jules Ferry High School in Cannes.
- Tania Bacoyannis and Nicolas Cedilnik presented AI for high school teachers and interacted with them on this topic during a day.

## **LEMON 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*

Gwladys Toulemonde is member of the scientific committee of Spatial Statistics 2019 (Sitges, Spain)

### **9.1.2. Journal**

#### *9.1.2.1. Member of the Editorial Boards*

Gwladys Toulemonde is guest editor of a special issue of the Journal Spatial Statistics entitled Space-time modeling of rare events and environmental risks. This special issue is related to the conference METMA 9 organized in 2018 in Montpellier by Gwladys Toulemonde and Liliane Bel.

Antoine Rousseau is associate editor of Discrete and Continuous Dynamical Systems series S **DCDS-S**.

#### *9.1.2.2. Reviewer - Reviewing Activities*

Carole Delenne is a reviewer for Journal of Hydraulic Research, Water, Computers Environment and Urban Systems (1 to 3 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 (3 manuscripts/year)

Pascal Finaud-Guyot is a reviewer for Journal of Hydroinformatics, Advances in Water Resources, Environmental Modelling and Software, Journal of Hydrology (2 manuscripts/year)

Gwladys Toulemonde is a reviewer for computational statistics and data analysis, Dependence modeling, Extremes, Journal of applied Statistics, Journal of Statistical Theory and Practice, Statistics and Computing, Water Ressources research (1 to 3 manuscripts/year)

### **9.1.3. Invited Talks**

Gwladys Toulemonde was invited in a session of the Extreme Value Analysis (EVA) conference in July, 2019 (Zagreb, Croatia).

Gwladys Toulemonde was invited in a session of the ERCIM-CMStatistics conference in December, 2019 (London, UK).

Antoine Rousseau was invited at side event on AI and numerical modelling at COP25 (Madrid, Spain) in December 2019.

### **9.1.4. 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).

### **9.1.5. Scientific Expertise**

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

Antoine Rousseau is member of the international scientific board of the Climat-AmSud program

### 9.1.6. 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,

Carole Delenne is elected member of the HSM board (UMR 5569),

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*)

Antoine Rousseau is a member of the Inria CRI-SAM scientific board (*Bureau du 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*) and vice-president since July 2019

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*)

Gwladys Toulemonde was appointed in 2019 external member of a MCF recruitment at the university of Compiègne (MCF 4121, section CNU 26).

Gwladys Toulemonde was appointed in 2019 external member of a MCF recruitment at the university of Nice (MCF 4576, section CNU 26).

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Four LEMON permanent members (out of five) 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. The teaching load is summarized in Table 1 .

Gwladys Toulemonde is responsible for student recruitment at the IG department (Polytech Montpellier).

Table 1. Teaching

Antoine Rousseau	Teaching M1 level: 0 to 30 hrs/year Student supervision: 50 hrs/year
Carole Delenne	Teaching L1-M2 level: 200-250 hrs/year hydraulics, applied mathematics, informatics Student tutorship and supervision: 50-100 hrs/year
Gwladys Toulemonde	50% CNRS delegation in 2019 Teaching L3/M1/M2 level: 128 hrs in 2019 mathematics, probability, statistics, data mining
Pascal Finaud-Guyot	Teaching L3/M1/M2 level: 200-250 hrs/year hydraulics, applied mathematics, informatics Student tutorship and supervision: 50-100 hrs/year
Vincent Guinot	Teaching L3/M1/M2 level: 290 hrs/year Student tutorship and supervision: 50-100 hrs/year

### 9.2.2. Supervision

PostDoc: Gwladys Toulemonde advises a post-doctoral fellow (F. Palacios-Rodriguez) from october 2017 to september 2019 on spatio-temporal extreme processes to assess flood hazards [11], [12] (NUMEV funding until Oct 2018)

PhD : Gwladys Toulemonde has co-supervised a PhD thesis defended in september 2019 in an established collaboration with Sanofi and is also involved in two other industrial collaborations (BALEA, Twin Solutions)

PhD in progress :

- Vita Ayoub, "Assimilation of satellite derived flood information for better parameterizing and controlling large scale hydraulic models over data scarce areas", november 2018, Carole Delenne and R. Hostache (LIST, Luxembourg).
- Yassine Bel-Ghaddar, "Data fusion for urban network mapping. Application to sanitation networks", may 2019, Carole Delenne and A. Begdouri (LSIA, Fès, Morocco).
- Joseph Luis Kahn Casapia, "Coupling hydro-ecological reduced models for the simulation of fresh water ecosystems", September 2018, Antoine Rousseau and C. Casenave (INRA, Montpellier).
- Joao Guilherme Caldas Steintraesser, "Coupling large and small scale shallow water models with porosity in the presence of anisotropy", October 2019, Antoine Rousseau and Vincent Guinot.
- Cécile Choley, "Experimental and numerical study of the street-building exchange during urban floods", November 2019, Pascal Finaud-Guyot.

### 9.2.3. Juries

Gwladys Toulemonde has participated to the PhD thesis jury of Abdul-Fattah Abu-Awwad defended in June 2019 at the University of Lyon.

Carole Delenne was invited member of the PhD thesis jury of Gabrielle Rudi Chovelon, defended in May 2019 at SupAgro Montpellier.

## 9.3. Popularization

### 9.3.1. Internal or external Inria responsibilities

Gwladys Toulemonde is involved in the board of the CFEM (commission française pour l'enseignement des mathématiques) since october, 2019, representing the SFdS.

Gwladys Toulemonde is involved in the board of Animath since october, 2019, representing the SFdS.

Gwladys Toulemonde is a member of the organizing committee of the Forum Emploi Math (FEM 2019, Paris).

Antoine Rousseau is member of the scientific board of [Fondation Blaise Pascal](#)

Antoine Rousseau is member of the *MakeSEnS* group at Inria, instructed by Inria's management to make proposals for the institute to tackle current environmental issues: see [7]

Antoine Rousseau is co-editor of the national blog [binaire](#), published by [Le Monde](#)

### 9.3.2. Articles and contents

- *Pour une écologie numérique* (in french), [blog post on binaire](#), Antoine Rousseau, 2019.
- *Ces océans qu'on modélise* (in french), [blog post on binaire](#), Antoine Rousseau and coauthors, 2019.

### 9.3.3. Education

In 2019, Antoine Rousseau gave public lectures in the junior school of Aubais, France (30 kids, 10 years old): 2.5 days of introduction to coding.

**9.3.4. Interventions**

Antoine Rousseau gave a 2h lecture in Lycée Joffre (high school), Montpellier, France (60 students, 18-20 years old). The conference was linked to the 2019-2020 topic for the french engineering schools competition (TIPE): mathematical modelling for oceans. Antoine Rousseau also dedicated one full day to help young students to design their TIPE project.

## MATHNEURO Project-Team

## 7. Dissemination

### 7.1. Promoting Scientific Activities

#### 7.1.1. Scientific Events: Organisation

##### 7.1.1.1. General Chair, Scientific Chair

Mathieu Desroches was one of the Program Chairs of the **Waves Côte d'Azur conference**, held in Nice, 4-7 June, 2019.

##### 7.1.1.2. Member of the Organizing Committees

Mathieu Desroches was on the Scientific Committee of the **Waves Côte d'Azur conference**, held in Nice, 4-7 June, 2019.

Olivier Faugeras and Romain Veltz were on the Advisory Board of the **5th International Conference on Mathematical Neuroscience**, held in Copenhagen (Denmark), June 24 - 26, 2019.

#### 7.1.2. Journal

##### 7.1.2.1. Member of the Editorial Boards

Olivier Faugeras is the co-editor in chief of the open access **Journal of Mathematical Neuroscience**. This journal has a 2-year Impact Factor of 2.091.

Mathieu Desroches was Guest Editor of a **Special Issue on "Excitable Dynamics in Neural and Cardiac Systems"** of the journal **Communications in Nonlinear Science and Numerical Simulation**. This journal has 5-year Impact Factor of 3.637.

##### 7.1.2.2. 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, Chaos: An International Journal of Nonlinear Science, 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, Plos Computational Biology and Acta Applicandae Mathematicae.

#### 7.1.3. Invited Talks

Emre Baspinar, "A geometric model with frequency-phase and its application to image enhancement", conference "Shape Analysis in Biology", Sorbonne Université, Paris, November 2019

Emre Baspinar, "A sub-Riemannian cortical model with frequency-phase and its application to orientation map construction.", 1st meeting of the NeuroMod Institute, Fréjus (France), July 2019.

Emre Baspinar, "A sub-Riemannian model of the visual cortex based on frequency-phase and its applications" [poster], 5th International Conference on Mathematical Neuroscience, Copenhagen (Denmark), June 2019.

Emre Baspinar, "A sub-Riemannian cortical model with frequency-phase and its application to orientation map construction.", Waves Côte d'Azur Conference, Nice (France), June 2019.

Mathieu Desroches, “Canards in excitatory networks”, XXXIXth Dynamics Days Europe Conference, Rostock (Germany), September 2019.

Mathieu Desroches, “Canards and spike-adding in neural bursters”, International Congress on Industrial and Applied Mathematics (ICIAM), Valencia (Spain), July 2019.

Mathieu Desroches, “Canards in excitatory networks”, SIAM Conference on Application of Dynamical Systems, Snowbird (USA), May 2019.

Mathieu Desroches, “Slow-fast analysis of bursting oscillations: old and new”, Bilateral International Meeting UK-France, Royal Society, Chicheley Hall, Milton Keynes (UK), February 2019.

Olivier Faugeras, “The meanfield limit of a network of Hopfield neurons with correlated synaptic weights”, Bilateral International Meeting UK-France, Royal Society, Chicheley Hall, Milton Keynes (UK), February 2019.

Louisiane Lemaire, “Modeling the initiation of cortical spreading depression triggered by the hyperactivity of GABAergic neurons” [poster], 1st meeting of the NeuroMod Institute, Fréjus (France), July 2019.

Louisiane Lemaire, “Modeling the initiation of cortical spreading depression triggered by the hyperactivity of GABAergic neurons” [poster], 5th International Conference on Mathematical Neuroscience, Copenhagen (Denmark), June 2019.

Martin Krupa, “Neuronal mechanisms for sequential activation of memory items”, International Congress on Industrial and Applied Mathematics (ICIAM), Valencia (Spain), July 2019.

Martin Krupa, “Modeling cortical spreading depression induced by the hyperactivity of interneurons”, Waves Côte d’Azur Conference, Nice (France), June 2019.

Simona Olmi, “Cross frequency coupling in next generation inhibitory neural mass models”, Eugene Wigner Colloquium (Physics Colloquium), TU Berlin, Berlin (Germany), December 2019.

Simona Olmi, “Cross frequency coupling in next generation inhibitory neural mass models”, XXXIXth Dynamics Days Europe Conference, Rostock (Germany), September 2019.

Simona Olmi, “Influence of network topology on spreading of epileptic seizure”, Waves Côte d’Azur Conference, Nice (France), June 2019.

Simona Olmi, “Influence of network topology on spreading of epileptic seizure”, XXIV Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi, Parma (Italy), June 2019.

Simona Olmi, “Enhancing power grid synchronization and stability through time delayed feedback control”, EPS conference “Statistical Physics of Complex Systems”, Stockholm (Sweden), May 2019.

Simona Olmi, “The Kuramoto model with inertia: from fireflies to power grids”, School and Workshop on Patterns of Synchrony: Chimera States and Beyond, Trieste (Italy), May 2019.

Yuri Rodrigues, “A stochastic model of postsynaptic plasticity based on dendritic spine  $Ca^{2+}$  and downstream proteins”, PhD Seminar, Inria Sophia Antipolis, December 2019.

Yuri Rodrigues, “Towards a stochastic model of excitatory synapse”, 1st meeting of the NeuroMod Institute, Fréjus (France), July 2019.

Yuri Rodrigues, “A stochastic model of postsynaptic plasticity based on dendritic spine  $Ca^{2+}$  and downstream proteins” [poster], 5th International Conference on Mathematical Neuroscience, Copenhagen (Denmark), June 2019.

Halgurd Taher, “Heuristic mean-field model for short term synaptic plasticity” [poster], XXXIXth Dynamics Days Europe Conference, Rostock (Germany), September 2019.

Halgurd Taher, “Enhancing power grid synchronization and stability through time delayed feedback control”, XXXIXth Dynamics Days Europe Conference, Rostock (Germany), September 2019.

Halgurd Taher, “Mean-field model for short-term synaptic plasticity” [poster], 1st meeting of the NeuroMod Institute, Fréjus (France), July 2019.



Romain Veltz, “Dynamics of a mean field limit of interacting 2D nonlinear stochastic spiking neurons”, 5th International Conference on Mathematical Neuroscience, Copenhagen (Denmark), June 2019.

Romain Veltz, “Analysis of a mean field of 2d spiking neurons, theory and numerics”, Bilateral International Meeting UK-France, Royal Society, Chicheley Hall, Milton Keynes (UK), February 2019.

#### 7.1.4. Scientific Expertise

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

Mathieu Desroches was on the Advisory Board of the Complex Systems Academy of the UCA<sup>JEDI</sup> Idex.

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 2019, Jean Ponce, Stéphane Mallat and Francis Bach. This study group has also produced a report for the 2019 G7 meeting.

## 7.2. Teaching - Supervision - Juries

### 7.2.1. Teaching

Master / Doctorat: Fabien Campillo, **Introduction to Piecewise Deterministic Markov Processes and applications to Neuroscience**, 10 hours, Basque Center for Applied Mathematics (BCAM), Bilbao, Spain.

Master : Mathieu Desroches, **Modèles Mathématiques et Computationnels en Neuroscience (Lectures, example classes and computer labs)**, 30 hours, M1 (BIM), Sorbonne Université, Paris, France.

Master / Doctorat: Mathieu Desroches, **Slow-fast dynamics in bursting neurons**, Tutorial of 3 hours, ICMNS Conference, June 2019.

Master: Romain Veltz, **Mathematical Methods for Neurosciences**, 20 hours, M2 (MVA), Sorbonne Université, Paris, France.

### 7.2.2. Supervision

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

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: 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).

### 7.2.3. Juries

Fabien Campillo was reviewer and member of the jury of the PhD of Nicolas Thomas (École doctorale des sciences mathématiques de Paris centre (ED 386)), thesis of Sorbonne Université entitled “Stochastic numerical methods for Piecewise Deterministic Markov Processes. Applications in Neuroscience”, 20 June 2019.

Mathieu Desroches was examiner and member of the Jury of the HDR of Arnaud Tonnelier (Inria Tripop, Grenoble) entitled “Piecewise linear dynamical systems and excitability”, Inria Rhône Alpes, 20 June 2019.

Mathieu Desroches was reviewer and member of the Jury of the PhD of Marina Esteban (University of Seville, Spain) entitled “Dynamics and Bifurcations of Nonlinear Systems with Hysteresis”, University of Seville (Spain), 4 March 2019.

Mathieu Desroches was member of the Jury of the PhD of Gabriela Capo Rangel (Basque Center for Applied Mathematics, Bilbao) entitled “Computational predictive modeling of integrated cerebral metabolism, electrophysiology and hemodynamics”, University of the Basque Country (Leioa, Spain), 12 February 2019.

## **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*

Laure Blanc-Féraud was member of the Conference Program Committees of NCMIP (New Computational methods for Inverse Problems), OSA Applied Optics Congress Mathematics in imaging, Workshop SPARS (Signal processing with Adaptive Sparse Structured Representation).

Luca Calatroni was the co-organiser of the workshop Regularisation methods for inverse problems and machine learning (Jussieu, Paris), 19 November 2019.

#### *9.1.1.2. Reviewer*

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

Xavier Descombes was a reviewer for for the conferences ISBI, ICIP, ICASSP.

Grégoire Malandain was a reviewer for the conference ISBI.

### **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.

Luca Calatroni is a guest-editor of the Journal of Mathematical Neuroscience for the special issue on Colour representation and Cortical-inspired image processing

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

#### *9.1.2.2. Reviewer - Reviewing Activities*

Florence Besse was a reviewer for the journals Nature, Development, RNA, LifeStarAlliance, Front.mol.biol.

Luca Calatroni was a reviewer for the Journal of Mathematical Imaging and Vision, Applied Mathematics and Computation and SIAM Journal of Imaging Sciences.

Xavier Descombes was a reviewer for the Journal of the American Statistical Association.

### **9.1.3. Invited Talks**

Laure Blanc-Féraud was invited to give a talk at to give a talk during the Sparsity4PSL International Summer School.

Luca Calatroni was invited to give a talk at the GdR Vision 2019 (Marseille), 10 October 2019, at the Statistical and Computational Learning seminars (Università di Genova, IIT, LCSL), 29 November 2019, and a BaD seminar (University of Bologna), December 3 2019.

Xavier Descombes was invited to give a talk at the Institut Henro Poincaré (Paris) for the workshop "Statistical Modeling for Shapes and Imaging", march 11-15.

### **9.1.4. Leadership within the Scientific Community**

Laure Blanc-Féraud is member of IEEE BISP (Biomedical Imaging Signal Processing) Technical Committee.

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 is a member of the ANR scientific evaluation committee ASTRID.

Luca Calatroni was in the committee for the evaluation of PhD allocation for the Region Normandie.

Xavier Descombes is a member of the ANR scientific evaluation committee CE45.

Xavier Descombes is an expert of the French Research Ministry for evaluating companies CIR and JEI.

### 9.1.6. Research Administration

Laure Blanc-Féraud is a member of the "Commission Administrative Paritaire" for "chargé de recherche" of CNRS. She is a member of the Conseil Scientifique et Pédagogique de l'EUR DS4H, and of the Academic Council of the 3IA Côte d'Azur project, in charge of the biological axis.

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

Xavier Descombes is member of the "comité des projets" of Inria CRISAM, of the Comité Permanent des Ressources Humaines (CPRH), UNS, section 61, of the ANR evaluation committee CE45, of the Labex Signalife Scientific Council.

## 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, 13h30, L1, Polytech Nice Sophia, France

Master : Arne Bechensteen, Traitement Numérique des Images, 8h, M2, Polytech Nice Sophia, France

Master : Arne Bechensteen, Compression, analyse et visualisation de contenus multimédia, 2h, M2, Polytech Nice Sophia, France

Licence: Florence Besse, RNA localization, 3h, L3, ENS Ulm, France

Master: Florence Besse, Neuron cell biology and circuits, 6h, M1/2, Université Côte d'Azur, France

Master: Florence Besse, RNA localization and neuron morphology, 4h, M1/2, Université Côte d'Azur, France

Master: Laure Blanc-Féraud, Traitement avancé des images, master STIMM, 8h Eq. TD, Niveau M2, Université Côte d'Azur, France.

Master: Eric Debreuve, scientific image processing, 9h EqTD, M1 + M2, 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, 9h 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, 15h Eq. TD Niveau M2, Université Côte d'Azur.

Licence: Henrique Goulart, Automatique, 30h, niveau L3, École Polytechnique Universitaire de Nice Sophia-Antipolis, France

Licence: Henrique Goulart, Traitement Numérique du Signal, 48h, niveau L3, École Polytechnique Universitaire de Nice Sophia-Antipolis, France

Master: Sarah Laroui, Analyse d'images, master GBM, 10h Eq. TD, Niveau M2, Université Côte d'Azur, France.

Master/Ingénieur: Sarah Laroui, Data Science, M2/Ingénieur 5, Niveau 5eme année ingénieur, 4h Eq. TD, Polytech Nice Sophia, France.

IUT 1ere année: Sarah Laroui, Acquisition et codage de l'information, niveau 1ère Année DUT RT, 13h30 Eq. TD, Institut Universitaire de Technologie (IUT) Sophia, France.

DUT: Somia Rahmoun, Acquisition et Codage de l'Information, 8h Eq. TD, Bac+1, IUT Réseaux et Télécommunications de Nice Côte d'Azur, France

### 9.2.2. Supervision

PhD: Emmanuelle Poulain, Recalage déformable entre angioscanner cardiaque 3D statique et angiographie coronaire dynamique 2D+t, université Côte d'Azur, october 10th, 2019, Grégoire Malandain.

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

PhD in progress: Cédric Dubois, Classification du plancton conjointe en espèce et traits morphologiques et fonctionnels avec contrainte de relations espèces-traits et de hiérarchie des espèces en taxonomie génétique, october 1st, 2019, Eric Debreuve, Jean-Olivier Irisson (LOV, Villefranche-sur-mer).

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: Manuel Petit, Quantifying and modeling trajectories of living form development, 1st November 2019, Grégoire Malandain, Christophe Godin (EPI Mosaic, Inria, Lyon).

PhD in progress: Clara Sanchez, Lipides nutritionnels et neuroinflammation : développement d'outil de morphométrie cellulaire, 1st october 2019, Carole Rovère (IPMC), Eric Debreuve.

PhD in progress: Vasiliki Stergiopoulou, Learning and optimization for 3D+T super-resolution in fluorescent microscopy, January 1st 2020, Laure Blanc-Féraud, Luca Calatroni, Sébastien Schaub.

PhD in progress: Rudan Xiao, Analysis and classification of cellular and vascular markers in histological images: application to kidney cancer, 1st october 2019, Xavier Descombes, Eric Debreuve.

### 9.2.3. Post-doctorates

Post-doc: Vanna Lisa Coli, Image processing for ancient pottery, co-supervised by Laure Blanc-Féraud and Juliette Leblond EPI Factas.

Post-doc: Henrique Goulart, Superresolution microscopy by blinking molecules, supervised by Laure Blanc-Féraud, Eric Debreuve and Sébastien Schaub.

#### **9.2.4. Internships**

Amina Achaibou, Détection, caractérisation et clustering de cellules gliales dans le cadre d'une étude des lipides nutritionnels, Eric Debreuve

Ghosh Avrajit, Deep Learning for ExtraCellular Matrix classification, Laure Blanc-Féraud, Xavier Descombes

Deborah Cottais, Tumor cell tracking for automatic detection of cell death time, and classification of its type, Eric Debreuve

Paul-Emmanuel Ponsenard, Image binarization using persistence diagram, Xavier Descombes

Pat Vatiwutipong, Master of mathematics, "Properties of the d-Radon transform and application to imaging issues in archeology", co-supervised by Juliette Leblond EPI FACTAS and Laure Blanc-Féraud.

Zhankeng Zhang, Graph matching and classification using simulated annealing, Xavier Descombes

#### **9.2.5. Juries**

Florence Besse participated to 4 PhD defense committees (UCA (2) and University of Montpellier (2)) and 2 HDR defense committees (UCA and Paris Descartes)

Laure Blanc-Féraud was part of 3 PhD defense committees (Megane Boudineau IRIT Toulouse, Aleix Boquet Pasteur Institute Paris as reviewer, Jabrane Karkouri CReatis Lyon) and one HDR committee (Mathieu Aucejo CNAM Paris). She was part of 2 "comités de suivi de thèse".

Xavier Descombes participated as a reviewer to the PhD thesis committee of Lamees Nasser (Paris Sorbonne University) and Kim Jonkhooon (Paul Sabatier University, Toulouse).

Grégoire Malandain participated as reviewer to the PhD thesis committee of Carlos Tor Diez (COMUE Bretagne Loire) and as supervisor to the PhD thesis committee of Emmanuelle Poulain (université Côte d'Azur)

### **9.3. Popularization**

#### **9.3.1. Education**

Luca Calatroni participates to the Italian project "Penne amiche della scienza" to promote scientific research in Primary Schools.

#### **9.3.2. Interventions**

Laure Blanc-Féraud gave a conference in high school CIV during "la fête de la science".

National events: Village des Sciences et de l'Innovation d'Antibes Juan les Pins 2019.

The Morpheme team took part in "La fête de la Science" during the "Village de la Science" in Juan-Les-Pins. Somia Rahmoun, Cedric Dubois and Arne Bechensteen were present at the Inria stand for this event.

## COATI 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

- Christelle Caillouet :
  - MiSARN'19: International Mission-Oriented Wireless Sensor, UAV and Robot Networking in conjunction with IEEE INFOCOM 2019.
  - Wi-DroIT'19: 1st International Workshop on Wireless sensors and Drones in Internet of Things in conjunction with DCOSS 2019
  - AlgoTel'19: 21ème Rencontre Francophone sur les Aspects Algorithmiques de Télécommunications, Saint Laurent de la Cabrerisse, France, June 4-7, 2019.
- David Coudert :
  - ONDM'19: 23rd Conference on Optical Network Design and Management, Athens, Greece, May 13-16, 2019.
  - IEEE ICC'19: IEEE International Conference on Communications, Shanghai, China, May 20-24, 2019.
  - IEEE Globecom'19: IEEE Global Communications Conference, Waikoloa, Hi, USA, December 9-13, 2019.
- Frédéric Giroire :
  - Algotel'19: 21ème Rencontre Francophone sur les Aspects Algorithmiques de Télécommunications, Saint-Laurent-de-la-Cabrerisse, France, June 4-7, 2019.
- Frédéric Havet :
  - LAGOS'19: X Latin and American Algorithms, Graphs and Optimization Symposium, Belo Horizonte, Brazil, June 2-7 2019.
  - JGA'19: Journées Graphes et Algorithmes, Brussels, Belgium, November 15-17 2019.
- Joanna Moulherac :
  - CoRes'19: Rencontres Francophones sur la Conception de Protocoles, l'Évaluation de Performance et l'Expérimentation des Réseaux de Communication, Saint Laurent de la Cabrerisse, France, June 3-4, 2019.
- Emanuele Natale :
  - SPAA'19: 31st ACM Symposium on Parallelism in Algorithms and Architectures, Phoenix, AZ, USA, June 22-24, 2019 .
- Nicolas Nisse :
  - CIAC'19: 11th International Conference on Algorithms and Complexity, Roma, Italy, May 27-29th, 2019.
  - LAGOS'19: X Latin and American Algorithms, Graphs and Optimization Symposium, Belo Horizonte, Brazil, June 2-7, 2019.
  - WG'19: 45th International Workshop on Graph-Theoretic Concepts in Computer Science, Vall de Núria, Catalonia, Spain, June 19-21, 2019.

#### 10.1.1.2. Reviewer

Members of COATI have reviewed numerous manuscripts submitted to national and international conferences, including:

AlgoTel 2019, CoRes 2019, CSR 2019, EvoApplications 2019, IEEE ICC 2019, IPDPS 2019, IEEE Globecom 2019, LAGOS 2019, MFCS 2019, ONDM 2019, OPODIS 2019, IEEE PIMRC 2019, SPAA 2019, WG 2019.

### **10.1.2. Journal**

#### *10.1.2.1. Member of the Editorial Boards*

Jean-Claude Bermond :

Computer Science Reviews, Discrete Mathematics, Discrete Applied Mathematics, Journal of Graph Theory, Journal of Interconnection Networks (Advisory Board), Mathématiques et Sciences Humaines, Networks, Parallel Processing Letters, the SIAM book series on Discrete Mathematics, Transactions on Network Optimization and Control, Algorithms and Applications.

Christelle Caillouet :

Guest Editor of the Special Issue "Optimization and Communication in UAV Networks" of MDPI Sensors Journal with Nathalie Mitton.

Alexandre Caminada :

Sensors — Open Access Journal, MDPI editor, Basel.

Soft Computing, Springer.

Journal of Traffic and Transportation Engineering, Elsevier.

Transactions on Mobile Computing, IEEE.

Transactions on Vehicular Technology, IEEE.

David Coudert :

Discrete Applied Mathematics (Elsevier).

Networks (Wiley).

Frédéric Giroire :

Journal of Interconnection Networks (World Scientific).

Frédéric Havet :

Discrete Mathematics and Theoretical Computer Science.

#### *10.1.2.2. Reviewer - Reviewing Activities*

Members of COATI have reviewed numerous manuscripts submitted to international journals, including:

IEEE Access, The American Mathematical Monthly, ACM Journal of Experimental Algorithmics (JEA), Elsevier Ad Hoc Networks, Ars Combinatorica, Computer Communications (ComCom) Computer Networks (COMNET), Computers & Operations Research (COR), Discrete Applied Mathematics (DAM), Discrete Mathematics, Discrete Mathematics and Theoretical Computer Science (DMTCS), Discussiones Mathematicae Graph Theory, European Journal of Combinatorics, European Journal of Operational Research (EJOR), Graphs and Combinatorics, Journal of Computer and System Sciences (JCSS), Journal of Combinatorial Theory, Series B (JCTB), IEEE/OSA Journal of Lightwave Technology (JLT), Opuscula Mathematica, SIAM Journal on Discrete Mathematics (SIDMA), IEEE Transactions on Mobile Computing (TOMC), IEEE/ACM Transactions on Networking (ToN), IEEE Transactions on Network and Service Management (TNSM), IEEE Transactions on Parallel and Distributed Systems (TPDS), IEEE Transaction on Services Computing, Theoretical Computer Science (TCS), Theory of Computing Systems (TOCS), Utilitas Mathematica.



### 10.1.3. Invited Talks

- Julien Bensmail :
  - Sequential Metric Dimension (in trees)*. Meeting of IFCAM project, Indian Statistical Institute, Kolkata, India. February 2019.
  - On the “quest” towards a directed variant of the 1-2-3 Conjecture*. Seminar of the Department of Applied Mathematics, Northwestern Polytechnical University, Xi’an, China. October 2019.
  - On the “quest” towards a directed variant of the 1-2-3 Conjecture*. Seminar of the School of Mathematics and Statistics, Xidian University, Xi’an, China. September 2019.
  - On partitioning graphs into connected subgraphs*. Seminar of the Department of Applied Mathematics, Northwestern Polytechnical University, Xi’an, China. September 2019.
  - A Decompositional Approach to the 1-2-3 Conjecture*. Seminar of the Departamento de Matemática, Universidade Federal do Ceará, Fortaleza, Brazil. May 2019.
- David Coudert :
  - Scientific objectives of ANR project MULTIMOD*. Workshop “Complexité et algorithmes” of GDR IM, Roscoff, France, April 3-5, 2019.
  - On the Flinders Hamiltonian Cycle Problem Challenge*. Keynote speaker at “21ème Rencontres Francophones sur les Aspects Algorithmiques des Télécommunications” (AlgoTel 2019), Saint Laurent de la Cabrerisse, France, June 3-7, 2019.
  - On the Flinders Hamiltonian Cycle Problem Challenge*. Department of Computer Science & Software Engineering, Concordia University, Québec, Canada, July 25, 2019.
- Frédéric Giroire :
  - Placement de services réseaux virtuels dans le cloud et au-delà*. Journées Cloud <https://www.irit.fr/journeescloud2019/>, Toulouse, France. September, 12, 2019.
  - Overview of Networking Challenges for the Placement of Cloud Services*. Team seminar. Concordia University, Montréal, Canada.
  - Sobriété énergétique des réseaux informatiques*. Journée Scientifique "Concilier numérique et environnement ?" de l'Académie RISE / EUR DS4H de l'Université Côte d'Azur, France. December 2, 2019.
- Frédéric Havet :
  - Unavoidability and universality of digraphs*, WG 2019, Vall de Núria, Catalonia, Spain, June 2019.
  - On the unavoidability of trees in tournaments*, A tribute to Frédéric Maffray, Grenoble, France, September 2-4, 2019.
- Emanuele Natale :
  - From Distributed Computing to Natural Algorithms and Beyond*, invited talk at the 20th Italian Conference on Theoretical Computer Science (ICTCS'19) as a recipient of the IC-EATCS Young Researcher Award, Como, Italy, September 9-11, 2019.
- Nicolas Nisse :
  - Recovery of disrupted airline operations*, seminar team ParGO, Univ. federal do Ceara, Fortaleza, Brazil, May 10th, 2019
  - Eternal domination in grid-like graphs*, seminar of Northwestern Polytechnical University, Xi’an, China, Sept. 9th, 2019
  - Localization GameS in graphs*, seminar of Xidian University, Xi’an, China, Sept. 5th, 2019

#### 10.1.4. Leadership within the Scientific Community

Alexandre Caminada :

Member of the administrative board of the Sophia Club Entreprise (club of more than 200 Sophia companies).

David Coudert :

Co-chair of *Pôle RESCOM of GDR RSD of CNRS* since 2017 and member of the steering committee since 2005.

Frédéric Giroire :

Member of the steering committee of *GT Energy of the GDR RSD of CNRS*.

Frédéric Havet :

Member of the steering committee of *GT Graphes of the GDR IM of CNRS*.

Nicolas Nisse :

Member of the "bureau" of the GT CoA of the GDR IM.

#### 10.1.5. Scientific Expertise

- Jean-Claude Bermond :  
Expert for DRTT-MESR Crédit impôt recherche (CIR et agréments).
- Alexandre Caminada :  
Expert for HCERES evaluation of UMR5157 SAMOVAR (Services répartis, Architectures, MODélisation, Validation, Administration des Réseaux), Telecom Sud Paris.  
Expert for CTI of ENSEA, graduate school on economy and statistics, Abidjan, Côte d'Ivoire.
- David Coudert :  
Expert for ANR
- Frédéric Havet :  
Expert for The Fund for Scientific Research - FNRS, Belgium.
- Nicolas Nisse :  
Expert for ESF (European Science Foundation).  
Expert for National Science Centre, OPUS (Poland)

#### 10.1.6. Research Administration

- Jean-Claude Bermond :  
Responsible for the cooperation between Inria and Greece : setting of grants for master 2 students co-financed by Inria Sophia Antipolis Méditerranée and the French Embassy in Greece (in 2019 the grant was given to Foivos Fioravantes who did his internship in Coati) and getting financial support for internships via the Bodossakis Foundation.
- Christelle Caillouet :  
Elected member of CPRH (Comité Permanent de Ressources Humaines) University of Nice Sophia Antipolis;  
Elected member of I3S laboratory committee since December 2016.
- Alexandre Caminada :  
Head of the graduate school of engineering Polytech Nice Sophia which includes the EA7498 lab (Polytech Lab) of the French Ministry for Education, Research and Innovation, in charge of research in civil engineering and smart building at Université Côte d'Azur.

Member of the executive board of the Sophia Interdisciplinary Institute of Artificial Intelligence started in 2019.

Manager of the Chinese Scholarship Council PhD program for the Polytech network (70 Phd subjects proposed in 2019 by the 15 graduate schools).

Member of the selection committee of the tenure professor position nr552 (section 27, machine learning) at Université Côte d'Azur.

- David Coudert :
  - Nominated member for Inria at the doctoral school STIC, since September 2017;
  - Head (since December 2019) and member (since 2009) of the “Comité de Suivi Doctoral” of Inria;
  - Nominated member for Inria at the steering committee of Academy 1 RISE (Networks, Information, Digital Society) of UCA<sup>JEDI</sup> since February 2018;
  - Nominated member for Inria at the steering committee of EUR DS4H since February 2018;
  - Nominated member for Inria at the steering committee of Labec UCN@Sophia since February 2018;
  - Member of the steering committee of seminar Forum Numerica of Academy 1 RISE of UCA<sup>JEDI</sup> since 2018;
  - Member of the “Bureau du comité des équipe-projets” of Inria research center Sophia Antipolis - Méditerranée since 2018.
- Frédéric Giroire :
  - In charge of the internships of stream UbiNet of Master 2 IFI, UNS.
- Frédéric Havet :
  - Head of COMRED team of I3S laboratory.
- Luc Hogie :
  - Member of the CUMI (comité des utilisateurs des moyens informatiques) of Inria Sophia Antipolis Méditerranée;
  - Elected member of I3S laboratory committee since December 2016.
- Joanna Moulhierac :
  - Member of selection committee MCF 775, IUT Arles, 2019.
- Nicolas Nisse :
  - Elected member of "Comité de centre", Inria, Sophia Antipolis.
  - Member of “Comité Scientifique et Pédagogique” (CSP) EUR DS4H.
- Michel Syska :
  - Elected member of CPRH (Comité Permanent de Ressources Humaines) University of Nice Sophia Antipolis.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching Responsibilities

Julien Bensmail :

2019: In charge of the internships of the 1st-year students of Département QLIO of IUT Nice Côte d'Azur.

Since September 2019: Head of the Licence Professionnelle “Managements des Processus Logistiques” (MPL) of Université Nice-Sophia Antipolis.

Christelle Caillouet :

Elected member of Conseil de département IUT Informatique since September 2017.

Alexandre Caminada :

Head of the graduate school of engineering Polytech Nice Sophia (1500 master grade students, 100 faculty members, 50 staffs).

Member of the executive board of the Polytech network, national network of public graduate school of engineering.

Member of the executive board of Université Côte d'Azur.

Joanna Moulhierac :

“Directrice d'études” for the 1st-year students of “Département Informatique” of IUT Nice Côte d'Azur (since September 2017).

Head of the “Conseil de Département Informatique” of IUT Nice Côte d'Azur (since September 2017).

### 10.2.2. Teaching

IUT: Julien Bensmail, *Recherche opérationnelle*, 90h ETD, Level L2, Département QLIO of IUT Nice Côte d'Azur, UNS, France;

IUT: Julien Bensmail, *Systèmes de gestion de bases de données*, 70h ETD, Level L2, Département QLIO of IUT Nice Côte d'Azur, UNS, France;

IUT: Julien Bensmail, *Sécurité des échanges de données inter-entreprises*, 30h ETD, Level LP, LP MPL of IUT Nice Côte d'Azur, UNS, France;

IUT: Christelle Caillouet, *Object Oriented Programming*, 150h ETD, Level L1, IUT Nice Côte d'Azur, UNS, France;

IUT: Christelle Caillouet, *Introduction to Networks*, 21h ETD, Level L1, IUT Nice Côte d'Azur, UNS, France;

IUT: Christelle Caillouet, *Algorithmics*, 21h ETD, Level L2, IUT Nice Côte d'Azur, UNS, France;

IUT: Adrien Gausseran, *Bases de la conception orientée objet*, 64h ETD, Level L1, IUT Nice Côte d'Azur, UNS, France;

IUT: Adrien Gausseran, *Introduction à l'algorithmique et à la programmation*, 6h ETD, Level L1, IUT Nice Côte d'Azur, UNS, France;

IUT: Luc Hogie, *Distributed programming*, 28h ETD, Level L2, IUT Nice Côte d'Azur, UNS, France;

IUT: Hicham Lesfari, *Réseaux d'opérateurs et réseaux d'accès*, 48h ETD, Level L2, IUT Nice Côte d'Azur, UNS, France;

IUT: Joanna Moulhierac, *Introduction à l'algorithmique*, 30h ETD, Level L1, IUT Nice Côte d'Azur, UNS, France;

IUT: Joanna Moulhierac, *Introduction aux Réseaux*, 36h ETD, Level L1, IUT Nice Côte d'Azur, UNS, France;

IUT: Joanna Moulhierac, *Réseaux avancés*, 60h ETD, Level L2, IUT Nice Côte d'Azur, UNS, France;

IUT: Joanna Moulhierac, *Compléments d'algorithmique*, 30h ETD, Level L2, IUT Nice Côte d'Azur, UNS, France;

IUT: Thibaud Trolliet, *Database*, 64h ETD, Level L1, IUT Nice Côte d'Azur, UNS, France;

IUT: Michel Syska, *Tutored Project: Introduction*, Level L1, IUT Nice Côte d'Azur, UNS, France;

IUT: Michel Syska, *Operating Systems: Advanced Programming*, 40h ETD, Level L2, IUT Nice Côte d'Azur, UNS, France;

IUT: Michel Syska, *Data Structures and Algorithms*, 44h ETD, Level L2, IUT Nice Côte d'Azur, UNS, France;

IUT: Michel Syska, *Introduction to Artificial Intelligence*, 40h ETD, Level L2, IUT Nice Côte d'Azur, UNS, France;

IUT: Michel Syska, *Algorithmics*, 52h ETD, Level L2, IUT Nice Côte d'Azur, UNS, France;

IUT: Michel Syska, *Web Security*, 13h ETD, Level L3, IUT Nice Côte d'Azur, UNS, France;

MPSI: Nicolas Nisse, *Option informatique, MPSI*, 24h ETD, classe préparatoire MPSI, Lycée International de Valbonne, France;

Licence: Frédéric Giroire, *Probability and statistics*, 50h ETD, 1st year (L3), Engineer School Polytech Nice;

Licence: Thi Viet Ha Nguyen, *TDs Theoretical computer science 2 (Formal languages and automata)*, 22h ETD, L3, Polytech Nice Sophia, France;

Master: Alexandre Caminada, *Radio location systems*, 20h ETD, Master 2 (in english), Polytech Nice Sophia, France

Master: Alexandre Caminada, *Artificial intelligence*, 40h ETD, Master 2 (in english), Polytech Nice Sophia, France

Master: Alexandre Caminada, Master grade student's internship supervision and assesment, 10h ETD, Master 2, Polytech Nice Sophia, France

Master: David Coudert, *Algorithms for Telecoms*, 36h ETD, M2, Université Nice Sophia Antipolis, France;

Master: Frédéric Giroire, *Graph Algorithms*, 15h ETD, Master 2, International Track Ubinet, Université Côte d'Azur, Nice;

Master: Frédéric Giroire, *Machine learning for networks*, 15h ETD, Master 2, International Track Ubinet, Université Côte d'Azur, Nice;

Master: Emanuele Natale, *Natural Distributed Algorithms*, 20h, Laurea Magistrale, University of Rome Tor Vergata, Italy.

Master: Nicolas Nisse, *Graphes*, 36 ETD, M1 Informatique, UNS/UCA, France;

Master: Nicolas Nisse, *Graphes avancés*, 36 ETD, M2 Informatique, UNS/UCA, France;

Master: Nicolas Nisse, *Algorithmes et Optimisation*, 15 ETD, M2 IFI, Parcours Ubinet, UNS/UCA, France;

Master: Nicolas Nisse, *Algorithmique*, 10 ETD, Formation professeurs de lycée, DIU, UCA, France;

Master: Stéphane Pérennes, *Algorithmes et complexité*, 10h ETD, M1 SI4, Polytech Nice Sophia, France

### 10.2.3. Supervision

#### 10.2.3.1. PhD thesis

PhD: Brieuc Berruet, *Application des techniques de Machine Learning à la géolocalisation "indoor" des objets connectés dans le contexte de la future 5G*, doctorale school SPIM, Université de Belfort Franche Comté, December 17, 2019. Supervisor: Alexandre Caminada and Oumaya Baala (Orange).

PhD: Emilio Cruciani, *Simple Randomized Distributed Algorithms for Graph Clustering*, Gran Sasso Science Institute, December 19, 2018. Co-supervisors: Gianlorenzo D'Angelo (GSSI), Luca Becchetti (Sapienza University of Rome) and Emanuele Natale.

PhD: Mehdi Katranji, *Utilisation des méthodes de Machine Learning pour apprendre les modèles de mobilité humaine selon leurs attributs socio-démographiques et géographiques*, doctorale school SPIM, Université de Belfort Franche Comté, December 16, 2019. Supervisor: Alexandre Caminada and Fouad Hadjselem (Orange).

PhD: Fionn McInerney, *Domination and Identification Games in Graphs* [14], Université Côte d'Azur, July 8, 2019. Supervisor: Nicolas Nisse.

PhD: Andrea Tomassilli, *Towards Next Generation Networks with SDN and NFV* [15], June 24, 2019. Supervisors: Stéphane Pérennes and Frédéric Giroire.

PhD in progress: Ali Al Zoobi, *Algorithms for shared on demand public transportation system in the city*, since October 2018. Co-supervisors: David Coudert and Nicolas Nisse.

PhD in progress: Francesco D'Amore, *Dynamics for multi-agent system coordination in noisy and stochastic environments*, since October 2019. Co-supervisors: Emanuele Natale and Nicolas Nisse.

PhD in progress: Giuseppe Di Lena, *Resilience of virtualized networks*, since April 2018. Co-supervisors: Thierry Turletti (DIANA), Chidung Lac (Orange Labs Lannion) and Frédéric Giroire. CIFRE grant with Orange.

PhD in progress: Foivos Fioravantes, *Distinguishing labellings of graphs*, since October 2019. Co-supervisors: Julien Bensmail and Nicolas Nisse.

PhD in progress: Adrien Gausseran, *Optimization Algorithms for Network Slicing for 5G*, since October 2018. Supervisors: Joanna Moulierac and Nicolas Nisse.

PhD in progress: Hicham Lesfari, *Machine learning for dynamic network resource allocation*, since October 2019. Supervisor: Frédéric Giroire.

PhD in progress: Zhejiayu Ma, *Learning problem for the diffusion of multimedia contents*, since October 2018. Co-Supervisors: Guillaume Urvoy-Keller, Frédéric Giroire, Soufiane Rouiba (Easy-broadcast, Nantes). CIFRE grant with Easybroadcast.

PhD in Progress: Thi-Viet-Ha Nguyen, *Graph Algorithms techniques for (low and high) resolution model of large protein assemblies.*, since October 2018. Co-supervisors: Frédéric Havet and Dorian Mazauric (ABS).

PhD in progress: Thibaud Trolliet, *Exploring Trust on Twitter*, since October 2017. Co-supervisors: Arnaud Legout (DIANA) and Frédéric Giroire.

#### 10.2.3.2. Internships

Licence: Paul Bastide, *Density Estimation via Random Walks with Limited Communication*, ENS Rennes, France, from 20 May 2019 until 12 July 2019. Supervisor: Emanuele Natale.

Licence: Gabriel Djebbar, *Collapse and graphs problems*, SI3, Polytech Nice Sophia, France, from July 2018 until August 2018. Co-supervisors: Frédéric Havet and Dorian Mazauric (ABS).

Licence: Solal Gaudin, *Compromis temps-espace dans l'énumération des paires éloignés par distances décroissantes*, L3 ENS Cachan, France, from June 2019 until July 2019. Supervisor: David Coudert.

Licence: Emile Sorci, *Oblivious metric dimension*, L3, ENS Lyon, France, from June 2019 until July 2019. Co-supervisors: Julien Bensmail and Nicolas Nisse.

Licence: Zoé Varin, *Constrained matchings*, L3, ENS Lyon, France, from June 2019 until July 2019. Co-supervisors: Julien Bensmail and Nicolas Nisse.

Master 1 (tutorship): Nitha Sagar Jayanna, *Shortest Path in Multimodal Public Transportation Networks*, M1 Computer Science, Digital Systems for Humans (DS4H) Graduate school - Université Côte d'Azur, France, from October 2018 until June 2019. Supervisor: Michel Syska

Master 1 (tutorship): Shamprika Mehreen, *Multi Objective Shortest Path Problem*, M1 Computer Science, Digital Systems for Humans (DS4H) Graduate school - Université Côte d'Azur, France, from October 2018 until June 2019. Supervisor: Michel Syska

Master 2 (TER): Haoran Ding, *Machine learning for dynamic network resource allocation*, Master 2 IFI, international track Ubinet, Université Côte d'Azur, France, from October 2019 until December 2019. Co-supervisors: Frédéric Giroire and Hicham Lesfari.

Master 2 (TER): Thomas Dissaux, *Computing treelength*, M2 IFI, Université Côte d'Azur, France, from October 2019 until December 2019. Supervisor: Nicolas Nisse

Master 2 (TER): Igor Dias Da Silva, *Computation and analysis of drone trajectories for effective surveillance and data collection*, Master IFI, Université Côte d'Azur, France, from November 2019 until December 2019. Supervisor: Christelle Caillouet.

Master 2 (TER): Arno Gobbin, *Computational Complexity of Puzzles and Games*, SI5 Polytech Nice Sophia, Université Côte d'Azur, France, from November 2019 until December 2019. Supervisor: Emanuele Natale

Master 2 (TER): Siwar Helaoui, *Distributed simulation of algorithms for the deployment of self-organized UAVs*, SI5 Polytech Nice Sophia, Université Côte d'Azur, France, from November 2019 until March 2020. Supervisor: Christelle Caillouet and David Coudert.

Master 2 (TER): Noueman Khalikine, *Algorithms for studying the evolution over time of the structure of social graphs*, stream Ubinet of M2 IFI, Université Côte d'Azur, France, from November 2019 until December 2019. Supervisor: David Coudert and Frédéric Giroire.

Master 2 (TER): Abdelkrim El Merss, *Algorithms for studying the evolution over time of the structure of social graphs*, stream Ubinet of M2 IFI, Université Côte d'Azur, France, from November 2019 until December 2019. Supervisor: David Coudert and Frédéric Giroire.

Master 2 (TER): Victor Tapissier, *Evolution over time of the structure of social graphs*, SI5 Polytech Nice Sophia, Université Côte d'Azur, France, from November 2019 until December 2019. Supervisor: David Coudert and Frédéric Giroire.

Master 2 (TER): Bruno Tarbes, *Evolution over time of the structure of social graphs*, SI5 Polytech Nice Sophia, Université Côte d'Azur, France, from November 2019 until December 2019. Supervisor: David Coudert and Frédéric Giroire.

Master 2 (apprentissage): Théo Qui, *Implementation and study of Graphs' decompositions*, M2 IFI, Université Côte d'Azur, France, from September 2019 until August 2020. Supervisor: Nicolas Nisse.

Master 2: Athanasia Farmaki, *Implementaiton of algorithms for the dial-a-ride problem with time windows*, in the context of ANR MULTIMOD, Master 2, National Technical University of Athens, Greece, from January 2019 until June 2019. Co-supervisors: David Coudert and Nicolas Nisse.

Master 2: Foivos Fioravantes, *BMRN\*-colouring of planar digraphs*, Master 2 IFI, international track Ubinet, Université Côte d'Azur, France, from March 2019 until August 2019. Supervisor: Julien Bensmail.

Master 2: Hicham Lesfari, *Network Anomaly Detection Using Graph Kernels*, Master 2 IFI, international track Ubinet, Université Côte d'Azur, France, from March 2019 until August 2019. Supervisor: Frédéric Giroire.

Master 2: Bai Xin, *Optimization of Drones Trajectory for Optimal Sensor Coverage and Data Collection*, M2 Ubinet, Université Côte d'Azur, France, from March 2019 until August 2019. Supervisor: Christelle Caillouet.

Google Summer of Code: Ritesh K, *Improvement of methods for computing distances in the graph module of *Sagemath**, Bachelor of Technology at the Department of Computer Science and Engineering of National Institute of Technology Karnataka, India. from May 2019 until August 2019. Mentor: David Coudert.

Google Summer of Code: Rajat Mittal, *Implementation of algorithms for enumeration of  $k$ -shortests simple paths and contribution to the improvement of graph module of *Sagemath**, Master at Indian Institute of Technology (BHU) Varanasi, India. from May 2019 until August 2019. Mentor: David Coudert.

Google Summer of Code: Georgios Giapitzakis Tzintanos, *Implementation of new graph traversals (*LexBFS*, *LexDFS*, etc.) and contribution to the improvement of graph module of *Sagemath**, Bachelor of Science at the National and Kapodistrian University of Athens, Greece. from May 2019 until August 2019. Mentor: David Coudert.

#### 10.2.4. Juries

Jean-Claude Bermond :

President of the PhD prize committee *prix de thèse Graphes “Charles Delorme”* <http://gtgraphes.labri.fr/pmwiki/pmwiki.php/PrixTheseDelorme/PrixTheseDelorme>;

Christelle Caillouet :

Member of PhD committee of Dorin Rautu, Université de Toulouse, October 1, 2019;

Alexandre Caminada :

Referee for the PhD thesis of Shen Peng, Paris-Sud university, June 17, 2019, Chance Constrained Problem and Its Applications;

Referee for the Pierre Lafitte Price, supported by the Doctoral Schools SFA (Basic and Applied Sciences) and STIC (Sciences and Technologies of Information and Communication) of Université Côte d’Azur and Mines Paris, to enhance the quality of the research work of 2nd year PhD students;

David Coudert :

Referee and member of PhD committee of Valentin Pollet, Université de Montpellier, October 3, 2019;

Referee and member of PhD committee of Francesca Fossati, Sorbonne Université, November 29, 2019;

President of PhD committee of Paul Beaujean, Université Paris Dauphine, December 16, 2019;

Frédéric Havet :

Member of PhD committee Jocelyn Thiébaud, Université de Montpellier, November 19, 2019;

Joanna Moulhierac :

Member of PhD committee of Chaopeng Guo, Université de Toulouse, June 14, 2019;

Nicolas Nisse :

Referee and member of PhD committee Valentin Gledel, Université de Lyon (LIRIS), September 24th, 2019;

Referee and member of PhD committee Sébastien Ratel, Université Aix-Marseille (LIS), November 8th, 2019.

### 10.3. Popularization

#### 10.3.1. Internal or external Inria responsibilities

- Jean-Claude Bermond, Frédéric Havet, Joanna Moulhierac, and Nicolas Nisse are involved in Terra Numerica which brings together several popularization groups in order to create a museum of digital sciences.
- Frédéric Havet: Vice-president and member of the scientific committee of the association Institut Esope 21 (<https://lewebpedagogique.com/institutesope21/>).

#### 10.3.2. Education

- Frédéric Havet, Joanna Moulhierac and Nicolas Nisse (responsable) : Participation to Galejade project “Graphes et ALgorithmes : Ensemble de Jeux À Destination des Ecoliers... (mais pas que)” <https://galejade.inria.fr/>.  
Design of pedagogical resources introducing graphs and algorithms to primary school students.



Training of primary school teachers, ESPE, Nice (March 22, 2019), Lyon (April 10th, 2019).

Intervention Lycée Carnot (Cannes, March 14, 2019), Lycée Sydney Bechet (Antibes, March 13, 2019), Lycée au Cannet (April 5, 2019)

- Frédéric Havet :

Training of secondary school teachers on graphs and algorithms. April 23, 2019.

### 10.3.3. Interventions

- Fête de la Science (Frédéric Havet, Nicolas Nisse, Ali Al Zoobi) :  
Villeneuve-Loubet, October 5, 2019;  
Colline du Château de Nice (stands Inria and I3S laboratory), October 4-6, 2019;  
Collège Lycée Vinon-sur-Verdon, October 8-11, 2019;  
Palais des Congrès de Juan-Les-Pins, October 19-20, 2019.
- Ali Al Zoobi :  
Presentation of posters and combinatorial games during the "Fête des Sciences", Collège Emile Roux, June 5, 2019.
- David Coudert :  
Presentation of the *Flinders Hamiltonian Cycle Problem Challenge* to a group of students from classe préparatoire MPSI, Lycée International de Valbonne, June 24, 2019.
- Frédéric Giroire :  
Accueil de la mission locale de Grasse pour une session de médiation scientifique, 26 avril 2019.
- Frédéric Havet :  
Animation of the exhibition "Animals of the Mediterranean sea" 6 classes, Ecole la Tauriac, Toulon, January 24, 2019.  
Conferences "Birds of Var", 6 classes, Ecole élémentaire de Rians, February 1, 2019.  
Conférence "Be a mathematician", Ecole des Pallières, February 2, 2019.  
Animation "Birds of Var", 6 classes Ecole de la Tauriac and 2 classes Ecole de la Beaucaire, Toulon, Mars 07 2019.  
3 conferences "Les pavages", "La science du ballon de football", "Mathémagie" for 10 classes in total. Collège Daudet Nice, April 15, 2019.  
"La magie du binaire". Conference for six classes in Manosque for the "Jeux fabriqués" day organised by DANE 04. April 2, 2019.  
Training of primary school teachers.
- Frédéric Havet, Joanna Moulhierac, and Nicolas Nisse participated to the supervision of twelve schoolchildren (3ème) in internship.
- Nicolas Nisse :  
MathC2+, Sophia Antipolis, June 14, 2019
- Michel Syska :  
Member of the organization of the code competition "*Retro Gaming pico-8*" (55 teams of 3 students), April, 2019.  
Organization and supervision of the local site IUT for the national code competition "*La nuit de l'info*" (156 students = 3.7% of participants), December 5-6, 2019.

### 10.3.4. Internal action

- Frédéric Havet and Nicolas Nisse participated to the Cafe'In presenting Galejade. April 29, 2019.

## DIANA Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

Chadi Barakat is on the editorial board of the Computer Networks journal, and was/is on the Technical Program Committee for the Network Traffic Measurement and Analysis Conference (2019 and 2020), the IEEE Symposium on Measurements and Networking M&N (2019), the International Conference on Network and Service Management (CNSM 2019) and the NetLearn Workshop (2020). He is currently in charge of international affairs at Inria Sophia Antipolis and is member of the COST-GTRI of Inria.

Walid Dabbous is member of the scientific committee of the DS4H Graduate school. He is also member of the Ubinet International Master program steering committee. He served as a Technical Program Committee member of the Artefact Evaluation Committee for the CoNext 2019 conference. He was member of the selection committee for the 2019 ACM SIGOPS France and GDR RSD thesis prize.

Arnaud Legout is the president of the Commission of the users of IT resources of Sophia Antipolis Inria research center.

Damien Saucez has co-chaired the ACM SIGCOMM *Artefact Evaluation Committee* whose role is to assess the reproducibility level of papers accepted to ACM SIGCOMM sponsored conferences and journals. He was TPC co-chair of the 2019 ACM Workshop on ns-3. He is regular reviewer for IEEE, ACM, Elsevier, and Springer journals.

Thierry Turletti, Senior ACM and IEEE member, served in 2019 in the program committees of the following international workshops and conferences: 2nd Workshop on Emerging Trends in Softwarized Networks (ETSN'19), Paris, France, June 28, 2019; 10th Workshop on ns-3, Mangalore, India, University of Florence, Italy, June 19-20 2019; 21st Algotel Conference, Narbonne, France, June 3-7, 2019; and VTC2019-Spring workshop, Kuala Lumpur, Malaysia, 28 April – 1 May 2019. Thierry Turletti is president of the Committee for Technological Development (CDT) and member of the committee NICE that studies postdoc and visiting researcher applications at Inria Sophia Antipolis. Thierry Turletti is member of the Editorial Boards of the Journal of Mobile Communication, Computation and Information (WINET) published by Springer Science and of the Advances in Multimedia Journal published by Hindawi Publishing Corporation.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Master 2 Ubinet: Chadi Barakat and Walid Dabbous, Evolving Internet, 31.5 hours, M2, University of Nice-Sophia Antipolis, France.

Master Ubinet: Chadi Barakat and Walid Dabbous, Internet Measurements and New Architectures, 31.5 hours, M2, University of Nice-Sophia Antipolis, France.

Master 1 in Computer Science: Chadi Barakat, Computer Networks, 15 hours, M1, University of Nice Sophia Antipolis, France.

Master 1 in Computer Science: Chadi Barakat, Internet of the Future, 15 hours, M1, University of Nice Sophia Antipolis, France

Master Estel: Chadi Barakat, Voice over IP, 9 hours, University of Nice-Sophia Antipolis, France.

Master Ubinet: Arnaud Legout, From BitTorrent to Privacy, 36 hours, M2, University of Nice-Sophia Antipolis, France.

Master 1 in Computer Science: Arnaud Legout, Oral and written communications, 18 hours, M1, University of Nice-Sophia Antipolis, France.

Master IUP GMI: Damien Saucez, Security and privacy in networks, 38h, M2, University of Avignon, France.

### **E-learning**

Python: Arnaud Legout and Thierry Parmentelat are co-authors of the MOOC Python 3 : "Python 3 : des fondamentaux aux concepts avancés du langage" that lasts 9 weeks on FUN (<https://www.france-universite-numerique-mooc.fr/>), UCA. For the second session there were 12748 registered persons. In total, this MOOC all on its editions has been followed by 57938 persons.

### **9.2.2. Supervision**

PhD in progress: Othmane Belmoukadam works on "QoE aware content management in the Internet caching and transport". He is supervised by Chadi Barakat and funded by the doctoral school EDSTIC of Université Côte d'Azur (UCA).

PhD in progress: Yanis Boussad works on "Large scale characterization of the exposition to microwaves". He is co-supervised with Leonardo Lizzi, LEAT.

PhD in progress: Giuseppe Di Lena works on "Building a resilience methodology for NFV/SDN" in Apr 2018. His PhD is co-supervised by Thierry Turetletti, Damien Saucez and Frédéric Giroire from the Coati project-team .

PhD started: Mamoutou Diarra started his PhD on "Multi-access Edge Computing" in november 2019. He is co-supervised by Thierry Turetletti, Walid Dabbous and Amine Ismail from Ekinops.

PhD stopped: Thibaut Ehlinger stopped his PhD on "Mapping Quality of Service metrics to user Quality of Experience in the Internet" in April 2019. He was co-supervised by Chadi Barakat and Vassilis Christophides (EPI MiMove, Inria Paris).

PhD started: Houssam Elbouanani started his PhD on "Experiment control for reproducible research" in december 2019. He is co-supervised by Walid Dabbous, Chadi Barakat and Thierry Turetletti.

PhD in progress: Iman Fouad started her PhD on on Web tracking technologies and privacy protection in november 2017. Her thesis is co-supervised by Arnaud Legout and Nataliia Bielova (Indes).

PhD: Karyna Gogunska defended her PhD thesis [11] entitled "Empowering Virtualized Networks with Measurement As a Service (MaaS)" in december 2019. Her thesis was co-supervised by Chadi Barakat and Guillaume Urvoy-Keller (I3S) and was funded by the Labex UCN@SOPHIA.

PhD: Muhammad Jawad Khokhar defended his PhD thesis [12] entitled "From Network Level Measurements to Expected Quality of User Experience" in october 2019. His PhD was supervised by Chadi Barakat and was funded by the ANR BottleNet project.

PhD: Mohamed Naoufal Mahfoudi defended his PhD thesis entitled [13] "Unlocking Wireless Sensing Potential in Wi-Fi and IoT Networks" in ocober 2019. His thesis was co-supervised by Walid Dabbous and Robert Staraj (LEAT) and was funded by the Labex UCN@SOPHIA.

PhD: Ghada Moualla defended her PhD thesis [14] entitled "Resilient Virtualized Network Functions for Data Centers and Decentralized Environments" in september 2019. Her thesis is co-supervised by Thierry Turetletti and Damien Saucez and was funded by the ANR Reflexion project.

PhD in progress: Imane Taibi works on "Big data analysis for network monitoring and troubleshooting". She is co-supervised by Gerardo Rubino, Yassine Hadjadj-Aoul from the Dionysos project-team and Chadi Barakat.

PhD in progress: Mathieu Thiery works on "Data protection of connected objects and smartphones" in April 2017. He is co-supervised by Vincent Roca from the Privatics project-team and Arnaud Legout.

PhD in progress: Thibaud Trollet works on "Exploring trust on Twitter". He is now fully supervised by Frederic Giroire and member of the Coati project team.

### 9.2.3. *Juries*

Chadi Barakat served as reviewer of Jingxiu SU PhD thesis, "Recherches sur la mesure de l'analyse du tracking sur le Web", defended in December 2019 at the University Grenoble Alpes and the Chinese Academy of Sciences.

Chadi Barakat served as examiner of Lakhdar Meftah PhD thesis, "Towards Privacy-sensitive Mobile Crowdsourcing", defended in December 2019 at the University of Lille, France.

Chadi Barakat served as reviewer of Mariem Ben Yahia PhD thesis, "Low Latency Video Streaming Solutions based on HTTP/2", defended in May 2019 at IMT-Atlantique, France.

Chadi Barakat served as reviewer of Hamza Ben Ammar PhD thesis, "On Models for Performance Evaluation and Cache Resources Placement in Multi-Cache Networks", defended in May 2019 at the University of Rennes 1, France.

Chadi Barakat served as jury member for the mid-term review of the PhD thesis of Antoine Saverimoutou (Orange Labs) for his thesis entitled "Métrologie de l'Internet du futur: Nouvelles métriques et méthodes de mesure de la qualité de navigation Web" in March 2019.

Walid Dabbous wrote an examiner report on the thesis of Fangzhou Jiang entitled "Towards Characterizing and Exploiting Fine-grained User Behaviors in Mobile System" at the University of New South Wales.

Walid Dabbous served as reviewer of the PhD thesis of Kim-Hung LE "Mécanismes d'interopérabilité pour les applications industrielles de l'Internet des Objets et la Ville Intelligente", defended on April 1, 2019 at Eurecom, France.

Walid Dabbous served as reviewer of the PhD thesis of Yoann Desmouceaux "Network-Layer Protocols for Data Center Scalability", defended on April 10, 2019 at École Polytechnique, France.

Walid Dabbous served as a member of the recruitment committee for a Professor position at Sorbonne University in April 2019.

Thierry Turletti served as reviewer of Romuald Corbel PhD thesis "Évolution des protocoles de transport du point de vue de l'équité", defended on December 4, 2019 at Université de Rennes 1, France.

Thierry Turletti served as reviewer of Géraldine Texier HDR "Vers un Internet programmable offrant des garanties de qualité de service", defended on December 3, 2019 at Université de Rennes 1, France.

Thierry Turletti served as reviewer of Jean-Michel Sanner PhD thesis "Architecture du plan de contrôle SDN et placement des services réseaux dans les infrastructures des opérateurs", defended on July 23, 2019 at Université de Rennes 1, France.

Thierry Turletti served as examiner of Andrea Tomassilli PhD thesis "Vers un Internet programmable offrant des garanties de qualité de service", defended on June 24, 2019, at UCA, Sophia Antipolis, France.

## 9.3. Popularization

### 9.3.1. *Internal or external Inria responsibilities*

Damien Saucez is part of the MASTIC (<https://project.inria.fr/mastic>) group at Inria. MASTIC groups all the activities for scientific dissemination for Inria Sophia Antipolis.

### 9.3.2. *Articles and contents*

Walid Dabbous wrote an Interstices article [37] on the occasion of the 50<sup>th</sup> anniversary of the Internet. The article recalls the story of the first France-ARPANet connection that was established by Christian Huitema's team in July 1988.

## FOCUS Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

Mario Bravetti has been scientific co-organizer for Int. PhD School and Bootcamp on Behavioural Application Program Interfaces (BehAPI 2019), Leicester, UK.

Ugo Dal Lago has organized the Second Workshop on Probabilistic Interactive and Higher-Order Computation (6-7 February 2019) <http://pihoc2019.cs.unibo.it/>.

#### 10.1.1.2. Member of the Organizing Committees

Local Organising Committee:

Michael Lodi has been a member of the Local Organising Committee of the 13th Conference of European Science Education Research Association (ESERA '19). Bologna, 26th - 30th August 2019

Steering Committee membership:

I. Lanese: Conference on Reversible Computation (RC); IFIP Int. Conference on Formal Techniques for Distributed Objects, Components and Systems (FORTE); Interaction and Concurrency Experience (ICE)

D. Sangiorgi: Int. Conference on Concurrency Theory (CONCUR)

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Member of the Conference Program Committees

M. Bravetti: 22nd International Conference on Fundamental Approaches to Software Engineering (FASE/ETAPS 2019); IEEE International Conference on Big Data (BigData 2019); 19th IEEE International Conference on Software Quality, Reliability, and Security (QRS 2019); 8th IPM International Conference on Fundamentals of Software Engineering (FSEN 2019)

U. Dal Lago: Annual ACM/IEEE Symposium on Logic in Computer Science (LICS 2019); 47th ACM SIGPLAN Symposium on Principles of Programming Languages (POPL 2020); 28th European Symposium on Programming (ESOP 2019); 4th International Conference on Formal Structures for Computation and Deduction (FSCD 2019)

I. Lanese: 11th Conference on Reversible Computation (RC 2019); 12th Interaction and Concurrency Experience (ICE 2019); 16th International Conference on Formal Aspects of Component Software (FACS 2019); 12th IEEE International Conference on Service-Oriented Computing and Applications (SOCA 2019); First Workshop on Artificial Intelligence and fOrmal VERification, Logic, Automata, and sYnthesis (OVERLAY 2019); 4th Workshop on Formal Reasoning about Causation, Responsibility, and Explanations in Science and Technology (CREST 2019); 2nd International Conference on Microservices (MICROSERVICES 2019); 12th Innovations in Software Engineering Conference (ISEC 2019)

S. Martini: Workshop on History of Formal Methods (HFM2019); Fifth International Conference on History and Philosophy of Computing (HAPOC 5).

D. Sangiorgi: 22nd International Conference on Foundations of Software Science and Computation Structures (FOSSACS); 44th International Symposium on Mathematical Foundations of Computer Science (MFCS); 12th A.P. Ershov Informatics Conference (PSI); Workshop on History of Formal Methods (HFM2019); 15th International Conference on Software Technologies (ICSOFT)

G. Zavattaro: 17th International Conference on Service Oriented Computing (ICSOC'19); International Conference TOOLS 50+1: Technology of Object-Oriented Languages and Systems (TOOLS'19); 30th International Conference on Concurrency Theory (CONCUR'19); 34th ACM/SIGAPP Symposium On Applied Computing – track on Microservices, DevOps, and Service-Oriented Architecture (ACM-SAC 2019)

### **10.1.3. Journals**

#### *10.1.3.1. Member of the Editorial Boards*

M. Bravetti: Journal of Universal Computer Science.

U. Dal Lago: Logical Methods in Computer Science; Mathematical Structures in Computer Science; Acta Informatica.

M. Gabbrielli: Int. Journal Theory and Practice of Logic Programming.

C. Laneve: Frontiers in ICT (Section Formal Methods).

I. Lanese: Editor in chief of the Open Journal of Communications and Software (Scientific Online).

D. Sangiorgi: Acta Informatica, Distributed Computing, RAIRO Theoretical Informatics and Applications.

### **10.1.4. Invited Talks**

U. Dal Lago: Bellairs Workshop on Higher-Order Probabilistic Computation; 1st Computer Science Workshop; “Mission 10000 Conference: Quantum Science and Technologies”

D. Sangiorgi: International Conference TOOLS 50+1: Technology of Object-Oriented Languages and Systems (TOOLS'19)

Schools:

M. Avanzini: International School on Rewriting, Paris, France, 1–6 July, 2019

U. Dal Lago: 1st “Caleidoscope” Summer School

G. Zavattaro: BehAPI Summer School: Behavioural Approaches for API-Economy with Applications, Leicester, UK, 8–12 July, 2019

### **10.1.5. Leadership within the Scientific Community**

U. Dal Lago has been elected member of the Scientific Council of the Italian Chapter IC-EATCS (November 2017).

S. Martini is a member of the Council of the Commission on History and Philosophy of Computing, an organism of the International Union for History and Philosophy of Science, 2017-2021.

G. Zavattaro is member of the scientific committee of GRIN (GRuppo INformatici), Italy.

### **10.1.6. Administration duties**

M. Gabbrielli is Deputy Head of the Department of Computer Science and Engineering, University of Bologna, since May 2018.

D. Sangiorgi is coordinator of postgraduate studies at the Department of Computer Science and Engineering, University of Bologna.

G. Zavattaro is coordinator of undergraduate studies at the Department of Computer Science and Engineering, University of Bologna.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

- Mario Bravetti
  - Master: “Linguaggi, Compilatori e Modelli Computazionali”, 120 hours, 1st year, University of Bologna, Italy.
- Ugo Dal Lago
  - Undergraduate: “Algorithms and Data Structures for Biology”, 60 hours, 2nd year, University of Bologna, Italy. 20 hours, 1st year, University of Bologna, Italy.
  - Undergraduate: “Optimization”, 36 hours, 2nd year, University of Bologna, Italy.
  - Master: “Foundations of Logic for Computer Science”, 24 Hours, 2nd year. University of Bologna, Italy.
  - Master: “Cryptography”, 40 Hours, 2nd year, University of Bologna, Italy’.
  - Master: “Languages and Algorithms for AI: Machine Learning Theory”, 32 Hours, 1st year, University of Bologna, Italy’.
- Maurizio Gabbrielli
  - Undergraduate: “Programming languages”, 40 hours, 2nd year, University of Bologna, Italy.
  - Master: “Artificial Intelligence”, 60 hours, 2nd year, University of Bologna, Italy.
- Francesco Gavazzo
  - Undergraduate: “Programming languages”, 30 hours, 2nd year, University of Bologna, Italy.
  - Undergraduate: “Basic Computer Skills”. 30 hours, BSc Medical Chemistry and Pharmaceutical Technology, BSc Biology, University of Bologna.
- Ivan Lanese
  - Undergraduate: “Architettura degli Elaboratori”, 66 hours, 1st year, University of Bologna, Italy.
  - Master: “Ingegneria del Software Orientata ai Servizi”, 22 hours, 2nd year, University of Bologna, Italy.
  - Master: “Algorithms and data structures for computational biology”, 36 hours, 1st year, University of Bologna, Italy.
  - Master: “Programming for bioinformatics”, 30 hours, 1st year, University of Bologna, Italy.
- Cosimo Laneve
  - Undergraduate: “Programmazione”, 70 hours, 1st year, University of Bologna, Italy.
  - Master: “Analisi di Programmi”, 42 hours, 1st year, University of Bologna, Italy.
- Simone Martini
  - Master: “Introduction to Algorithms and Programming”, 32 hours, 1st year, University of Bologna, Italy.
- Davide Sangiorgi
  - Undergraduate: “Operating Systems”, 110 hours, 2nd year, University of Bologna, Italy.
  - Undergraduate: “Computer abilities for biologists”, 8 hours, 1st year, University of Bologna, Italy.
- Gianluigi Zavattaro

Master: “Scalable and Cloud Programming”, 50 hours, 2nd year, University of Bologna, Italy.

Undergraduate: “Algoritmi e strutture dati”, 60 hours, 2nd year, University of Bologna, Italy.

Master: “Languages and Algorithms for Artificial Intelligence”, 32 hours, 1st year, University of Bologna, Italy (Master in Artificial Intelligence).

### 10.2.2. Supervision

Below are the details on the PhD students in Focus: starting date, topic or provisional title of the thesis, supervisor(s).

- Melissa Antonelli, November 2019. “Probabilistic Arithmetic and Almost-sure Termination”. Supervisor Ugo Dal Lago.
- Adrien Durier, September 2016, "Proving behavioural properties of higher-order concurrent languages", ENS de Lyon and University of Bologna. Supervisors: Daniel Hirschhoff and Davide Sangiorgi.
- Michael Lodi, January 2017, “Introducing Computational Thinking in K-12 Education: Historical, Epistemological, Cognitive and Affective Aspects”. Supervisor: S. Martini.
- Gabriele Vanoni, November 2018. “Optimal Reduction, Geometry of Interaction, and the Space-Time Tradeoff”. Supervisor Ugo Dal Lago.
- Stefano Pio Zingaro, November 2016, “High level languages for Internet of Things applications”. Supervisor: Maurizio Gabbrielli.

PhD thesis completed in 2018:

- Raphaëlle Crubillé, October 2015, “Bisimulation Metrics and Probabilistic Lambda Calculi”, Université Denis Diderot and University of Bologna. Supervisors Thomas Ehrhard and Ugo Dal Lago.
- Francesco Gavazzo, October 2015, “Coinductive Techniques for Effectful Lambda Calculi”. Supervisor U. Dal Lago.
- Tong Liu, November 2015, “Constraint based languages for Software Defined Networks”. Supervisor: Maurizio Gabbrielli.

### 10.2.3. Juries

G. Zavattaro has been member of the PhD evaluation committee of Doriana Medic, supervisor Claudio Antares Mezzina, IMT Lucca, Italy.

## 10.3. Popularization

Michael Lodi and Simone Martini have carried out extended work of scientific popularization, including the following.

- They are members of the technical committee of Olimpiadi del Problem Solving (at Italian Ministry of Education), <http://www.olimpiadiproblemsolving.com>; this involves preparation of material and supervision and jury during the finals.
- Simone Martini has given the following talks, among others:
  - De la création d’une “théorie mathématique du calcul” à la “pensée informatique”. Quatrième journée académique sur l’enseignement de l’informatique, Marseille (avril 2019)
  - To code or not to code: the school curriculum facing the digital revolution. Collegium—Lyon Institute for Advanced Studies (Juin 2019)
  - Logic and computing in Italy at the birth of the Italian Computer Science, Roma Tre, September 2019



## INDES Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

#### 9.1.1.1. General Chair, Scientific Chair

- Iliaria Castellani was the co-chair (together with Mohammad Reza Mousavi, Antonio Ravara and Alexandra Silva) of the workshop “Open Problems in Concurrency Theory 2019” (OPCT 2019), which was held in affiliation with the POPL 2019 conference in Lisbon, on January 14-15, 2019. <https://popl19.sigplan.org/track/opct-2019-papers>
- Iliaria Castellani was the co-chair (together with Mohammad Reza Mousavi) of the workshop TRENDS 2019, the annual event of the IFIP WG1.8 on Concurrency Theory, which took place in Amsterdam on August 31, 2019, in association with the CONCUR 2019 conference. <https://concurrency-theory.org/events/workshops/trends>
- Nataliia Bielova was the co-chair (together with François Pellegrini) of the CNIL-Inria Privacy Award 2019. The award ceremony will take place at the CPDP 2020 conference in Brussels. <https://www.cnil.fr/en/launch-4th-edition-cnil-inria-privacy-award>

#### 9.1.1.2. Member of the Organizing Committees

Manuel Serrano organized the IFIP 2.16 (working group on Language Design) workshop in Nice from November 11th to November 15th <http://program-transformation.org/WGLD/NiceMeeting2019>.

### 9.1.2. Scientific Events: Selection

#### 9.1.2.1. Member of the Conference Program Committees

- Iliaria Castellani served in the Program Committees of the conference CONCUR 2019 and the workshop EXPRESS/SOS 2019.
- Nataliia Bielova served in the Program Committees of the workshop MADWeb 2019, and the conferences PETs 2019, IEEE SecDev 2019, and IEEE EuroS&P 2019.
- Manuel Serrano served in the Program Committee of ProWeb’19 workshop. He was member of the ACM Software award <https://www.sigplan.org/Awards/Software/>.
- Tamara Rezk served in the Program Committees of the workshops MADWeb 2019, SSIoT 2019, PriSC 2019, and the conferences IEEE SecDev 2019, and NDSS 2019, and Programming.

#### 9.1.2.2. Reviewer

- The team members have been reviewers for the following conferences and workshops: CONCUR’19, EXPRESS/SOS’19, PETs 2019, IEEE SecDev 2019, IEEE EuroS&P 2019, OOPSLA’19, ....

### 9.1.3. Journal

#### 9.1.3.1. Member of the Editorial Boards

- Iliaria Castellani was a member of the editorial board of *Technique et Science Informatiques*, a French journal ended in June 2019.
- Iliaria Castellani (together with Mohammad Reza Mousavi) was guest editor for the JLAMP special issue on Trends in Concurrency Theory (Selected invited contributions from the workshops TRENDS 2015 and TRENDS 2016), *J. Log. Algebr. Meth. Program.*, vol. 107, 2019 [19]. <https://doi.org/10.1016/j.jlamp.2019.07.001>.

#### 9.1.3.2. Reviewer - Reviewing Activities

- The team members have been reviewers for the following journal: The Computer Journal.

#### 9.1.4. Invited Talks

- Nataliia Bielova has been a keynote at the the Francophone workshop on Privacy Protection “l’Atelier sur la Protection de la Vie Privée” (APVP), which took place in Cap Hornu (France) from 9 to 11 July 2019. <https://project.inria.fr/apvp2019/>. Nataliia gave invited talks at SAP Labs (France), NOYB and TU Wien (Austria) in July/August 2019. She was an invited speaker at the Mozilla Security Summit on November 8, 2019, Vienna (Austria). <https://events.mozilla.org/mozillasecurityresearchsummit2019> presenting the joint work with Imane Fouad and Arnaud Legout.
- Celestin Matte presented an ongoing work at the CNIL on October 1, 2019. Title of the talk: "Détection des violations du RGPD et de la directive e-Privacy dans les bannières de consentement aux cookies du Transparency and Consent Framework d’IAB Europe".
- Manuel Serrano has been invited to be a keynote at the *Huawei European Research Symposium* in January 2019. He presented his work on *Hop* and *HipHop*. He has been invited by RainCode, a Belgium company located in Brussels, specialized in language compilation, to give a talk on the static compilation of dynamic languages.

#### 9.1.5. Leadership within the Scientific Community

- Iliaria Castellani is the chair of the IFIP TC1 WG 1.8 on Concurrency Theory since June 2014 (reelected for a second term in March 2018).
- Iliaria Castellani was a member of the Management Committee of the COST Action IC1405 on Reversible Computation (until April 2019).
- Nataliia Bielova is a member of the Steering Committee of ACM PLAS.
- Tamara Rezk was a member of the Steering Committee of the POST conference during 2019 and is a member of the Steering Committee of the PriSC workshop.

#### 9.1.6. Research Administration

- Iliaria Castellani is a member of Inria’s “Comité Parité et Égalité des Chances”. In the Centre of Inria Sophia Antipolis, she is a member of the “Comité d’Animation et Médiation Scientifique” and of the “Comité Scientifique du Colloquium”. Within UCA, she is a member of the “Réseau Égalité” and of the organising committee of the seminar series “Forum Numerica”.
- Iliaria Castellani was the chair of the “jury d’admissibilité” of the CRCN competition (for junior researcher permanent positions) in the Inria Centre of Grenoble Rhône Alpes.
- Nataliia Bielova was a member of the hiring committee for an Inria chair position “enseignement et recherche dans le domaine de la cybersécurité” of Supelec in February 2019.
- Nataliia Bielova is a member of “Comité du Suivi Doctoral (CSD)” (Supervision of PhD students) of the Inria Sophia Antipolis Méditerranée research center.
- Since summer 2019, Manuel Serrano is vice-chair of the Inria evaluation committee (EC). The charge for this duty amounts to about 50% of his professional activities. He co-chaired the three research promotion juries of 2019. He chaired the Inria *Algorithmics, Computer Algebra and Cryptology* theme EC evaluation. He prepared the evaluation seminar of the Inria theme *Embedded systems, Architecture, and Compilation*.
- Tamara Rezk was a member of "Commission de Développement Technologique (CDT)" of the Inria Sophia Antipolis Méditerranée research center.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Master : Tamara Rezk, Security of Web Applications, 28ETD, niveau M2, University of Nice Sophia Antipolis, France

Master : Tamara Rezk, Preuves en Cryptographie, 28ETD, niveau M2, University of Nice Sophia Antipolis, France

IUT : Héloïse Maurel, Introduction aux technologies du Web, 20ETD, niveau DUT1, University of Nice Sophia Antipolis, France

DIU-EIL : Héloïse Maurel, Introduction aux langages de description et programmation du Web , 20ETD, University of Nice Sophia Antipolis, France

Master: Nataliia Bielova, Privacy on the Internet, 15ETD, M2, SKEMA Business school, France.

Master : Nataliia Bielova, Security and Ethical aspect of Data, 27ETD, niveau M1, Université Côte d'Azur, France

Doctorat : Nataliia Bielova, Ecole de Cybersécurité, 3ETD, UCA, France

### 9.2.2. E-learning

#### E-learning

Mooc: Nataliia Bielova with C. Lauradoux and V. Roca, 1 session (2 months), FUN-MOOC, Inria, public targeted: around 30,000 for all the sessions since 2018, <https://www.fun-mooc.fr/courses/course-v1:inria+41015+session03/about>.

### 9.2.3. Supervision

PhD in progress: Imane Fouad, Web tracking detection and measurement, 1/01/2018, Nataliia Bielova and Arnaud Legout.

PhD in progress: Michael Toth, Privacy Policies and Cookie Banners as a GDPR consent, 1/12/2019, Nataliia Bielova and Vincent Roca.

Postdoc, Celestin Matte, Large-scale measurement of Cookie Banners, 1/03/2019-, Nataliia Bielova.

Postdoc: Yoon Seok Ko, Subsets of secure JavaScript, 1/10/2018-, Tamara Rezk, Manuel Serrano.

PhD in progress: Jayanth Krishnamurthy, Secure Reactive Web Programming, 12/09/2018, Manuel Serrano.

PhD in progress: Bertrand Petit, Musique Massivement Interactive, 12/09/2017, Manuel Serrano.

PhD in progress : Héloïse Maurel, Secure compilation of IoT applications, 1/10/2018, Tamara Rezk

PhD in progress : Mohamad Ellaz, Encodings of ElGammal, 1/12/2017, Benjamin Gregoire and Tamara Rezk

PhD in progress : Lesly-Ann Daniel, Security analysis of binary code, 1/10/2018, Sébastien Bardin and Tamara Rezk

PhD in progress : Adam Khayam, Semantics of Multitier Languages, 1/07/2019, Alan Schmitt and Tamara Rezk

Postdoc: Francis Somé, IoT secure broadcasting, 1/11/2018-1/04/2019, Tamara Rezk

### 9.2.4. Juries

- Nataliia Bielova was a member of the PhD jury of Antoine Vastel, University of Lille.
- Nataliia Bielova was a member of the jury "soutenance de stage" of the UBINET master of the University of Nice Sophia Antipolis.
- Tamara Rezk was a member of the HdR jury of Catalin Hritcu, ENS.
- Tamara Rezk was a reporter and jury member of the PhD jury of Alexandre Dang, University of Bretagne Loire.

- Tamara Rezk was a member of the jury “soutenance de stage” of the CASPAR master of the University of Nice Sophia Antipolis.
- Manuel Serrano was a reporter and jury member of N. Oostvogels’s PhD, Vrije University, Brussels.

## 9.3. Popularization

### 9.3.1. Internal or external Inria responsibilities

Tamara Rezk was member of the editorial board of Interstices (<https://interstices.info/>) and Blog Binaire Le Monde (<https://www.lemonde.fr/blog/binaire/>).

### 9.3.2. Articles and contents

- Nataliia Bielova has been interviewed by the Usine Digitale on 22 November 2019, title "Fuite massive de données à AccorHotels : ce que risque l’entreprise", <https://www.usine-digitale.fr/article/fuite-massive-de-donnees-a-accorhotels-que-risque-l-entreprise.N906279>.
- Nataliia Bielova has been interviewed by the L’OBS on 29 November 2019, title "Entre réalité augmentée et reconnaissance faciale, on a parcouru le supermarché de demain", <https://www.nouvelobs.com/economie/20191129.OBS21725/entre-realite-augmentee-et-reconnaissance-faciale-on-a-parcouru-le-supermarche-de-demain.html>.
- Nataliia Bielova and Tamara Rezk have contributed to the Inria white book on CyberSecurity, published in January 2019: <https://hal.inria.fr/hal-01993308>.
- The browser extension "Cookie Glasses" developed by Celestin Matte and Nataliia Bielova has been extensively discussed on the general public media due to a complaint made by NOYB to the CNIL on the GDPR and ePrivacy violations of several e-commerce websites: <https://noyb.eu/say-no-to-cookies-yet-see-your-privacy-crumble/>.

### 9.3.3. Education

- Nataliia Bielova: *Moderation and Animation of the MOOC Protection de la vie privée dans le monde numérique*, 05/2019-06/2019.

### 9.3.4. Interventions

- Nataliia Bielova made an intervention with high school students during Semaine De La Science with Cinesciences at the cinémathèque of Nice on 4 October 2019.
- Celestin Matte presented his work on "Tracage Wifi et Bluetooth" at the public event called "Pas Sage en Seine" in June 2019, <https://programme.passageenseine.fr/>.
- Nataliia Bielova made a presentation with BSc and MSc students during the ACM-W Ukrainian Chapter celebration on December 5, 2019, <https://women.acm.org/2019-2020-celebrations/>.
- Imane Fouad presented her work on "detection of third-party trackers" at Inria PhD Seminars in December 2019.

## NEO Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

- Eitan Altman was the general chair of the 12th EAI International Conference on Performance Evaluation Methodologies and Tools (VALUETOOLS 2019), Palma de Mallorca, Spain, 13-15 March 2019;
- Konstantin Avrachenkov co-organized the 16th Workshop on Algorithms and Models for the Web Graph (WAW 2019), University of Queensland, Brisbane, Australia, 6-7 July 2019;
- Eitan Altman is chairman of the Steering committee of the workshop NetGCoop - Networking Games, Control and Optimisation;
- Eitan Altman is member of the steering committee of the conferences WiOpt and Valuetools.

#### 10.1.1.2. Member of the Organizing Committees

- Giovanni Neglia was publicity co-chair of the 20th International Symposium on Mobile Ad Hoc Networking and Computing (ACM MobiHoc 2019), Catania, Italy, 2-5 July 2019.

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Chair of Conference Program Committees

- Konstantin Avrachenkov was the co-chair of the 16th Workshop on Algorithms and Models for the Web Graph (WAW 2019), University of Queensland, Brisbane, Australia, 6-7 July 2019.
- Konstantin Avrachenkov was the co-chair of the 9th EAI International Conference on Game Theory for Networks (GameNets 2019), Paris, France, April 25-26, 2019.

#### 10.1.2.2. Member of the Conference Program Committees

- ACM Sigmetrics / IFIP Performance 2019 (Phoenix, Arizona, USA) (S. Alouf, K. Avrachenkov);
- ACM Sigmetrics 2020 (Boston, Massachusetts, USA) (S. Alouf);
- IEEE Intl. Conf. on Computer Communications (INFOCOM 2020, Beijing, China) (G. Neglia);
- 39th IEEE Intl. Conf. on Distributed Computing Systems (ICDCS 2019, Dallas, Texas, USA) (K. Avrachenkov);
- 27th IEEE Intl. Conf. on Network Protocols (ICNP 2019, Chicago, Illinois, USA) (K. Avrachenkov);
- 25th Intl. Conf. on Analytical & Stochastic Modelling Techniques & Applications (ASMTA 2019, Moscow, Russia) (K. Avrachenkov);
- 10th Conf. on Decision and Game Theory for Security (GameSec 2019, Stockholm, Sweden) (K. Avrachenkov);
- 8th Intl. Conf. on Complex Networks and their Applications (Lisbon, Portugal) (K. Avrachenkov);
- 26th Intl. Conf. on Telecommunications (ICT 2019, Hanoi, Vietnam) (K. Avrachenkov);
- SIAM Conf. on Control and Its Applications (CT19, Chengdu, China) (K. Avrachenkov);
- SIAM Intl. Conf. on Data Mining (SDM19, Calgary, Canada) (K. Avrachenkov);
- 20th Conf. of the Société Française de Recherche Opérationnelle et d'Aide à la Décision (ROADEF 2019, Le Havre, France) (A. Jean-Marie);

- 7th Symposium on Control, Automation, Industrial Informatics and Smart Grid (ICAIS'19, Trivandrum, Kerala, India) (K. Avrachenkov);
- 16th Intl. Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt 2019, Avignon, France) (K. Avrachenkov);
- 16th European Performance Engineering Workshop (EPEW2019, Milan, Italy) (A. Jean-Marie);
- IEEE INFOCOM Workshop on the Communications and Networking Aspects of Online Social Networks (CAOS'19, Paris, France), (G. Neglia);
- 21st Workshop on MATHematical performance Modeling and Analysis (MAMA 2019, Phoenix, USA) (A. Jean-Marie).

#### 10.1.2.3. Reviewer

- 27th IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2020, London, Canada) (A. Jean-Marie);
- Forum on Specification & Design Languages (FDL 2019, Southampton, UK) (S. Alouf).

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

- *ACM Transactions on Modeling and Performance Evaluation of Computing Systems (ACM ToMPECS)* (K. Avrachenkov);
- *AIMS: Journal of Dynamic Games* (E. Altman);
- *Elsevier Computer Communications (COMCOM)* (G. Neglia);
- *Elsevier International Journal of Performance Evaluation (PEVA)* (K. Avrachenkov);
- *IEEE Transactions on Mobile Computing* (G. Neglia);
- Editor at large in *IEEE/ACM Transaction of Networking* (E. Altman);
- *Probability in the Engineering and Informational Sciences* (K. Avrachenkov);
- *Springer: Dynamic Games and Applications* (E. Altman);
- *Stochastic Models* (K. Avrachenkov);
- *Wiley Transactions on Emerging Telecommunications Technologies (ETT)* (S. Alouf).

#### 10.1.3.2. Reviewer - Reviewing Activities

- *Dynamic Games And Applications* (A. Jean-Marie);
- *Elsevier Computer Networks* (G. Neglia);
- *Elsevier International Journal of Performance Evaluation (PEVA)* (S. Alouf);
- *EURO Journal on Computational Optimization* (A. Jean-Marie);
- *IEEE Internet of Things Journal* (C. Xu);
- *IEEE Networking Letters* (G. Neglia);
- *IEEE/ACM Transactions on Mobile Computing (TMC)* (G. Neglia);
- *IEEE/ACM Transactions on Networking (ToN)* (G. Neglia);
- *Journal of Economic Dynamics and Control* (A. Jean-Marie);
- *Theoretical Computer Science (TCS)* (A. Jean-Marie).

#### 10.1.4. Tutorials, Invited Talks

- E. Altman gave a tutorial on "Network Games" at the Workshop on Network, population and congestion games (NPCG19) 17 April, Paris, France.
- G. Neglia gave an invited talk on "Machine Learning Training: Research Challenges and Opportunities for Distributed Computing" at the International Workshop on Distributed Cloud Computing (DCC), 18 October, Budapest, Hungary.

- C. Xu gave an invited talk on "Dynamic back up workers in distributed machine learning" at Sun Yat-sen University, September 3, Guangzhou, China.

### **10.1.5. Leadership within the Scientific Community**

S. Alouf

- has been elected for two years at the Board of Directors of ACM SIGMETRICS.
- is a member of the Equality and Diversity committee of ACM SIGMETRICS.
- is a member of the Conference Advisory committee of ACM SIGMETRICS.

E. Altman

- is a fellow member of IEEE (Class of 2010).
- is a fellow member of EAI (Class of 2019)
- is an elected member of IFIP WG 7.3 on "Computer System Modeling".
- is a member of WG 6.3 of IFIP on Performance of Communication Systems.

K. Avrachenkov

- is a member of the scientific committee for Labex UCN@Sophia;
- is a member of Conseil Scientifique & Pédagogique EUR DS4H Université Côte d'Azur;

A. Jean-Marie

- is a member of the Steering Committee of the GDR RO, a national research initiative on Operations Research sponsored by the CNRS;
- is an elected member of IFIP WG 7.3 on "Computer System Modeling".

G. Neglia is member of the scientific animation committee for the IDEX UCA<sup>JEDI</sup> research program "Social Interactions and Complex Dynamics" since 2017.

### **10.1.6. Scientific Expertise**

Giovanni Neglia is a consultant for the startup Payback Network in the period November 2019 - January 2020. The consultancy is on differential privacy techniques.

### **10.1.7. Research Administration**

S. Alouf

- is member of CLF, the training committee of Inria Sophia Antipolis Méditerranée, since November 2014;
- is vice-head of project-team NEO since January 2017.

K. Avrachenkov

- is responsible for the supervision and validation of the project-teams' yearly activity reports since 2010;
- is a member of NICE, the Invited Researchers Committee of Inria Sophia Antipolis Méditerranée, since 2010.
- is a member of scientific and pedagogical committee for the graduate school DS4H of UCA.

A. Jean-Marie

- is the scientific coordinator of Inria activities in Montpellier (since 2008); as part of this duty, he represents Inria at: the Scientific Council of the Doctoral School "Sciences and Agrosiences" of the Univ of Avignon; at the Regional Conference of Research Organisms (CODOR);
- is member of the managing sub-committee of the Project-Team Committee of the Inria Sophia Antipolis – Méditerranée research center since December 2017;

- is Head of project-team NEO since January 2017.

G. Neglia

- is the scientific delegate for European partnerships for Inria Sophia Antipolis – Méditerranée since 2014;
- is member of the Inria COST GTRI (International Relations Working Group of Inria’s Scientific and Technological Orientation Council since 2016.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Note: UNS is the Univ Nice Sophia-Antipolis, UCA is the Univ Côte d’Azur.

Licence : M. Drevetov, “Tools for biology – Statistics”, 24H, L1 Life Sciences, UNS, France;

Master : S. Alouf, “Performance Evaluation of Networks”, 27H, M2 Ubinet, UCA, France;

Master : K. Avrachenkov, “Statistical Analysis of Graphs”, 6H, M2 Data Science, UCA, France;

Master : M. Drevetov, “Statistical Analysis of Graphs”, 26H, M2 Data Science, UCA, France;

Master : G. Neglia, “Distributed Optimization and Games”, 31.5H, M2 Ubinet, UNS, France;

Master : G. Neglia, “Performance Evaluation of Networks”, 4.5H, M2 Ubinet, UCA, France;

Master : G. Neglia, responsible for the “Winter School on Hands-on Machine Learning”, 22.5H, M1 Computer Science, UNS, France.

Doctorat: A. Jean-Marie, “Queueing Systems”, 6H, Summer School ResCom 2019, Anglet, France.

### 10.2.2. Supervision

PhD: Zaid Allybokus, “Scalable Online Algorithms for SDN Controllers”, UCA, 11 June 2019, advisors: Konstantin Avrachenkov, Jeremie Leguay and Lorenzo Maggi (Huawei).

PhD: Dimitra Politaki, “Greening data center”, UCA, 16 July 2019, advisors: Sara Alouf and Fabien Hermenier (Nutanix).

PhD in progress: Mandar Datar, “Singular perturbation approach for machine learning in multiobjective optimisation”, Univ Avignon, 1 May 2018, advisor: Eitan Altman.

PhD in progress: Maximilien Drevetov, “Statistical Physics Methods for Distributed Machine Learning”, UCA, 1 Oct. 2018, advisor: Konstantin Avrachenkov.

PhD in progress: Guilherme Iecker Ricardo, “Caching for wireless networks”, UCA, 1 Sept. 2018, advisors: Giovanni Neglia and Pietro Elia (EURECOM).

PhD in progress: Mikhail Kamalov, “Semi-supervised variational autoencoders versatile data”, UCA, 1 June 2019, advisor: Konstantin Avrachenkov.

PhD in progress: Marie Masson, “Fonctionnalités auto-organisantes dans le réseau d’accès radio 5G virtuels”, UCA, 1 Dec. 2017, advisors: Eitan Altman and Zwi Altman (Orange).

PhD in progress: Tareq Si Salem, “Federated Learning”, UCA, 1 October 2019, advisor: Giovanni Neglia.

PhD interrupted: Abhishek Bose, “Adaptive crawling with machine learning techniques”, 1 June 2018 – 30 Sep. 2029.

### 10.2.3. Juries

NEO members participated in the Ph.D. committees of (in alphabetical order):

- Zaid Allybokus, “Scalable Online Algorithms for SDN Controllers”, UCA, 11 June (K. Avrachenkov as advisor);



- Lea Bayati, “Data Centers Energy Optimization”, Univ Paris-Est Créteil, 20 September (A. Jean-Marie as reviewer);
- Céline Comte, “Resource management in computer clusters: algorithm design and performance analysis”, Telecom ParisTech, 24 September (A. Jean-Marie as jury president);
- Muhammad Jawad Khokhar, “Modeling Quality of Experience of Internet Video Streaming by Controlled Experimentation and Machine Learning”, UCA, 15 October (G. Neglia as jury member)
- Xiaoyi Mai, “Methods of random matrices for large dimensional statistical learning”, CentraleSup-elec, 16 October (K. Avrachenkov as jury member);
- Antonio Massaro, “Optimisation, games and learning strategies in telecommunication systems subject to structural constraints”, University of Trento, 7 May (K. Avrachenkov as reviewer);
- Dimitra Politaki, “Greening data center”, UCA, 16 July (S. Alouf as advisor);
- Yonathan Portilla, Univ Avignon, “Study of Social Networks: modelling and analysis”, 20 May (E. Altman as co-advisor);
- Arthur Vallet, “Modélisation markovienne de lasers multimodes à semiconducteurs”, Université de Montpellier, 15 October (A. Jean-Marie as jury member).

## 10.3. Popularization

### 10.3.1. Interventions

- Sara Alouf presented the Researcher profession at the *Forum des Métiers*, Collège Emile Roux, Le Cannet, on 15 March 2019, to a total of 62 students in 6 groups, aging 12-14 years.

## CHORALE Team

# 9. Dissemination

## 9.1. Scientific Events: Organisation

### 9.1.1. General Chair, Scientific Chair

Philippe Martinet the corresponding chair for the PPNIV19 IRO19 workshop (<https://project.inria.fr/ppniv19>). He has managed the reviewing process, the website update and the general publicity. More than 300 attendees for this 11th edition.

### 9.1.2. Member of the Organizing Committees

Philippe Martinet has co-organized the IROS19-PPNIV19 (<https://project.inria.fr/ppniv19>) workshop with Christian Laugier, Marcelo H. Ang, Christoph Stiller and Miguel Sotelo (over 300 attendees).

Philippe Martinet has co-organized the Cutting edge Forum on Autonomous Driving (<https://project.inria.fr/ad19/>) with Christian Laugier, Marcelo H. Ang, Christoph Stiller and Miguel Sotelo (more than 150 attendees).

### 9.1.3. Scientific Events: Selection

#### 9.1.3.1. Chair of Conference Program Committees

Philippe Martinet was Regional Chair for CISRAM 2019.

#### 9.1.3.2. Member of the Conference Program Committees

Philippe Martinet was member for the IPC for ICINCO 2019.

Patrick Rives was Program Committee member of the Conférence Française de Photogrammétrie et de Télédétection 2019 (CFPT)

#### 9.1.3.3. Reviewer

Philippe Martinet was Associated Editor for ITSC 2019, and reviewer for ICINCO19, PPNIV19.

Guillaume Allibert has reviewed papers for ICRA, IROS, IFAC WC, CDC, ACC.

Paolo Salaris has reviewed papers for ICRA, CDC, RSS.

Patrick Rives has reviewed papers for ICRA, IROS, IV, ICAR.

Renato Martins has reviewed papers for WACV, ICRA, IROS, ITSC, ICAR, PPNIV19.

### 9.1.4. Journal

#### 9.1.4.1. Member of the Editorial Boards

Philippe Martinet is member of the Editorial Board of the Springer ISCA Book Series since 2014.

Philippe Martinet is co-Editor of the Springer book collection “Parallel Robots : Theory and Applications” setup in January 2015.

#### 9.1.4.2. Reviewer - Reviewing Activities

Philippe Martinet is Associate Editor of the journal IEEE-Transactions on Intelligent Vehicles.

Guillaume Allibert has reviewed papers for RA-L and IEEE Trans. on Mechatronics.

Paolo Salaris has reviewed: RA-L, TRO, AURO

Renato Martins has reviewed papers for RA-L and Elsevier JVCI.

### 9.1.5. Invited Talks

Patrick Rives gave a Plenary Talk at the Universidade Federal de Minas Gerais (UFMG), Brazil

Title: Towards new sensors and representations for autonomous navigation in large scale human-like environments

### 9.1.6. Scientific Expertise

- International:
  - Philippe Martinet is corresponding chair and co-chair with C. Laugier and Christoph Stiller, of the IEEE RAS Technical Committee on “Autonomous Ground Vehicles and Intelligent Transportation Systems (AGVITS)”.
  - Philippe Martinet is Deputy director of the GdR Robotique.
  - Philippe Martinet was member of CNU 61 from 2011 until September 2019.
  - H2020: Philippe Martinet has participated of the ICT-2019-2 call (4 projects were evaluated)
  - STIC Amsud: Philippe has evaluated one proposal in 2019
  - Skywin (Aerospace Cluster of Wallonia): Patrick Rives has evaluated one proposal
  - Program BRIDGE Discovery (Swiss National Science Foundation): Patrick Rives has evaluated one proposal
- National:
  - Philippe Martinet is deputy director of the GdR robotics.
  - ANR: Guillaume Allibert was part of the CES33 in 2019. He has participated to the evaluation of the pre-projects and to the final projects evaluation.
  - ANR: Patrick Rives has evaluated one proposal in 2019
  - HCERES: Philippe has participated of the evaluation of LAAS (November 2019), IFFS-TAR AME department (March 2019) and ONERA DTIS Department (December 2019).
  - ISITE-NEXT in Nantes: Philippe Martinet has evaluated one Talent application in 2019
  - ANRT: Philippe Martinet has evaluated one application for CIFRE grant in 2019
  - Philippe Martinet is coordinator of the ANR MOBI-Deep project
  - Guillaume Allibert is coordinator of the ANR CLARA project
- Local:
  - Paolo Salaris was member of CSD (Comité de Suivi Doctoral) in Inria Sophia Antipolis until end of August 2019.

### 9.1.7. Research Administration

Guillaume Allibert is the SIS team deputy head at I3S since 2017. This team is composed of 57 people (18 teacher-researchers, 11 researchers, 6 ATER & post doc, 3 emeritus and 19 PhD students).

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Guillaume Allibert is assistant professor at the Cote-d’Azur-University. He teaches at the GEII department of the IUT of Nice Côte d’Azur. He is in charge of two complete teaching modules: control and computer science. He also participates in the mathematics course.

Philippe Martinet managed four main actions in 2019 in relation with the education system:

- EIT Digital AUS: Participation in the definition of the educational program. This master program will be done at Polytech Sophia.
- New engineering track on autonomous system: Participation in the discussion to put in place a new engineering track between Polytech Sophia and Ecole des Mines. This Engineering track will start in 2021.
- EMJMD MIR (Erasmus Mundus Joint Master Degree on Marine and Maritime Intelligent Robotics): Jean-Pierre Merlet and Philippe Martinet have discussed with the coordinator of the master Vincent Hugel in order that Inria become an associated partner for this new educational program in robotic.
- Philippe Martinet, Jean-Pierre Merlet and Guillaume Allibert have co-organized the first GdR Robotics Winter school on Robotics Principia (<https://project.inria.fr/roboticsprincipia/>). An HAL collection has been setup (<https://hal.inria.fr/ROBOTICA-PRINCIPIA>).

### 9.2.2. Supervision

PhD : David Perez Morales, Multisensor based control in intelligent parking applications, Ecole Centrale de Nantes, December 6th 2019, P. Martinet, O. Kermorgant, S. Dominguez

PhD : Luis Contreras, SLAM collaboratif dans des environnements extérieurs, Ecole Centrale de Nantes, April 10th 2019, P. Martinet, O. Kermorgant

PhD in progress : Mohammed Boussaha, Hybrid urban scene analysis from mobile mapping images and laser scan, Université Paris Est -MSTIC, 15/10/2016, Bruno Vallet (IGN-Matis), Patrick Rives

PhD in progress : Dyanna Hassan, Plate-forme robotisée d'assistance aux personnes à mobilité réduite, Univ Côte d'Azur, 1/01/2017, P. Rives, P. Salaris

PhD in progress : Ihab Mohammed, Coupling Deep Learning and Advanced Control in UAV Navigation, Univ Côte d'Azur, 1/12/2018, P. Martinet, G. Allibert, P. Salaris

PhD in progress: Franco Fusco, High-speed visual servoing, Ecole Centrale de Nantes, 1/9/2017, P. Martinet, O. Kermorgant

PhD in progress : Maria Kabtoul, Proactive Social navigation for autonomous vehicles among crowds, Univ Grenoble Alpes, 1/09/2018, A. Spalanzani, P. Martinet

PhD in progress : Luiz Alberto Serafim Guardini, Autonomous car driving: use of dynamic probabilistic occupancy grids for contextualized planning of emergency trajectory with minimal criticity, Univ Grenoble Alpes, 1/10/2018, A. Spalanzani, P. Martinet, C. Laugier

PhD in progress : Zongwei Wu, New convolution for spherical images using depth, Université de Bourgogne Franche Comté, 1/10/19, C. Demonceaux, G. Allibert,

### 9.2.3. Juries

HdR : Guillaume Caron, Vision robotique directe, Univ Picardie Jules Verne, December 10th 2019 (P. Martinet, reviewer)

PhD : David Sierra Gonzales, Towards Human like prediction and decision making for automated vehicles on highway scenarios, Univ Grenoble Alpes, April 1st 2019, (P. Martinet, reviewer)

PhD : Soler Ulun, Multi-robot relative localization using computer vision, NTU Singapore, 2019, (P. Martinet, reviewer)

PhD : Jiang Xiaoyue, Visual and Lidar based SLAM by variational Bayesian method, NTU Singapore, 2019, (P. Martinet, reviewer)

PhD : Michel Moukari, Estimation de profondeur à partir d'images monoculaires par apprentissage profond, Univ de Caen, July 1st 2019, (P. Martinet, reviewer)

PhD : Pavan Vasishta, Building and Leveraging prior knowledge for predicting pedestrian behavior around autonomous vehicles, Univ Grenoble Alpes, September 30th 2019, (P. Martinet, examiner)

PhD : David Perez Morales, Multisensor based control in intelligent parking applications, Ecole Centrale de Nantes, December 6th 2019 (G. Allibert, examiner)

PhD : Thibaut Tezenas du Montcel, Evitement d'obstacles pour quadrirotors en utilisant un capteur de profondeur, Univ Grenoble Alpes, December 16th 2019 (G. Allibert, examiner)

PhD : Jose Juan Tellez, Teleoperation of an UAV for navigation in unstructured environments using a portable haptic interface, Univ Grenoble Alpes, June 26th 2019 (G. Allibert, examiner)

PhD : Kevin Giraud Esclasse, Towards reactive motion generation on exteroceptive feedback for generalized locomotion of humanoid robots, Univ Toulouse Midi-Pyrénées, December 18th 2019 (G. Allibert, examiner)

PhD : Thiago L. Gomes. Transferring human motion and appearance in monocular videos, PhD Qualifying Exam on Computer Science, Universidade Federal de Minas Gerais, Brazil, July 12th 2019 (R. Martins, examiner)

## **9.3. Popularization**

### **9.3.1. Articles and contents**

Philippe Martinet and Renato Martins have been interviewed in December 2019 by France 3 Côte d'Azur in order to popularize the work of CHORALE in the field of Connected Autonomous Vehicles. Real demonstrations of autonomous driving have been done at Inria Sophia Antipolis, and another one at CASA experimental site. An FR3 magazine will be launched in february 2020.

### **9.3.2. Interventions**

- Patrick Rives has presented the topic of Autonomous vehicle during the day "Formation IA pour les professeurs des lycées", Sophia Antipolis, 14/11/2019

## GRAPHDECO Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

#### 9.1.1.1. Member of the Organizing Committees

V. Deschaintre is the Web chair of EGSR 2020.

### 9.1.2. Scientific Events: Selection

#### 9.1.2.1. Member of the Conference Program Committees (PC)

Y. Gryaditskaya was a PC member of Computational Visual Media Conference (CVM) 2020. A. Bousseau was a PC member for SIGGRAPH '19, Eurographics'19 and SMI'19. G. Drettakis was a member of the PC of Pacific Graphics'19 and EGSR'19 and participated in the papers sort for SIGGRAPH'19 in January in Zurich.

### 9.1.3. Journal

#### 9.1.3.1. Member of the Editorial Boards

- George Drettakis is an Associate Editor of Computational Visual Media (CVM).

#### 9.1.3.2. Reviewer - Reviewing Activities

Y. Gryaditskaya was a reviewer for IEEE Transactions on Image Processing (TIP), T. Stanko for Computer Aided Geometric Design journal, V. Deschaintre for SIGGRAPH Asia, Eurographics papers and STARS, R. Deeb for JOSA A, Optics express and CVIU and T. Thonat for Computer and Graphics.

### 9.1.4. Invited Talks

- Y. Gryaditskaya and V. Deschaintre gave invited talks at Ecole Polytechnique in July 2019.
- V. Deschaintre gave an invited talk at the Materials and Appearance Modelling workshop in Strasbourg in July.
- J. Philip and G. Drettakis gave an invited talk on multi-view relighting using a geometry-aware network at NASA Jet Propulsion Laboratory, Pasadena in July 28th, 2019.
- A. Bousseau gave a Thinkshell Architectural Geometry Lesson, Navier Laboratory (Paris, France), "Interpreting Drawings for 3D Design".
- G. Drettakis presented at the French Academy of Sciences days at Sophia-Antipolis (June 21st, 2019) on the topic "Computer Graphics and Machine Learning". Video on the Academy of Sciences [site](#).
- G. Drettakis presented IBR research at the following companies: Mikros Image in Paris in September and Airbus Systems in Sophia in October.

### 9.1.5. Leadership within the Scientific Community

G. Drettakis chairs the Eurographics (EG) working group on Rendering, and the steering committee of EG Symposium on Rendering.

### 9.1.6. Scientific Expertise

G. Drettakis was an evaluator for the French ANR, ERC consolidator grants and Swiss National Research foundation, and is a member of the jury of the Ph.D. thesis award of the IG-RV (<https://prixigrv2018.sciencesconf.org/>). A. Bousseau was an evaluator for the IdEX University of Strasbourg (postdoc and PhD fellowships) and a member of the Eurographics Ph.D. award committee.

### 9.1.7. Research Administration

Adrien Bousseau is a member of “comité du centre” and “comité du suivi doctoral”.

### 9.1.8. Interventions at Conferences

- J. Delanoy presented her work at the 8th ACM/EG Expressive Symposium, 5-6 May 2019, Genoa, Italy, and at SMI 2019 (Geometry Summit), 17-21 June 2019, Vancouver, Canada.
- F. Hähnlein presented a talk about "Data-driven sketch segmentation" project at JFIGRV2019 in Marseille, and also attended NeuroSTIC2019 and the UCA Deep Learning Summer School 2019.
- J. Philip presented his paper "Multi-view relighting using a geometry network" at SIGGRAPH 2019 in Los Angeles in August.
- V. Deschaintre presented his paper "Flexible SVBRDF Capture with a Multi-Image Deep Network" at EGSR 2019 in Strasbourg in July.
- Y. Gryaditskaya presented her paper "OpenSketch: A Richly-Annotated Dataset of Product Design Sketches" at SIGGRAPH Asia 2019 in Brisbane in November.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Licence: T. Stanko Fondements mathématiques 1 (L1), 40h eq. TD, Université Côte d’Azur (France).

Master: G. Drettakis, A. Bousseau, Data visualization (M1), 12h eq. TD. Université Côte d’Azur (France).

### 9.2.2. Supervision

Ph.D.: Théo Thonat, Image-based rendering of thin and stochastic structures, defended June 2019, George Drettakis [13].

Ph.D.: Johanna Delanoy, Data-driven sketch-based modeling, defended June 2019, Adrien Bousseau [11].

Ph.D.: Valentin Deschaintre, Data-driven material capture, defended November 2019, Adrien Bousseau and George Drettakis [12].

Ph.D. in progress: David Jourdan, Interactive architectural design, since October 2018, Adrien Bousseau and Melina Skouras (Imagine)

Ph.D. in progress: Felix Hahnlein, Line Drawing Generation and Interpretation, since February 2019, Adrien Bousseau.

Ph.D. in progress: Julien Philip, Data-driven image-based rendering and relighting, since November 2016, George Drettakis.

Ph.D. in progress: Simon Rodriguez, Leveraging semantic information in image-based rendering, since November 2016, George Drettakis.

Ph.D. in progress: Stavros Diolatzis, Guiding and Learning for Illumination Algorithms, since April 2019, George Drettakis.

### 9.2.3. Juries

G. Drettakis was a member of the Ph.D. jury J-P. Bauchet (UCA) and Ph.D. reviewer of T. Leimkhueler (U. Saarbruecken). A. Bousseau was Ph.D. Reviewer for Marek Dvoroznak (TU Prague), Li Changjian (The University of Hong Kong) and Geoffrey Guingo (Grenoble University).

## 9.3. Popularization

### 9.3.1. Internal or external Inria responsibilities

- George Drettakis chairs the local “Jacques Morgenstern” Colloquium organizing committee and was elected a member of the Inria Scientific Council.

### 9.3.2. Articles and contents

J. Philip participated in the Youtube video interview: Intelligences artificielles: créatives mais perverses ? - Macroscopie La chaine - [Video link](#) - July 2019.

The work of J. Philip was the topic of a press release: L’algorithme d’apprentissage profond qui permet de changer l’éclairage des photos et de vidéos. [Link to inria Press release](#) and other media coverage [Link to Pix Fan press release](#)

The work Multi-view relighting using a geometry-aware network was presented at Adobe Max - November 2019. The project was part of the 11 projects selected out of 200 to be presented at Adobe MAX under the name project #LightRightSneak [Link to the event](#).

Some press coverage of this event regarding the project : [Link to Tech cafe](#) listen starting at 32’00". [Link to slrlouge](#). [Link to petapixel](#).



## GRAPHIK Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

- Marie-Laure Mugnier is co-responsible for a national group (2017-2020), named **Reasoning on Data** (Rod), common to two GDRs (CNRS research groups), namely Artificial Intelligence (formal and algorithmic aspects of Artificial Intelligence) and MaDICS (Big Data, Data Science). The aim of this action is to gather researchers from different domains on the development of knowledge representation and reasoning techniques devoted to data exploitation. <http://www.lirmm.fr/rod/>
- Rallou Thomopoulos has been co-leader of the trans-unit program **InCom** (Knowledge and Model Integration) of the CEPIA Division of INRA from 2018. She also organised the session on “Digital Issues” in the 2019 annual seminar of INRAE-TRANSFORM research division, and she was co-organizer of a one-day workshop on data-mining for food and bioproduct processing research on the 25th of November 2019.
- Patrice Buche is a coordinator of the **IN-OVIVE** (INtégration de sources/masses de données hétérogènes et Ontologies, dans le domaine des sciences du VIVant et de l’Environnement) network. He also was one of the organisers of the Fifth IN’OVIVE workshop event (<https://workshop.inra.fr/in-ovive-2019/>), collocated with the IC 2019 conference.

#### 9.1.1.1. General Chair, Scientific Chair

Madalina Croitoru is part of the Steering Committee of ICCS 2020 (25th International Conference of Conceptual Structures).

### 9.1.2. Scientific Events: Selection

#### 9.1.2.1. Chair of Conference Program Committees

Madalina Croitoru was co-chair of the **Doctoral Consortium at AAMAS 2019** (<http://aamas2019.encs.concordia.ca/>).

#### 9.1.2.2. Member of the Conference Program Committees

We regularly participate to the program committees of the top conferences in AI and KR (IJCAI, AAAI, ECAI, KR, AAMAS), as PC members or senior PC members. We also regularly participate to the program committees of more focused international conferences and workshops as well as national events.

#### International

- IJCAI / PRICAI 2020 (29th International Joint Conference on Artificial Intelligence): senior PC and PC
- IJCAI / ECAI 2019 (28th International Joint Conference on Artificial Intelligence): senior PC
- ECAI 2020 (24th European Conference on Artificial Intelligence): senior PC
- AAAI 2019 (33rd AAAI Conference on Artificial Intelligence): PC
- Datalog 2.0 2019: PC
- ISWC 2019 (18th International Semantic Web Conference): PC

#### National

- CNAI 2019 (Conférence Nationale en Intelligence Artificielle): PC
- IC 2019 (Ingénierie des Connaissances): PC
- EGC 2019 (Extraction et Gestion des Connaissances): PC

### 9.1.3. Journal

#### 9.1.3.1. Member of the Editorial Boards

- International Journal of Metadata, Semantics and Ontologies (IJSMO)
- Revue africaine de la recherche en informatique et mathématiques appliquées (ARIMA)

#### 9.1.3.2. Reviewer - Reviewing Activities

- Artificial Intelligence Journal (AIJ)
- Theory and Practice of Logic Programming (TPLP)
- International Journal of Approximate Reasoning (IJAR)

### 9.1.4. Invited Talks

- Marie-Laure Mugnier, *Existential Rules: a Study Through Chase Termination, FO-Rewritability and Boundedness*, keynote talk, 3rd International Joint Conference on Rules and Reasoning (RuleML+RR 2019), 2019 <http://2019.ruleml-rr.org>
- Marie-Laure Mugnier, *Reasoning on Data: Ontology-Based Data Access*, keynote talk, Journées d'Intelligence Artificielle Fondamentale (JIAF 2019), associated with PFIA 2019, 2019 <https://www.irit.fr/pfia2019/jiaf/>
- Marie-Laure Mugnier, *An introduction to Ontology-Based Data Access*, invited tutorial, Winter School of the 19th Conférence Francophone sur l'Extraction et la Gestion de Connaissances (EGC 2019), 2019 <https://egc2019.sciencesconf.org/>
- Patrice Buche, *Semantic to the rescue of food industry needs*, invited talk, SEMantic web SeminAr MontpEllier (SESAME), 2019 (<https://informatique-mia.inra.fr/sesame>)
- Pierre Bisquert, *Argumentation and decision in agronomical problems*, invited talk, Journée Robustesse en traitement de données et en recommandation: méthodes et applications, 2019 <https://lfa2019.wp.imt.fr/files/2019/10/Programme13nov2019.pdf>

### 9.1.5. Research Administration

- Marie-Laure Mugnier was the *scientific coordinator* for the evaluation of Inria theme “Data and Knowledge Representation and Processing” and its twelve project-teams (evaluation period: 2016-2019).
- From September 2019 onwards, Madalina Croitoru is *deputy member* of the CNU section 27 (Computer Science).
- Rallou Thomopoulos is an *elected member* of the Scientific Committee of the INRA-CEPIA research division (2016-2020).

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

The six faculty members teach at all university levels (IUT, Licence, Master). All of them do an average of 200 teaching hours per year. The main courses they are in charge of are: Logics (L), Databases (M, IUT), Web Technologies (IUT), Artificial Intelligence (M), Knowledge Representation and Reasoning (M), Social and Semantic Web (M), Software Engineering (IUT), Human Computer Interaction (IUT). Concerning full-time researchers in 2019, Jean-François Baget and Pierre Bisquert gave Master courses (40h and 1h30 respectively).

Moreover, some faculty members have specific teaching responsibilities:

- At IUT, Madalina Croitoru was the head of Special Conversion Year (2014-2019) and the head of international relations for the computer science department (2018-mid-2019). In 2019, she was promoted professor and moved to the Science Faculty. From September 2019, she has been in charge of international relations for the Computer Science department at the Science Faculty as well as of the management of industrial master internships (about 100 students each year).
- Federico Ulliana is the head of the curriculum “Data, Knowledge and Natural Language Processing” (DECOL, about 30 students), part of the Master of Computer Science, since 2017.

### 9.2.2. Involvement in University Structures

- Michel Leclère has been deputy head of the Computer Science department of the Science Faculty (July 2015 - July 2019). He was also in charge of the Information Systems of the faculty (April 2017 - October 2019)
- Marie-Laure Mugnier is member of the Council of the Scientific Department MIPS (Mathematics Informatics Physics and Systems) of the University of Montpellier (since 2016).

### 9.2.3. Supervision

PhD defended: Stathis Delivorias, “Chase variants & boundedness”. Supervisors: Federico Ulliana, Michel Leclère and Marie-Laure Mugnier. University of Montpellier, September 2019.

PhD defended: Bruno Yun, “Argumentation techniques for existential rules”. Supervisors: Madalina Croitoru, Rallou Thomopolous and Srdjan Vesic (CRIL). University of Montpellier, July 2019.

PhD in progress: Elie Najm, “Knowledge Representation and Reasoning for innovating agroecological systems”. Supervisors: Marie-Laure Mugnier and Christian Gary (INRA, UMR SYSTEM). Started October 2019.

PhD in progress: Olivier Rodriguez, “Querying key-value store under semantic constraints”. Supervisors: Federico Ulliana and Marie-Laure Mugnier. Started February 2019.

PhD in progress: Martin Jedwabny, “Argumentation and ethical decision making”. Supervisors: Madalina Croitoru and Pierre Bisquert. Started October 2019.

PhD in progress: Maxime Buron (CEDAR Inria team), “Efficient reasoning on large heterogeneous graphs”. Supervisors: François Gaosdoué (IRISA/CEDAR), Ioana Manolescu (CEDAR) and Marie-Laure Mugnier. Started October 2017.

### 9.2.4. Juries

- Jury member for the HDR of Ivan Varzinczak (Nov. 2019, U. Artois) - Marie-Laure Mugnier
- Jury member for the HDR of Meghyn Bienvenu (Dec. 2019, U. Bordeaux) - Marie-Laure Mugnier
- Jury reviewer for the PhD defense of Gerald Berger (June 2019, TU Vienna, Austria) - Marie-Laure Mugnier
- Jury member for the PhD defense of Frederic Verdier (Dec. 2019, U. Montpellier) - Marie-Laure Mugnier
- Jury member for the PhD defense of Lily Galois (Dec. 2019, U. Lille) - Marie-Laure Mugnier

We do not mention here participations to juries as supervisors of GraphIK PhD students.

## 9.3. Popularization

Michel Chein gave two talks on Artificial Intelligence: a public conference in the context of the Academy of the Sciences and Humanities of Montpellier and a radio interview (RCF) - both in March 2019.

## HEPHAISTOS Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

- J-P. Merlet is a permanent member of the International Steering Committee of the IROS conference, of the CableCon conference and chairman of the scientific Committee of the Computational Kinematics workshop. He is also an advisor for ICRA 2020,
- Y. Papegay is a permanent member of the International Steering Committee of the International Mathematica Symposium conferences series. He is a member of the OpenMath Society, building an extensible standard for representing the semantics of mathematical objects.

#### 9.1.1.1. Reviewer - Reviewing Activities

- The members of the team reviewed numerous papers for numerous international conferences and journals

### 9.1.2. Journal

#### 9.1.2.1. Member of the Editorial Boards

- E. Wajnberg is Editor-in-Chief of the journal *BioControl* (published by Springer).
- E. Wajnberg is a board member of the journals *Entomologia Experimentalis et Applicata* (published by Wiley), *Neotropical Entomology* (published by Springer), *Applied Entomology and Zoology* (published by Springer), and *Journal of Economical Entomology* (Publish by Oxford University Press).

### 9.1.3. Invited Talks

- E. Wajnberg has been invited for talks by the University of Beer Shava at Sde Boqer (Israel, March), the University of La Plata (Argentina, April), the University of Buenos Aires (Argentina, April), the University of São Paulo at Piracicaba (Brazil, October)

### 9.1.4. Leadership within the Scientific Community

- J-P. Merlet is Inria representative to the PPP Eurobotics aisbl. He is a member of the IFToMM (International Federation for the Promotion of Mechanism and Machine Science) Technical Committees on History and on Computational Kinematics and is one of the 10 elected members of IFToMM Executive Council, the board of this federation. He is a member of the scientific committee of the CNRS GDR robotique and a chair of 3IA Côte d'Azur.

### 9.1.5. Scientific Expertise

- J-P. Merlet was involved in project evaluations for several foreign funding agencies (Israel, Austria, ERC). He was also appointed as *Nominator* for the Japan's Prize.
- E. Wajnberg is involved in project evaluation for several foreign funding agencies (Belgium, Italy).
- E. Wajnberg was invited to be a committee member for recruiting an Institute Director by the CNR (Rome, Italy)

### 9.1.6. Research Administration

- J-P. Merlet was an elected member of the Academic Council of UCA COMUE (until July 2019), is a corresponding member of Inria ethical committee (COERLE) and member of the Research, Ethical Committees of UCA. He is an elected member of Inria Scientific Committee and of the "Commission Administrative Paritaire" of Inria

- Y. Papegay is a member of the CUMI (the committee managing the interaction between researchers and the computer support staff)
- O. Pourtallier is responsible of the NICE committee (long term invited scientists and post-doctoral student selection).
- O. Pourtallier is a board member of the Scientific and Pedagogical Council of DS4H graduate school of UCA.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

J-P. Merlet has taught 6 hours on parallel robots to Master ISC (M2) at University of Toulon. He has also been invited at ESIEE Paris for a talk about assistance robotics

J-P. Merlet, P. Martinet (CHORALE) and G. Allibert (I3S) have organized the first GDR robotics winter school, *Foundation of robotics*. During 5 days 35 students, mostly 1st year PhD students, have followed courses taught by international experts. Slides and additional materials have been regrouped in a HAL collection, *Robotics principia*, that has been organized in such a way that the next occurrences of this school will also be able to deposit additional documents. The idea of this collection is to be able to address all topics in robotics with various viewpoints.

In February, Y. Papegay has been visiting lecturer of University of French Polynesia, where he gave an object oriented programming course.

Y. Papegay has taught 3 hours on parallel robots to Master ISC (M2) at University of Toulon

P. Pourtallier lectured 6 hours on game theory to Master OSE (M2), at École des Mines de Paris, Sophia Antipolis, France

E. Wajnberg lectured One week course (about 30 h) about the use of the R program and statistics for PhD students and senior scientists in Rehovot (Israel, February)

### 9.2.2. Supervision

J. Moussaid. Analyse de robots parallèles à câbles (2019-), Supervisor: J-P. Merlet

W. Plouvier. Improving pest control efficiency: a modelling approach (2015-2019). Supervisor: E. Wajnberg.

E. Thomine. Agencement cultural pour promouvoir le transfert des services écosystémiques de biocontrôle au sein des paysages agricoles (2016 à 2019). Supervisors : N. Desneux & E. Wajnberg.

### 9.2.3. Juries

- J-P. Merlet was a jury member for the Best PhD Awards of the robotics GDR and has been president of 2 PhD juries.

## 9.3. Popularization

- J-P. Merlet gives 3 talks in the Alpes-Maritimes in the framework of the *Science pour Tous* association. He has also participated in a seminar on *robotics and media* involving 6 robotics experts and 6 journalists for a reflexion on the bias of the presentation of robotics to a general audience. He was also a member of the scientific committee for the permanent exhibition *Robot* at the Cité des Sciences, Paris
- Y. Papegay is actively participating to the Math.en.Jeans initiative for Mathematics teaching for undergraduate students.
- Y. Papegay is developing several pedagogical resources based on small robotics devices at high-school level.

- Y. Papegay organized and animated summer schools in experimental mathematics and computer sciences. Several one week sessions have been held in Oxford in June, July, August and November gathering more than 70 high-school students - most of them were awardees in Mathematics Olympiads.
- O. Pourtallier is corresponding researcher for two MATH.en.JEANS workshops, an initiative for Mathematics teaching for undergraduate students.
- E. Wajnberg gives 5 talks in the Alpes-Maritimes in the framework of the *Science pour Tous* association

### **9.3.1. Interventions**

- the HEPHAISTOS project has on average about 100 visitors per year, either young students or teachers, to which we present our robotics and assistance activities

### **9.3.2. Internal action**

- the HEPHAISTOS project has developed a set of cable-driven parallel robots, the MARIONET-SCHOOL series, that is used to illustrate visually scientific concepts in various domains

## Stars Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

#### 9.1.1.1. General Chair, Scientific Chair

- Elisabetta De Maria was General chair of the international conference CsBio 2019 (10th International Conference on Computational Systems-Biology and Bioinformatics), Nice, France.

#### 9.1.1.2. Member of the Organizing Committees

- Antitza Dantcheva, Abhijit Das and François Brémont organized the special session on human health monitoring based on computer vision at the 14th IEEE International Conference on Automatic Face and Gesture Recognition (FG'19).
- Antitza Dantcheva co-organized the Robust Tattoo Detection and Retrieval Competition (RTDRC 2019) associated to the 10th IEEE International Conference on Biometrics: Theory, Applications and Systems (BTAS 2019).
- Antitza Dantcheva co-organized the special session on The Future of Biometrics beyond Recognition and Anti-Spoofing at the 12th IAPR International Conference on Biometrics (ICB'19).

#### 9.1.1.3. Chair of Conference Program Committees

- François Brémont was part of the Organization Committee for the workshop on “Crowd analysis and applications: simulations meet video analytics”
- François Brémont was part of the AVSS'19 Organization Committee
- François Brémont was a Session Chair of AVSS - 17th IEEE International Conference on Advanced Video and Signal-Based Surveillance, Taipei, Taiwan, 18-21 September 2019.
- Elisabetta De Maria was Program chair of the international conference BIOINFORMATICS 2019 (10th International Conference on Bioinformatics Models, Methods, and Algorithms), which is part of BIOSTEC 2019 (12th International Joint Conference on Biomedical Engineering Systems and Technologies), Prague, Czech Republic.
- Elisabetta De Maria was Program chair of the international conference CsBio 2019 (10th International Conference on Computational Systems-Biology and Bioinformatics), Nice, France.
- Antitza Dantcheva was program Co-chair at the International Conference of the Biometrics Special Interest Group (BIOSIG) 2019, Darmstadt, Germany.

#### 9.1.1.4. Member of the Conference Program Committees

- Monique Thonnat was program committee member of the conference ICPRAM 2020.
- Elisabetta De Maria was member of the program committee of the ICML Workshop on Computational Biology 2019, Long Beach, CA, USA.

#### 9.1.1.5. Reviewer

- François Brémont was reviewer for the conferences: CVPR2019-20, ICCV2019, ICPRS-19, ICDP19, WACV 2020, AVSS19.
- François Brémont was reviewer for the Journal: IEEE International Conference on Systems, Man, and Cybernetics (SMC), IET Computer Vision, IEEE Transactions on Circuits and Systems for Video Technology

- Antitza Dantcheva was reviewer for IEEE Transactions on Information Forensics and Security (TIFS), IEEE Transactions on Biometrics, Behavior, and Identity Science (T-BIOM), IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), Pattern Recognition and Neurocomputing.
- Srijan Das was reviewer for KCST 2019, ICAML 2019, AVSS 2019 and WACV 2020.

### 9.1.2. Journal

#### 9.1.2.1. Member of the Editorial Boards

- François Brémond was handling editor of the international journal "Machine Vision and Application".
- François Brémond was handling editor for the MDPI special issue sensors Deep Learning for multi-sensor fusion.
- Elisabetta De Maria was guest editor of the JBCB journal (Journal of Bioinformatics and Computational Biology) for the review process of selected papers for the special issue on the conference BIOINFORMATICS 2019.
- Antitza Dantcheva has been in the Editorial Board of the Journal Multimedia Tools and Applications (MTAP) since 2017.

### 9.1.3. Invited Talks

- François Brémond was invited at the Data Science Riviera to give the talk "Cross domain residual transfer learning for person re-identification" in April 2019.
- François Brémond was invited to give a keynote speech on people tracking at the T4S Workshop in AVSS Taipei, 21 September 2019.
- François Brémond was invited in HealthCare and AI CITEDi at Tijuana, 23 August 2019.
- Monique Thonnat was invited as Speaker on AI and Health session to the CEO Forum at VivaTech, Paris, 16 May 2019.
- Monique Thonnat was invited to give a talk entitled Where to Focus on for Human Action Recognition? at the Franco-Mexican workshop on AI, Mexico, 27-29 August 2019.
- Monique Thonnat was invited by TEC Monterey for to give a talk on AI for Daily Living Activity recognition from videos at the AI Hub Launch, Guadalajara, 27 November 2019.
- Elisabetta De Maria was invited at *School of Electrical Engineering and Computer Science*, University of Ottawa, Canada in June 2019. Title of the talk: Parameter Learning for Spiking Neural Networks Modelled as Timed Automata.
- Elisabetta De Maria was invited at *Center of Modeling, Simulation, and Interactions (MSI)*, Université Côte d'Azur, France in September 2019. Title of the talk: Parameter Learning for Spiking Neural Networks Modelled as Timed Automata.
- Srijan Das was invited at the Data Science Riviera to give the talk "Spatio-temporal attention mechanism for Activities of Daily Living" in November.
- S L Happy was invited at the Data Science Riviera to give the talk "Apathy diagnosis by analyzing facial dynamics in videos" in April.
- Abhijit Das was invited at the Data Science Riviera to give the talk "Robust face analysis employing machine learning techniques for remote heart rate estimation and towards unbiased attribute analysis" in January.

### 9.1.4. Leadership within the Scientific Community

- François Brémond was part of the Evaluation Committee for new Inria team creation, Chorale.
- François Brémond was part of the Evaluation Committee for PINZ Axel research application for Austrian Science Fund.



- Monique Thonnat is member of the scientific board of ENPC, Ecole Nationale des Ponts et Chaussées since June 2008.
- Jean-Paul Rigault is an ISO C++ expert and the head of the French delegation at the ISO C++ standardization committee.
- Antitza Dantcheva serves in the Technical Activities Committee of the IEEE Biometrics Council since 2017
- Antitza Dantcheva serves in the EURASIP Biomedical Image & Signal Analytics (BISA) SAT 2018-2021
- Antitza Dantcheva is member of the European Reference Network for Critical Infrastructure Protection (ERNICIP), Thematic Group Extended Virtual Fencing - use of biometric and video technologies, since 2017
- Antitza Dantcheva is member of the European Association for Biometrics, since 2018

### 9.1.5. Scientific Expertise

Elisabetta De Maria was facilitator of the brainstorming of the strategic axis "Humain-Biologie" during the meeting of the I3S Laboratory, Fréjus, France.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Stars Team members (e.g. François Brémond) gave the class Master Data Science M2 in *Computer Vision and Deep Learning* from December 10, 2019 to February 25, 2020.

<http://www-sop.inria.fr/members/Francois.Bremond/MSc/class/deepLearningWinterSchool/index.html>

### 9.2.2. Supervision

- PhD: U. Ujjwal, "Pedestrian detection to dynamically populate the map of a crossroad" [12], Thèses, Université Côte d'Azur, November 2019.
- PhD: I. Sarray, "Conception de systèmes de reconnaissance d'activités humaines" [11], Thèses, Université Côte d'Azur, March 2019.

PhD in progress: Srijan Das, "Action recognition of daily living activities from RGB-D videos", 2017, PhD codirected 50% François Brémond and Monique Thonnat.

PhD in progress: Yaohui Wang, 2017, "Automated holistic human analysis", Antitza Dantcheva.

PhD in progress: Jen-Cheng Hou: "Quantified video analysis of seizure semiology in epilepsy", 2018, PhD codirected 50% Monique Thonnat and Prof. Fabrice Bartolomei, PU-PH AMU/Inserm.

PhD in progress: Juan Diego Gonzales Zuniga, 2018, "People Tracking using Deep Learning algorithms on embedded hardware", 70% François Brémond and 30% Serge Tissot (Fellowship CIFRE - Kontron).

PhD in progress: Thibaud L'Yvonnet, "Relations between human behaviour models and brain models - Application to serious games", 2018, Sabine Moisan and Elisabetta De Maria.

PhD in progress: Hao Chen, 2019, "People Re-identification using Deep Learning methods", 70% François Brémond and 30% Benoit Lagadec (Fellowship CIFRE - ESI).

PhD in progress: Rui Dai, 2019, "Action Detection for Untrimmed Videos based on Deep Neural Networks", François Brémond.

Abdorrahim Bahrami, "Modelling and verifying dynamical properties of biological neural networks in Coq", Elisabetta De Maria.

Srijan Das was mentor for the Emerging Technology Business Incubator (ETBI) Led by NIT Rourkela, a platform envisaged transforming the start-up ecosystem of the region.

Srijan Das mentored for B.E.N.J.I. in GirlScript Summer of Code 2019 edition.

### 9.2.3. Juries

- François Brémond was jury member of Tenure Track Selection: committee member for permanent position, COS informatique, Lyon 2 University, 6 May 2019
- François Brémond was jury member for habilitation, Anthony Fleury, Lille University, 20 February 2019
- François Brémond was jury member for habilitation, Stefan Duffner, Lyon University, 5 April 2019
- François Brémond was jury member of the mid-term review for 6 PhDs - Nicolas Girard (May 3rd, 2019), Melissa Sanabria (May 21st, 2019), Lucas Pascal (July 11, 2019), Claire Labit (October 8, 2019), Renato Baptista (January 17 and August 28, 2019), Magali PAYNE (December 3, 2019).
- François Brémond was jury member of the following PhD theses:
  - PhD, Jennifer Vandoni, Université de Paris Saclay, Saclay, 14 May 2019.
  - PhD, Amr Alyafi, Grenoble Institute of Technology, 27 May 2019.
  - PhD, Cristiano Massaroni, La Sapienza University in Rome, 13 December 2019.
- Monique Thonnat was reviewer for the PhD defense of Florent Lefevre, University of Lorraine, 4 December 2019
- Monique Thonnat was president for the PhD defense of Danny Francis, Sorbonne Université, 12 December 2019
- Jean-Paul Rigault was president of the HDR jury of Julien Deantoni.
- Elisabetta De Maria was member of the Ph.D. proposal defence jury of Abdorrahim Bahrami, University of Ottawa, Canada. Title of the thesis: Verifying Dynamic Properties of Neural Networks in Coq.
- Antitza Dantcheva was reviewer for the PhD defense of Mohamed Abdul Cader, Queensland University of Technology, Australia.

## 9.3. Popularization

### 9.3.1. Articles and contents

- François Brémond was interviewed for *Web Interview* on Facial recognition: limits and challenges for society, 16 Oct 2019.
- François Brémond was interviewed for *Graphical novel* about the challenges of AI, 29 Oct 2019.
- Antitza Dantcheva was interviewed for an article in *Science et Vie* on facial analysis in October 2019.
- Antitza Dantcheva was interviewed for an article in *Charlie Hebdo* on facial recognition in February 2019.

### 9.3.2. Interventions

- François Brémond, Thibaud L'Yvonnet, David Anghelone and Sandrine Boute represented STARS on the 19 October at the *La fête de la science* in Palais des Congrès d'Antibes Juan-les-Pins.
- STARS presented demos for Unlimitech Sport, Lyon, 18-21 September 2019.

## TITANE Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

Pierre Alliez was program co-chair of the EUROGRAPHICS conference and of the Symposium on Solid and Physical Modeling (SPM).

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Member of the Conference Program Committees

- Pierre Alliez: member of the advisory board for EUROGRAPHICS 2020.
- Florent Lafarge: EUROGRAPHICS
- Yuliya Tarabalka: ICCV

#### 10.1.2.2. Reviewer

- Pierre Alliez: ACM SIGGRAPH, SIGGRAPH Asia, Symposium on Geometry processing.
- Florent Lafarge: CVPR, ICCV, SIGGRAPH.

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

- Pierre Alliez: associate editor of the Computer Graphics Forum, Computer-Aided Geometric Design and Computer-Aided Design. He is also a member of the editorial board of the CGAL open source project.
- Florent Lafarge: associate editor of The Visual Computer and the Revue Française de Photogrammétrie et de Télédétection, and member of the Editorial Advisory Board of the ISPRS Journal of Photogrammetry and Remote Sensing

#### 10.1.3.2. Reviewer - Reviewing Activities

- Pierre Alliez: reviewer for Computer Graphics Forum and ACM Transactions on Graphics.
- Florent Lafarge: reviewer for the ISPRS Journal of Photogrammetry and Remote Sensing and the International Journal of Computer Vision.

### 10.1.4. Invited Talks

Pierre Alliez gave invited talks at Cambridge university, Google X and UCLA.

### 10.1.5. Leadership within the Scientific Community

Pierre Alliez is a member of the Steering Committees of the EUROGRAPHICS Symposium on Geometry Processing, EUROGRAPHICS Workshop on Graphics and Cultural Heritage and Executive Board Member for the Solid Modeling Association.

### 10.1.6. Scientific Expertise

Pierre Alliez was a reviewer for the European commission and ANR, and is a scientific advisory board member for the Bézout Labex in Paris (Models and algorithms: from the discrete to the continuous).

### **10.1.7. Research Administration**

Pierre Alliez is Head of Science of the Inria Sophia Antipolis center and a member of the scientific committee of the 3IA Côte d'Azur.

## **10.2. Teaching - Supervision - Juries**

### **10.2.1. Teaching**

Master: Pierre Alliez, Florent Lafarge and Gaétan Bahl, advanced machine learning, 21h, M2, university Nice Sophia Antipolis, France.

Master: Pierre Alliez, data visualization, 3h, M2, university Côte d'Azur, France.

Master: Pierre Alliez and Florent Lafarge, 3D Meshes and Applications, 32h, M2, Ecole des Ponts ParisTech, France.

Master: Florent Lafarge, Traitement d'images numériques, 6h, M2, university Nice Sophia Antipolis, France.

Master: Pierre Alliez and Florent Lafarge, Interpolation numérique, 60h, M1, university Nice Sophia Antipolis, France.

Master: Florent Lafarge, Mathématiques pour la géométrie, 20h, M1, EFREI, France.

Master: Yuliya Tarabalka, Discrete inference and learning, 12h, M2 MVA, ENS Paris-Saclay & CentraleSupélec, France.

### **10.2.2. Supervision**

PhD defended January 16th: Hao Fang, Geometric modeling of man-made objects at different level of details, since March 2016, Florent Lafarge.

PhD defended December 6th: Jean-Philippe Bauchet, Kinetic data structures for the geometric modeling of urban environments, since October 2016, Florent Lafarge.

PhD in progress: Julien Vuillamy, city reconstruction from multi-sourced data, since April 2018, Pierre Alliez and Florent Lafarge.

PhD in progress: Muxingzi Li, indoor reconstruction from a smartphone, since February 2018, Florent Lafarge.

PhD in progress: Lionel Matteo: From Pleiades images to very high resolution topography in complex zones, since September 2017, Yuliya Tarabalka and Isabelle Manighetti.

PhD in progress: Onur Tasar, Using deep learning approaches to devise an efficient representation for large-scale satellite images, since October 2017, Yuliya Tarabalka and Pierre Alliez.

PhD in progress: Nicolas Girard, How to structure satellite data, since November 2017, Yuliya Tarabalka.

PhD in progress: Vincent Vadez, Geometric simplification of satellites for thermal simulation, since August 2018, Pierre Alliez.

PhD in progress: Gaétan Bahl, low-power neural networks, since March 2019, Florent Lafarge.

PhD in progress: Mulin Yu, remeshing urban-specific CAD formats, since November 2019, Florent Lafarge.

PhD in progress: Tong Zhao, shape reconstruction, since November 2019, Pierre Alliez and Laurent Busé (from the Aromath Inria project-team).

PhD stopped after one year: Flora Quilichini, Geometry Compression, between January 2018 and June 2019, Pierre Alliez and Guillaume Lavoué (INSA Lyon).

### **10.2.3. Juries**

- Pierre Alliez was a PhD committee member for Siargey Kachanovich and Jean-Philippe Bauchet (Inria Sophia Antipolis). He was a reviewer for the habilitation committee of Sébastien Valette (INSA Lyon).
- Florent Lafarge was a PhD thesis reviewer for Romain Rombourg (University of Grenoble Alpes) and Thomas Holzmann (TU Graz, Austria).

## **10.3. Popularization**

### ***10.3.1. Interventions***

- Pierre Alliez gave a talk on geometric modeling in a high school in Cannes, April 26th.

## **WIMMICS Project-Team**

# **10. Dissemination**

## **10.1. Promoting Scientific Activities**

### ***10.1.1. Scientific Events: Organisation***

#### *10.1.1.1. General Chair, Scientific Chair*

Elena Cabrio was Conference Handbook Chair of ACL 2019 (Association of Computational Linguistics conference). Florence (Italy), July 2019.

Catherine Faron Zucker was co-chair of the AFIA scientific day on Education and Training on Artificial Intelligence (EFIA), Paris, 10/02/2019.

Fabien Gandon was general chair of ISWC the International Semantic Web Conference, October, 2019.

Serena Villata was Handbook Chair of the 2019 Conference on Empirical Methods in Natural Language Processing (EMNLP- 2019).

#### *10.1.1.2. Member of the Organizing Committees*

Michel Buffa was co-organizer of the W3C Workshop on Web Games, 27-28 June 2019; Redmond, WA, USA.

Fabien Gandon was co-organizer of the Joint Day Inria Ministry of Culture 02/12/2019.

### ***10.1.2. Scientific Events: Selection***

#### *10.1.2.1. Chair of Conference Program Committees*

Nhan Le Thanh:

Program chair of 13th International Conference on Computing and Communication Technologies (RIVF). 20-22 March 2019, Danang, Vietnam.

#### *10.1.2.2. Member of the Conference Program Committees*

Michel Buffa:

WebAudio conference 2019

W3C Workshop on Web Games, 27-28 June 2019; Redmond, WA, USA

Elena Cabrio:

Association for Computational Linguistics conference (ACL 2019), EMNLP2019, the Extended Semantic Web Conference (ESWC 2019), the International Semantic Web Conference, the AAAI Conference on Artificial Intelligence (AAAI-19).

Olivier Corby:

Digital Health, Ingénierie des Connaissances, ICCS, IJCAI, ISWC, KCAP, Quweda, SBBB, TheWebConf, WUM.

Jérôme Delobelle:

AAAI, IJCAI 2019 ⇒ Distinguished Program Committee member, Rencontres des Jeunes Chercheurs en Intelligence Artificielle (RJCIA), AAMAS.

Catherine Faron Zucker:

TheWebConf, IJCAI (Int. Joint Conference on Artificial Intelligence), ESWC (European Semantic Web Conference), ISWC (Int. Semantic Web Conference), Semantics, ICCS (Int. Conference on Conceptual Structures), IC (Ingénierie des Connaissances), EGC (Extraction et Gestion des Connaissances), EIAH (Environnements Informatiques pour l'Apprentissage Humain).

Fabien Gandon reviewed for: IJCAI, EGC, WebSci.

Oscar Rodríguez Rocha:

SAC 2020 - ACM Symposium on Applied Computing 2020 - The Semantic Web and Applications (SWA), AAAI 2020 - The 34th AAAI Conference on Artificial Intelligence, IJCAI, Semantics, IEEE-RIVF International Conference on Computing and Communication Technologies, KEOD International Conference on Knowledge Engineering and Ontology Development, KSE International Conference on Knowledge and Systems Engineering.

Andrea Tettamanzi:

AAAI-19, ACM 2020 (SWA Track), EGC 2020, EKAW 2020, PPSN 2020, TheWebConf 2020, and Web Intelligence 2020 conferences. He was Senior PC Member of IJCAI.

Serena Villata:

IJCAI, EMNLP, AAAI, AAMAS, JURIX, ICAIL.

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

Catherine Faron Zucker:

Revue d'Intelligence Artificielle, Guest editor of the Semantic Web journal for a special issue devoted to extended versions of the best papers of EKAW 2018.

Serena Villata is among the authors of two editorial activities:

- Livio Robaldo, Serena Villata, Adam Wyner, Matthias Grabmair: Introduction for artificial intelligence and law: special issue "Natural Language Processing for Legal Texts". *Artif. Intell. Law* 27(2): 113-115 (2019) [4],
- Qingliang Chen, Paolo Torroni, Serena Villata: Principles and practice of multi-agent systems. *Knowledge Eng. Review* 34: e3 (2019) [2].

#### 10.1.3.2. Reviewer - Reviewing Activities

Elena Cabrio:

Journal Argument and Computation.

Andrea Tettamanzi has served as a referee for the journals: Fuzzy Sets and Systems, Semantic Web Journal, Transactions on Evolutionary Computation.

Serena Villata:

Journal of Logic and Computation, Argument & Computation, Artificial Intelligence.

### 10.1.4. Invited Talks

Michel Buffa:

Programmable Audio Workshop, "WebAudio applications developed during the WASABI ANR Project", December 4, 2019 — GRAME-CNCM, Lyon (France)

Master Class "Wasabi Project : Make Music Accessible To Everybody", Sophia Summit, 19th November 2019, Sophia Antipolis, France.

Elena Cabrio:

*An introduction to Computational Linguistics*. University of Bologna (Italy). May 2019.

Olivier Corby:

*Graph Data on the Web: extend the pivot, don't reinvent the wheel*, W3C workshop on RDF and Property Graph, Berlin, March 5th.

*SPARQL Template & Function*, workshop at EDF, Orsay, May 21st.

*Introduction au Web sémantique*, Datathon workshop of "archives nationales", Paris, november 29th.

Jérôme Delobelle:

"Comment utiliser l'argumentation pour lutter contre les fausses informations?", GraphiK team (Inria (Sophia Antipolis Méditerranée center), LIRMM (University of Montpellier and CNRS) and INRA), November 21st.

Catherine Faron Zucker:

Invited talk at the workshop of the MODAL project, Rennes, 2019/07/11: Injecting Domain Knowledge in Electronic Medical Records to Improve Hospitalization Prediction

Fabien Gandon:

Web Science 2019 keynote, The Web We Mix - benevolent AIs for a resilient web, Boston, USA, June,

RIVF 2019 keynote, Web of Data and Semantic Web: Linking Data and Their Schemas around the World, Da Nang Vietnam, March.

Andrea Tettamanzi:

Seminar, "Towards an Evolutionary Epistemology of Ontology Learning" at University of Danang, Vietnam, on March 19, 2019.

Conference on Unsupervised Learning at Amadeus, Sophia Antipolis, May 17, 2019.

Conference on Unsupervised Learning at Amadeus, Sophia Antipolis, October 25, 2019.

Serena Villata:

International Conference on Legal Data Mining, Machine Learning and Visualisation organized by HEC in March 2019 in Paris.

### ***10.1.5. Leadership within the Scientific Community***

Fabien Gandon is:

- member of IW3C2 steering committee for The Web Conference (WWW series) until May 2019.
- member of SWSA steering committee for the ISWC conference (as general chair of ISWC 2019).
- member of ESWC conference steering committee until October 2019.
- member of Web Science Trust Network.

### ***10.1.6. Scientific Expertise***

Michel Buffa:

Member of the W3C WebAudio working group

Academic Representative of Université Côte d'Azur to the W3C (AC Rep)

Elena Cabrio:

Reviewer of the proposals of the Vienna Science and Technology Fund (WWTF) in 2019.

Reviewer of the projects "soutien aux contrats doctoraux" of the Grand Est Région (France) in 2019.

Member of the evaluation committee assigning the AILC Master Thesis Award (the Italian association for Computational Linguistics) in 2019.

Catherine Faron Zucker:

scientific referent of the Inria Learning Lab,

member of the ANR scientific evaluation committee "Artificial Intelligence" (CE23),

reviewer of project proposals for the MSH Paris-Saclay.

### ***10.1.7. Research Administration***

Michel Buffa:



Member of the scientific council of the GRAME laboratory (Lyon)

Director of the Miage de Nice Sophia-Antipolis, composed of Licence, Master 1 and four Master 2 degrees. About 350 students (<http://miage.unice.fr>)

Olivier Corby is member of the Scientific and Pedagogical committee of DS4H Graduate School "Digital Systems for Humans" at Université Côte d'Azur. He is member of the scientific committee of Academy 1 RISE (Network, Information, Digital Society) at UCA. He is member of the PostDoc selection committee at Inria Sophia Antipolis.

Catherine Faron Zucker:

- General Treasurer of the French Society for Artificial Intelligence (AFIA).
- member of the steering committee of the AFIA college on Knowledge Engineering.
- member of the evaluation committee of Inria.
- member of the CPRH 27 commission at Université Côte d'Azur.
- coordinator of the Web option of the 5th year of Polytech Nice Sophia engineering school.
- pedagogical responsible of continuous training for the computer science department of Polytech Nice Sophia Antipolis.

Fabien Gandon is:

- Vice-head of science for Inria Sophia Antipolis - Méditerranée (Délégué Scientifique Adjoint, DSA)
- Advisory Committee representative of Inria at the World-Wide Web Consortium (W3C)
- Director of the joint research Laboratory Qwant-Inria
- Representative of Inria in the Web Science Trust Network
- Leader of the research convention with the French Ministry of Culture-Inria

Alain Giboin was member of the scientific committee of the IDEX Jedi Academy 5 "Homme, Idées et Milieux".

Serena Villata:

Since January 2019, Management Committee Member for France for the EU project COST Action CA17132 European network for argumentation and public policy analysis, nominated by the Ministère de l'Enseignement Supérieur, de la Recherche et de l'Innovation

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

DUT: Andrea Tettamanzi, Data Mining, 16 h ETD, L2, UCA, France.

Licence: Michel Buffa, JavaScript, 40h, L3 Miage, UNS, France.

Licence: Elena Cabrio, Introduction to the Web, 40 hours, (L2MASS), UNS, France.

Licence: Elena Cabrio, Internship supervision, 27 hours, (L3MIAGE), UNS, France.

Licence: Elena Cabrio, Web, 36 hours, (L3 MIAGE), UNS, France.

Licence: Elena Cabrio, Object Oriented Programming, 14 hours (L3 MIAGE), UNS, France.

Licence: Elena Cabrio, Software Engineering, 20 hours, (L3 MIAGE), UNS, France.

Licence: Andrea Tettamanzi, Advanced Web Programming (client side), 39h, L2, UNS, France.

Licence: Andrea Tettamanzi, Web, 30h, L3, UNS, France.

Master: Michel Buffa, Web technologies front and back end, 40h, M1, UNS, France.

Master: Michel Buffa, Server Side JavaScript and modern front-end frameworks, 60h, M2 Miage NTDP and MBDS, UNS, France.

Master: Michel Buffa, Programmable Web, 40h, M2, Polytech-Nice UNS, France.

- Master: Elena Cabrio, Computational Linguistics, 30 hours, (Lettres), UNS, France.
- Master: Elena Cabrio, Natural Language Processing for AI, 24 hours, (M1 INFO), UNS, France.
- Master and Licence: Elena Cabrio, Responsible of the intership programme, 40 hours, (L3 and M2 MIAGE), UNS, France.
- Master: Elena Cabrio, Project supervision, Polytech project “Applied Math”, 5 hours, UNS, France.
- Master: Olivier Corby, Semantic Web, 20h, Polytech Nice, UNS, France.
- Master: Catherine Faron Zucker, Web languages, 48h, M1, PNS UNS.
- Master: Catherine Faron Zucker, Semantic Web technologies (EN), 48h, M2 Informatique, PNS, UNS.
- Master: Catherine Faron Zucker, Knowledge Engineering (EN), 28h, M2 Informatique, PNS, UNS.
- Master: Catherine Faron Zucker, Semantic Web technologies (EN), 30h, M1 Data Science, UNS.
- Master: Catherine Faron Zucker, XML technologies, 16h, M2 IMAFA, PNS, UNS.
- Master: Catherine Faron Zucker, Projects and Internship tutoring, 32h, M2, PNS, UNS.
- Master: Fabien Gandon, Integrating Semantic Web technologies in Data Science developments, 56 h, M2, DSTI, France.
- Master: Alain Giboin, Human-Computer-Interaction Design and Evaluation, 21h, M2, UNS, France.
- Master: Alain Giboin, Adaptation of User Interfaces, 4h, M2, UNS, France.
- Master: Alain Giboin, Task and Activity Analysis for HCI design and evaluation, 16h, M2 Sociology and Ergonomics of Digital Technologies, UNS, France.
- Master: Alain Giboin, Digital Strategy (formerly: Economics and ICT) : Ergonomics, 16h, M2 Economics and ICT, ISEM, UNS, France.
- Master: Oscar Rodríguez Rocha, Web of Data, 15h, M2, Polytech Nice, UNS, France.
- Master: Oscar Rodríguez Rocha, Knowledge Engineering, 10h, M2, Polytech Nice, UNS, France.
- Master: Oscar Rodríguez Rocha, Web Languages, 15h, M1, Polytech Nice, UNS, France.
- Master: Andrea Tettamanzi, Logic for AI, 30 h ETD, M1, UNS, France.
- Master: Andrea Tettamanzi, Web, 30 h ETD, M1, UNS, France.
- Master: Andrea Tettamanzi, Agent-Based Modeling, 30 h ETD, M2, UNS, France.

### **E-learning**

Mooc: Michel Buffa, “JavaScript Intro” published first in Juin 2017 on the EDx platform (MIT/Harvard), still active and updated regularly.

Mooc: Michel Buffa, “HTML5 Coding Essentials and Best Practices”

Mooc: Michel Buffa, “HTML5 Apps and Games”, also on EDx, are still active and updated regularly.

More than 700.000 registered users since 2015 for these MOOCS.

Mooc: Fabien Gandon, Olivier Corby & Catherine Faron Zucker, Web of Data and Semantic Web (FR), 7 weeks, <http://www.france-universite-numerique.fr/>, Inria, France Université Numérique, Education for Adults, 3815 learners registered for 2019.

Mooc: Fabien Gandon, Olivier Corby & Catherine Faron Zucker, Introduction to a Web of Linked Data (EN), 4 weeks, <http://www.france-universite-numerique.fr/>, Inria, France Université Numérique, Education for Adults, 1226 learners registered for 2019.

Mooc: Fabien Gandon, Olivier Corby & Catherine Faron Zucker, Web of Data (EN), 4 weeks, <https://www.coursera.org/>, Coursera, Education for Adults, 1037 learners registered.

### 10.2.2. Supervision

PhD in progress: **Molka Dhouib**, *Modelling and supporting a B2B social network of service providers and consumers*, UCA, Catherine Faron Zucker, Andrea Tettamanzi.

PhD in progress: **Ahmed El Amine Djebri**, *Uncertainty in Linked Data*, UCA, Andrea Tettamanzi, Fabien Gandon.

PhD in progress: **Antonia Ettore**, *Artificial Intelligence for Education and Training: Knowledge Representation and Reasoning for the development of intelligent services in pedagogical environments*, UCA, Catherine Faron Zucker, Franck Michel.

PhD in progress: **Michael Fell**, *Natural Language Processing of Song Lyrics*, UCA, Co-supervision Elena Cabrio & Fabien Gandon.

PhD in progress: **Raphaël Gazzotti**, *Modelling Electronic Medical Records and Predicting Hospitalization*, UCA, Catherine Faron Zucker, Fabien Gandon.

PhD in progress: **Nicholas Halliwell**, *Explainable and Interpretable Prediction*, UCA, Fabien Gandon, Serena Villata.

PhD in progress: **Tobias Mayer**, *Argument Mining for Clinical Trials*, UNS, Johan Montagnat (CNRS, I3S), Serena Villata and Céline Poudat (UNS).

PhD in progress: **Thu Huong Nguyen**, *Mining the Semantic Web for OWL Axioms*, Andrea Tettamanzi, UNS.

PhD in progress: **Mahamadou Toure**, *Models and architectures for restricted and local mobile access to the Data Web*, UCA, Fabien Gandon, Moussa Lo (UGB, Senegal).

PhD in progress: **Vorakit Vorakitphan**, *Argumentation and Emotions Emotion Detection with Adaptive Sentiment Analysis*, Elena Cabrio, Serena Villata, UCA.

#### Internship

Master internship: **ElMahdi Ammari**, GUI builder for WebAudio plugins (WebComponents) developed as part of the WASABI project. Integration into the FAUST IDE.

Master internship: **Antonia Ettore**, *Modelling and publishing machine-processable curated biodiversity data*, UCA, Franck Michel, Catherine Faron Zucker.

Bachelor internship: **Matthis Lequiniou**, *Applying and comparing state-of-the-art algorithms to predict student's success on the SIDES knowledge graph*, UCA, Catherine Faron Zucker, Oscar Rodríguez Rocha.

Master internship: **Zineb Rahhali**, Machine learning to associate songs with presets of instruments and audio effects encoded in WebAudio.

Master internship: **Yun Tian**, *LinkedDataViz - Visualisation de données sur les co-publications scientifiques à partir de l'application HAL RDF*, Olivier Corby & Marco Winckler (I3S).

Master internship: **Maroua Tikat**, Development of ontologies to describe the WASABI corpus

### 10.2.3. Juries

Michel Buffa:

Reviewer of Pasquale LISENA PhD : "Recommandation musicale basée sur la connaissance : modèles, algorithmes et recherche exploratoire", defended October 11th, 2019, EURECOM – Sophia Antipolis

Elena Cabrio:

Reviewer and member of the PhD committee of Marco Rovera, University of Turin (Italy), July 2019.

Member of the PhD committee of Yaroslav Nechaev, University of Trento (Italy), April 2019.

Catherine Faron Zucker:

- reviewer of Cassia Trojahn’s HDR, entitled *Towards ontology matching maturity: contributions to complex, holistic and foundational ontology matching*, defended on December 12 at Université de Toulouse;
- reviewer of Justine Reynaud’s PhD thesis, entitled *Découverte de définitions dans le web des données*, defended on December 10 at Université de Lorraine;
- reviewer of Alexis Lebis’ PhD thesis, entitled *Capitaliser les processus d’analyse de traces d’apprentissage : modélisation ontologique & assistance à la réutilisation*, defended on May 22 at Sorbonne Universités;
- reviewer of Tanguy Reynaud’s PhD thesis, entitled *Génération de Questions à Choix Multiples Thématiques à Partir de Bases de Connaissances*, defended on February 28 at Université Jean Monnet;
- reviewer of Ademar Crotti Junior’s PhD thesis, entitled *A Jigsaw Puzzle Metaphor for Representing Linked Data Mappings*, defended on February 25 at University of Dublin, Ireland;
- external member of the monitoring committee of Stella Zevio’s PhD thesis at Université Paris Nord;
- external member of the monitoring committee of Francesco Bariatti’s PhD thesis at Université de Rennes;
- external member of the monitoring committee of Pauline Folz’s PhD thesis at Université de Rennes.

Fabien Gandon:

- Reviewer HDR Fatiha Sais, entitled *Knowledge Graph Refinement: Link Detection, Link Invalidation, Key Discovery and Data Enrichment* 20/06/2019
- Member jury HDR Clément Jonquet, *Ontology Repository and Ontology-based Services*, 26/05/2019

Andrea Tettamanzi was reviewer of the HDR thesis of Nathalie Hernandez, *La centralité des ontologies, du Web Sémantique des utilisateurs au Web Sémantique des objets*, Université de Toulouse 2, December 13, 2019.

## 10.3. Popularization

### 10.3.1. Education

Artificial Intelligence training course for high school teachers (Inria Sophia Antipolis) - “Qu’est-ce que l’IA ?” by Jérôme Delobelle.

### 10.3.2. Interventions

Science Festival (“Fête de la Science”) 2019, presentation of the WASABI project by Michel Buffa during “Journées Science et Musique” organized by IRISA in Rennes, October 2019.

### 10.3.3. Internal action

Presentation of Artificial Intelligence to college students by Jérôme Delobelle during their week-long visit to Inria Sophia Antipolis.

## ZENITH Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

- Florent Massegia: co-organizer of the first edition of the ADITCA workshop, at CLOSER 2019: <http://closer.scitevents.org/ADITCA.aspx?y=2019>
- Florent Massegia:  
of the second edition of the ADITCA workshop, at DATA 2019: <http://www.dataconference.org/ADITCA.aspx>

#### 10.1.1.2. Member of the Organizing Committees

- A. Joly: organizing committee of the international conference CLEF 2019 and the chair of the LifeCLEF track, Lugano, sept. 2019 (<http://clef2019.clef-initiative.eu/>)

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Member of the Conference Program Committees

- Artificial Intelligence & Knowledge Engineering (AIKE), 2019: F. Massegia
- European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (PKDD), 2019: F. Massegia
- Int. Conf. on Data Science, Technology and Applications (DATA), 2019: F. Massegia
- Int. Conf. on Information Management and Big Data (SIMBig), 2019: F. Massegia
- IEEE Int. Conf. on Data Mining (ICDM), 2019: F. Massegia
- ACM Symposium on Applied Computing (ACM SAC), Data Mining Track (DM), 2019: F. Massegia
- ACM Symposium on Applied Computing (ACM SAC), Data Stream Track (DS), 2019: F. Massegia
- Extraction et Gestion des Connaissances (EGC), 2019: F. Massegia
- Int. Conf. on Extending DataBase Technologies (EDBT), 2019: E. Pacitti
- Int. Conf. on Multimedia Retrieval (ICMR), 2019: A. Joly
- Int. Conf. on Acoustics, Speech, and Signal Processing (ICASSP), 2019: A. Joly, A. Liutkus
- Int. Conf. on Computer Vision (CVPR), 2019: A. Joly
- Int. Conf. and Labs of the Evaluation Forum (CLEF), 2019: A. Joly
- European. Conf. on Information Retrieval (ECIR), 2019: A. Joly
- EAI Int. Conf. on e-Infrastructure and e-Services for Developing Countries (AFRICOMM 2019): P. Valduriez.
- Bases de Données Avancées (BDA), 2019: E. Pacitti, R. Akbarinia
- IEEE/ACM Int. Symposium in Cluster, Cloud, and Grid Computing (CCGrid) 2019: Esther Pacitti

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

- VLDB Journal: P. Valduriez.

- Transactions on Large Scale Data and Knowledge Centered Systems: R. Akbarinia.
- Distributed and Parallel Databases: E. Pacitti, P. Valduriez.
- Book series “Data Centric Systems and Applications” (Springer): P. Valduriez.
- Plant Methods: C. Pradal.

#### 10.1.3.2. Reviewer - Reviewing Activities

- EVISE Future Generation Computer Systems Journal (FGCS): F. Masegla
- Information Systems (IS): T. Mondal, F. Masegla
- Distributed and Parallel Databases (DAPD): E. Pacitti, P. Valduriez
- IEEE Transactions on Knowledge and Data Engineering (TKDE): R. Akbarinia, F. Masegla
- IEEE Transactions on Industrial Informatics: R. Akbarinia
- Knowledge and Information Systems (KAIS): R. Akbarinia
- Plant methods: A. Joly
- Machine Learning: A. Joly
- Pattern Recognition Letters: A. Joly
- Transactions on Image Processing: A. Joly
- ACM Trans. on Database Systems: E. Pacitti
- Knowledge and Information Systems (KAIS): F. Masegla
- IEEE Transaction on Signal Processing (TSP): A. Liutkus
- IEEE Transactions on Audio Speech and Language Processing (TASLP): A. Liutkus
- IEEE Signal Processing Magazine: A. Liutkus
- IEEE Signal Processing Letters: A. Liutkus
- Frontiers in Plant Science: C. Pradal
- Neural Information Processing Systems (NeurIPS): A. Liutkus
- Int. Conf. on Machine Learning (ICML): A. Liutkus
- Int. Conf. on Acoustics, Speech and Signal Processing (ICASSP): A. Liutkus

#### 10.1.4. Invited Talks

- E.Pacitti: Inaugural lecture, “Data Processing: an evolutionary and multidisciplinary perspective”, CEFET/RJ, Rio de Janeiro on 12 August 2019.
- A. Joly: "AI for plant phenology" on 17 January at a workshop of the University of Florida (keynote); "AI for plant biodiversity monitoring" on 7 November at HPC-AI-BigData Convergence days (Conv' 2019); "An end-to-end deep learning approach to biodiversity monitoring", on 12 December at British Ecological Society conference (BES 2019);
- A. Liutkus: tutorial on "music source separation" at Int. Symposium on Music Information Retrieval (ISMIR 2018).
- F. Masegla: “Données, humanités et démarche scientifique”. Panel at the Inria Science Days (Journées Scientifiques Inria), on June 6, Lyon; “Analyse de données scientifiques”. IRD, on June 27, Montpellier. “Analyse de données à grande échelle”. TILECS Workshop. on July 4, Grenoble.
- P. Valduriez: "The Case for Hybrid Transaction Analytical Processing" on 25 April at IBM Research Brazil, Rio de Janeiro, Brazil; "Blockchain 2.0: opportunities and risks" on 14 Nov at Online Franco-African LIRIMA Seminar, Inria, Rennes; "Data-intensive Science" on 6 Nov. at HPC- AI-BigData Convergence Days (Conv'2019), EDF Lab Paris-Saclay; tutorial "NewSQL: principles, systems and trends" on 12 Dec at IEEE Bigdata 2019; participation in panel "Big Data Heterogeneity Challenges" on 11 Dec at IEEE Bigdata 2019; "Scalable transaction and polystore data management in LeanXcale" on 6 Dec at UC Berkeley and on 13 Dec at UCLA and UC Irvine.

- C. Pradal: "Multiscale plant modelling and Phenotyping" on 8 october at Tottori University and on 16 october at Nagoya University, Japan; workshop on plant modelling on 28 october at Tokyo University, Japan.

### **10.1.5. Leadership within the Scientific Community**

- A. Joly: Scientific manager of the LifeCLEF research forum.
- A. Liutkus: elected member of the IEEE Technical Committee on Audio and Acoustic Signal Processing.
- P. Valduriez: President of the Steering Committee of the BDA conference.

### **10.1.6. Scientific Expertise**

- F. Massegia: expert for the HCERES evaluation of the DAVID Lab (UVSQ). January 2019.
- R. Akbarinia: expert for the French National Research Agency (ANR).
- A. Joly: scientific advisory board of the ANR program "AI for biodiversity", expert for the National HPC grand equipment (GENCI) "grand challenge" program, reviewer for STIC AmSud international program.
- E. Pacitti: reviewer for STIC AmSud international program.
- P. Valduriez: reviewer for STIC AmSud international program.
- P. Valduriez: reviewer for NSERC (Canada).
- C. Pradal: member of CSS EGBIP ( Commissions Scientifiques Spécialisées) INRA.

### **10.1.7. Research Administration**

- A. Joly: Technical director of the InriaSOFT consortium PI@ntNet and representative of Inria in the steering committee.
- F. Massegia: "Chargé de mission pour la médiation scientifique Inria" and head of Inria's national network of colleagues involved in science popularization.
- E. Pacitti: head of Polytech' Montpellier's Direction of Foreign Relationships.
- P. Valduriez: scientific manager for the Latin America zone at Inria's Direction of Foreign Relationships (DPEI).

## **10.2. Teaching - Supervision - Juries**

### **10.2.1. Teaching**

Most permanent members of Zenith teach at the Licence and Master degree levels at UM2.

Esther Pacitti:

IG3: Database design, physical organization, 54h, level L3, Polytech' Montpellier, UM2

IG4: Networks, 42h, level M1, Polytech' Montpellier, 50 students, UM2

IG4: Distributed Databases, Big Data, 80h , level M1, Polytech' Montpellier, 50 students UM2

IG5: Iot- Information Management, 27h, level M2, Polytech' Montpellier, 15 students, UM2

Industry internship supervision and committees, level M2, Polytech' Montpellier, 40h

Patrick Valduriez:

Professional: Distributed Information Systems, Big Data Architectures, 75h, level M2, Capgemini Institut

Alexis Joly:

University of Montpellier: Machine Learning, 15h, level M2

Polytech' Montpellier: Content-Based Image Retrieval, 4.5h, level M1

AgroParisTech: Convolutional Neural Networks in Ecology and Agronomy, 2h, level M1

InnObs technical school: Innovations in the observation of seasonal biological events and associated data management, 6h, professionals.

Antoine Liutkus

University Paul Valery (Montpellier): multidimensional data analysis, 15h, level M1

Polytech' Montpellier: Audio Machine Learning, 1.5h, level M1

### 10.2.2. Supervision

PhD & HDR:

HDR: Reza Akbarinia, Parallel Techniques for Big Data Analytics, Univ. Montpellier, 24 May.

PhD: Renan Souza, Massively Distributed Clustering, UFRJ, Brazil, 17 Dec. Advisors: Marta Mattoso (UFRJ), Patrick Valduriez.

PhD: Mathieu Fontaine, Alpha-stable models for signal processing, IAEM, Nancy, 18 July. Advisors: Roland Badeau (Telecom Paris), Antoine Liutkus.

PhD: Christophe Botella, Large-scale Species Distribution Modelling based on Citizen Science data, Montpellier, 8 October. started Oct 2016, Univ. Montpellier. Advisors: Alexis Joly, François Munoz (univ. of Grenoble), Pascal Monestiez (INRA).

PhD in progress: Gaetan Heidsieck, Distributed Management of Scientific Workflows for High-Throughput Plant Phenotyping, started Oct 2017, Univ. Montpellier. Advisors: Esther Pacitti, Christophe Pradal, François Tardieu (INRA).

PhD in progress: Heraldo Borges, Discovering Tight Space-Time Sequences, started Oct 2018, Univ. Montpellier. Advisors: Esther Pacitti, Eduardo Ogaswara.

PhD in progress: Titouan Lorieul, Pro-active Crowdsourcing, started Oct 2016, Univ. Montpellier. Advisor: Alexis Joly.

PhD in progress: Khadidja Meguelati, Massively Distributed Clustering, started Oct 2016, Univ. Montpellier. Advisors: Nadine Hilgert (INRA), Florent Masegla.

PhD in progress: Lamia Djebour, Parallel Time Series Indexing and Retrieval with GPU architectures, started Oct 2019, Univ. Montpellier. Advisors: Reza Akbarinia, Florent Masegla.

PhD in progress: Quentin Leroy, Active learning of unknown classes, started Oct 2019, Univ. Montpellier, Industrial contract with INA, Advisors: Alexis Joly

### 10.2.3. Juries

Members of the team participated to the following PhD or HDR committees:

- R. Akbarinia: Chao Zhang (Univ. Clermont Auvergne, reviewer)
- A. Joly: Christophe Botella (Univ. of Montpellier, advisor)
- F. Masegla: Rebecca Pontes Salles (Master thesis of 2.5 years, CEFET, Rio de Janeiro), Ricardo Sperandio (Univ. Rennes, reviewer), Thibault Desprez (Univ. Bordeaux, reviewer).
- E. Pacitti: Daniel de Oliveira Junior (Univ. Federal Fluminense, Brazil)
- E. Pacitti: Heraldo Borges Phd qualification (CEFET, Brazil)
- P. Valduriez: Alexandru Costan (HDR, ENS Rennes, reviewer), Patricio Cerda (Univ. Paris Saclay, reviewer), Renan Souza (UFRJ, Rio de Janeiro, advisor)
- E. Pacitti: Selection Committee for professor position (University of Montpellier)



## 10.3. Popularization

### 10.3.1. Internal or external Inria responsibilities

F. Massegli is "Chargé de mission auprès de la DGD-S Inria pour la médiation scientifique" (50% of his time) and heads Inria's national network of colleagues involved in science popularization.

### 10.3.2. Articles and contents

- F. Massegli is co-author of [21], [40] on the feedback of Class'Code after 3 years of project and on a vision about future work for computational thinking education and computer science popularisation.
- A. Joly has given several interviews to different media giving rise to web articles about Pl@ntNet (see e.g. Google news with keyword Pl@ntNet).

### 10.3.3. Education

Computer science is, for the first time in France, an official discipline taught in high school (Lycée) with the common course about "Sciences Numériques et Technologie". As written by Inria's CEO Bruno Sportisse: "For over a decade, the institute has carried out actions that have paved the way with the firm conviction that "training in and through digital technology" is strategic: I am thinking here, in particular, of the Class'Code project."

F. Massegli is the initiator, with Serge Abiteboul, of the program called "1 scientifique — 1 classe : Chiche !" with the goal of reaching *all* the students of a specific level. This massive plan should concern all scientists at Inria and our partners in France.

F. Massegli was ambassador of Inria for the Science Celebration Day (Fête de la science):

- <https://www.youtube.com/watch?v=13957C9FxVg>
- <https://www.youtube.com/watch?v=yqnQe91Pztc>

F. Massegli gave a one day training on the Thymio robot for education in the media library network professionals. February 1. Montpellier. 18 attendees.

F. Massegli gave a one day training to teachers of French National Education on computational thinking. March 12. Montpellier. 20 attendees.

F. Massegli gave a one day training to teachers in pediatric hospitals (CHU Arnaud de Villeneuve). February 2. Montpellier. 10 attendees.

F. Massegli gave two days of training to computer science, robotics and computational thinking to reference teachers ("conseillers pédagogiques"). April 15 & 16. Montpellier. 20 attendees.

F. Massegli gave two days of training to the media library network professionals on Poppy Ergo Jr. June 28 & September 6. Montpellier. 11 attendees.

F. Massegli is a member of the scientific committee of a conference cycle on "Science and Society" organised with MSHSud.

P. Valduriez gave an invited talk on "Succeed in your Ph.D. Thesis: good practices and return of experience" at the Ph.D. meeting at LIRIS, Lyon, on Dec 11.

A. Joly was a member of the scientific advisory board of the **AI Family Challenge** organized by the NGO **Iridescent** that "supports girls, children, and their families to identify problems in their communities and find technology based solutions".

He organized an educational outing at the Montpellier Botanical Garden as part of the summer school organized each year by Polytech Montpellier (June 11). He participated in the organization and animation of the "**wild salad**" training organized by the association "Les écologistes de l'Euzière" 13-15 March.

### 10.3.4. Interventions

F. Massegli participated in the LIRMM events on science popularisation ("Fête de la science" on Feb 19, "accueil de stagiaires" on Oct 11), Montpellier.

A. Joly participated in: the animation of the Inria stand at the SIDO exhibition (April 10-11, Lyon); the PI@ntNet launch ceremony in Costa Rica in the presence of the Minister of Research and decision-makers (April 20).

E. Pacitti participated in Polytech'Montpellier International Summer School (Flow) on the subject of Data Science - Plant Phenotyping.

A. Joly participated in the day "**Ramène ta science**" co-organized by TelaBotanica and "Sciences Avenir" associations at the Halle Tropisme in Montpellier (as part of the Labbota initiative). He co-facilitated a participatory workshop and a debate with citizens on the theme of participatory science.

### ***10.3.5. Creation of media or tools for science outreach***

In the context of the Floris'tic project, A. Joly participates regularly to popularization, educational and citizen science actions in France (with schools, cities, parks, associations, etc.). The softwares developed within the project (PI@ntNet, Smart'Flore and ThePlantGame) are used in a growing number of formal educational programs and informal educational actions of individual teachers. For instance, Smart'Flore is used by the French National Education in a program for reducing early school leaving. PI@ntNet app is used in the Reunion island in an educational action called Vegetal riddle organized by the Center for cooperation at school. It is also used in a large-scale program in Czech republic and Slovakia (with a total of 100 classrooms involved in the program). An impact study of the PI@ntNet application did show that 6% of the respondents use it for educational purposes in the context of their professional activity.

F. Masseglia participated in the work group on "Jeu des 7 familles de l'informatique". This card game provides support for education to computer science from the history point of view.

A. Joly actively participates to the design and development of all PI@ntNet dissemination tools in particular **PI@ntNet web site** that contains contents for the press, articles for the general public, tutorials of PI@ntNet tools, guidelines for users of the API, etc.