

*Inria*

RESEARCH CENTER  
Saclay - Île-de-France

FIELD

Activity Report 2019

## Section Dissemination

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## AVIZ Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

- Steve Haroz is a co-founder and co-organizer of Transparent Statistics in Human-Computer Interaction.
- Steve Haroz co-organized the Visualization for Communication 2019 workshop (<http://viscomm.io>).
- Petra Isenberg co-organized a Dagstuhl seminar on Mobile Data Visualization (<https://www.dagstuhl.de/19292>).
- Petra Isenberg co-organized a tutorial at the Ubicomp conference about Visualization for Ubicomp.
- Jean-Daniel Fekete co-organized a Shonan seminar on Interactive Visualization for Interpretable Machine Learning (<https://shonan.nii.ac.jp/seminars/161/>).

#### 10.1.1.2. Member of the Organizing Committees

- Steve Haroz was Open Practices chair of the IEEE Information Visualization conference (until July 2019).
- Jean-Daniel Fekete was a member of the VGTC Best Thesis Award 2019.
- Tanja Blascheck was Video and Demo co-chair for ETRA 2019.
- Tanja Blascheck was Publicity chair for VISSOFT 2019.
- Petra Isenberg is a member of the IEEE reVISE committee 2019–2020.
- Petra Isenberg is the ACM SigCHI Paris Treasurer (2017–2019)
- Jean-Daniel Fekete was associate editor-in-chief of TVCG, liaison with the IEEE VIS paper chairs.

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Chair of Conference Program Committees

- Petra Isenberg was paper chair for IEEE Information Visualization

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

- Jean-Daniel Fekete was a member of the program committee for VIS.
- Petra Isenberg was a member of the ACM CHI program committee.
- Tobias Isenberg was a member of the program committee for IEEE SciVis, IVAPP, ACM/Eurographics Expressive, TrustVis Workshop, EuroVis, ACM IUI, IEEE VR.
- Pierre Dragicevic was a member of the program committee for InfoVis.
- Paola Valdivia was a member of the program committee for Short Papers of VIS.
- Tanja Blascheck was a member of the program committee for VMV, LEVIA, VISSOFT, EuroVis Posters, EuroVis Short Papers, ETRA, ETVIS, VAST.

#### 10.1.2.3. Reviewer

- Steve Haroz reviewed for CHI, VIS
- Jean-Daniel Fekete reviewed for CHI
- Tobias Isenberg reviewed for EuroVis, ACM/Eurographics Expressive, ACM IUI, ACM SIGGRAPH, IEEE PacificVis, TrustVis, ACM UIST, IEEE VIS, IEEE VR

- Pierre Dragicevic reviewed for CHI, VIS, Interact, IHM
- Tanja Blascheck reviewed for LEVIA, VMV, VISSOFT, VAST, EuroVis, PacificVis, ETRA, ETVIS, CHI, EuroVA, PacificVAST, VAST Challenge, Vision X Vis, Vis Short Papers
- Paola Valdivia reviewed for Short Papers of VIS 2019
- Xiyao Wang reviewed for CHI, VR, ICMI, MobileHCI, Vis
- Petra Isenberg reviewed for CHI, EuroVis

### **10.1.3. Journal**

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

- Pierre Dragicevic is member of the editorial board of the Journal of Perceptual Imaging (JPI) and the Springer Human-Computer Interaction Series (HCIS).
- Jean-Daniel Fekete is associate editor-in-chief of IEEE Transactions on Visualization and Computer Graphics.
- Petra Isenberg is associate editor of IEEE Transactions on Visualization and Computer Graphics.
- Petra Isenberg is associate editor-in-chief at IEEE Computer Graphics & Applications.
- Tobias Isenberg is member of the editorial board of Elsevier's Computers & Graphics journal.

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

- Steve Haroz reviewed for Cognition, Advances in Methods and Practices in Psychological Science, and Meta-Psychology
- Jean-Daniel Fekete reviewed for TVCG
- Tobias Isenberg reviewed for C&G, TIIS, TVCG
- Pierre Dragicevic reviewed for TVCG, CG&A, IV, Behavior & Information Technology, JPI
- Tanja Blascheck reviewed for IWC, TOCCHI, TVCG
- Petra Isenberg reviewed for TVCG

### **10.1.4. Invited Talks**

- Steve Haroz: "How the Brain Perceives and Remembers Quantities". Graphics Hunters Show Conference - Utrecht, The Netherlands.
- Steve Haroz: "How the Brain Perceives and Remembers Quantities". Ecole Normal Superior. Paris, France.
- Steve Haroz: "How the Brain Perceives and Remembers Quantities". Keynote at VisCrowd 2019. Clermont-Ferrand, France.
- Steve Haroz: "How the Brain Perceives and Remembers Quantities". Datarama 2019. Nantes, France.
- Steve Haroz: "Set Comparison Is Imprecise and Prone to Bias". VisXVision workshop at IEEE VIS 2019. Vancouver, Canada.
- Steve Haroz: "Transparency in Empirical Research". Panel talk at IEEE VIS 2019. Vancouver, Canada.
- Steve Haroz: "Using Open Science to Improve Credibility in Visualization, HCI, and Vision Science Research". SFB/TRR 161. Waldachtal, Germany.
- Jean-Daniel Fekete: "Practical Use Cases for Progressive Visual Analytics", Seminar at Shandong University, Qingdao, China, Nov. 26, 2019
- Jean-Daniel Fekete: "Dynamic Social Networks and Progressive Data Analysis", Seminar at Ochanomizu University, Tokyo, Japan, Nov. 22, 2019
- Jean-Daniel Fekete: "Advances in Network Visualization", Keynote at MARAMI 2019, Dijon, France, Nov. 8, 2019

- Jean-Daniel Fekete: "Multidimensional Projection at Scale on the Web: Tips and Tricks", Keynote of the HILDA 2019 Workshop, Amsterdam, The Netherlands, July 5th, 2019.
- Jean-Daniel Fekete: "Exploration visuelle d'hypergraphes dynamiques", Seminar at INED, Paris, France, June 18th, 2019.
- Jean-Daniel Fekete: "Données, humanité(s), démarche scientifique", Panel at Inria Scientific Days 2019, Lyon, France, June 6th, 2019.
- Jean-Daniel Fekete: "Analyzing the Evolution of Relationships with Dynamic Hypergraphs", Invited Talk, University of Delft, Delft, The Netherlands, Apr. 8th, 2019
- Jean-Daniel Fekete: "Analyzing the Evolution of Relationships with Dynamic Hypergraphs", Invited Talk, EHESS, Paris, France, Apr. 3, 2019
- Jean-Daniel Fekete: "Multidimensional Projection at Scale on the Web: Tips and Tricks", Invited Talk, VISUS Group, Univ. of Stuttgart, Stuttgart, Germany, Mar. 1, 2019
- Tobias Isenberg: "Interactive 3D Data Exploration", TU Dresden, Germany, Dec, 6, 2019
- Tobias Isenberg and Xiyao Wang: "VR and AR Visualizations in High-Energy Physics", Learning to Discover: Advanced Pattern Recognition Workshop, Institut Pascal, Orsay, France, Oct. 18, 2019
- Tobias Isenberg: "Carnivorous Plants and How to Visualize their Habitats based on Social Media Data", VieVisDays, TU Wien, Austria, Aug. 20, 2019
- Tobias Isenberg and Xiyao Wang: "Understanding TrackML Results with a Visualization System using a PC + HoloLens Hybrid", TrackML workshop at CERN, Geneva, Switzerland, Jul. 1, 2019
- Tobias Isenberg: "Illustrative Visualization and Interactive Exploration of Three-Dimensional Scientific Data", Synchrotron SOLEIL, France, May. 20, 2019
- Tobias Isenberg: "Illustrative Visualization and Interactive Exploration of Three-Dimensional Scientific Data", Shandong University, Qingdao, China, Feb. 24, 2019
- Tanja Blascheck: "Understanding Interactive Visualizations", Inria Sophia-Antipolis, Nice, France, January 2019.
- Petra Isenberg: "Top Research Questions for Empirical Studies in Visualization", Panel statement given at IEEE VIS 2019, Vancouver, Canada.
- Petra Isenberg: "Physical, Contextual, and Full of Value? What do novel directions in Visualization teach us about judging the value of visualization?", GiCentre Seminar Talk, City, University of London, UK
- Petra Isenberg: "Physical, Contextual, and Full of Value? What do novel directions in Visualization teach us about judging the value of visualization?", Keynote at BioVis 2019 at the ISMB conference in Basel, Switzerland

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

- Jean-Daniel Fekete was the chair of the EuroVis 2019 Best PhD Award.
- Petra Isenberg and Tobias Isenberg are members of the International Beliv workshop steering committee.
- Tobias Isenberg is a member of the steering committee for ACM/Eurographics Expressive Graphics.

#### ***10.1.6. Research Administration***

- Petra Isenberg was vice-president of the Inria Saclay CR hiring committee
- Pierre Dragicevic is Member of the Commission Consultative de Spécialistes de l'Université Paris-Sud (CCSU).
- Pierre Dragicevic is co-chair of the DataSense Axis of the Labex DigiCosme.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Master : Petra Isenberg, Interactive Information Visualization, 21h en équivalent, niveau (M1, M2), Université Paris Sud, France.

Master : Petra Isenberg, Graphisme et Visualisation, 24h en équivalent TD, niveau (M2), Polytech Paris-Sud, France.

Master : Petra Isenberg, Visual Analytics, 48 équivalent, niveau (M2), CentraleSupélec, France.

Licence : Tobias Isenberg, "Introduction to Computer Graphics", 12h en équivalent TD, L3, Polytech Paris-Sud, France.

Master : Tobias Isenberg, "Photorealistic Rendering/Advanced Computer Graphics", 21h en équivalent TD, M1, Polytech Paris-Sud and Université Paris-Saclay, France.

### 10.2.2. Supervision

PhD in progress: Alexis Pister, *Exploration, analyse, interprétabilité de larges réseaux historiques*, Université Paris-Saclay, defense planned for 2022, Jean-Daniel Fekete, Christophe Prieur, Inria.

PhD in progress: Yuheng Feng, *Visualisation pour l'analyse progressive*, Université Paris-Saclay, defense planned for 2022, Jean-Daniel Fekete, Université Paris-Saclay

PhD in progress: Mickaël Sereno, *Collaborative Data Exploration and Discussion Supported by AR*, Univ. Paris-Sud, defense planned for September 2021, Tobias Isenberg

PhD in progress: Xiyao Wang, *Augmented Reality Environments for the Interactive Exploration of 3D Data*, Univ. Paris-Sud, defense planned for October 2020, Tobias Isenberg

PhD in progress: Sarkis Halladjian, *Spatially Integrated Abstraction of Genetic Molecules*, Univ. Paris-Sud; defense planned for September 2020, Tobias Isenberg

PhD: Haichao Miao, *Geometric Abstraction for Effective Visualization and Modeling*, TU Wien, Austria, August 5, 2019, supervised by Ivan Viola, co-supervised by Ivan Barišić, Tobias Isenberg, and Eduard Gröller.

PhD in progress: Mohamad Alaul Islam: *MicroVisualization for mobile and ubiquitous data exploration*, Université Paris-Saclay, defense planned for 2022, Petra Isenberg and Jean-Daniel Fekete.

PhD in progress: Natkamon Tovanich: *Blockchain Visual Analytics*, defense planned for 2021, Université Paris-Saclay, Petra Isenberg and Jean-Daniel Fekete.

### 10.2.3. Juries

- Pierre Dragicevic: PhD proposal evaluation committee of Luiz Morais (Universidade Federal de Campina Grande, Brésil).
- Pierre Dragicevic: Reviewer for Hu Xi's M2 internship.
- Pierre Dragicevic: Co-Supervisor for Yumin Hong's M2 internship.
- Pierre Dragicevic: Reviewer for Talent Doctoral Fellowship Programme at the University of Copenhagen.
- Pierre Dragicevic: Reviewer for ATER 2019 applications at the Université Paris Saclay.
- Petra Isenberg: Reviewer for GRIQUI Fairouz M2 internship.
- Jean-Daniel Fekete: Member of the PhD committee of Dr. Philip Tchernavskij
- Jean-Daniel Fekete: Member of the PhD committee of Dr. Hugo Romat.
- Jean-Daniel Fekete: Member of the PhD committee of Dr. Sriram Karthik Badam.
- Jean-Daniel Fekete: Member of the PhD committee of Dr. Nicola Pezzotti.

## 10.3. Popularization

### 10.3.1. Articles and contents

- Steve Haroz’s [twitter account](#) on a broad range of topics including open science, visualization, and visual perception have been viewed over 1.1 million times and received over 30,000 engagements in the form of clicks, likes, and retweets in 2019.
- Steve Haroz maintains a website cataloging openly accessible papers and research materials in visualization research. [Open Access Vis](#) has averaged 2,000 unique visitors per year for the past three years.
- Steve Haroz maintains a [research website](#) receiving 5,000 unique visitors and a [blog](#) on research receiving 2,000 unique visitors in 2019.
- Pierre Dragicevic and Yvonne Jansen: the data physicalization wiki and the List of Physical Visualizations and Related Artefacts (600 weekly visits) are continuously being updated.
- Matthew Brehmer wrote a Medium article “Visualizing Trends on Mobile Phones: Animation or Small Multiples?” on an Aviz co-authored publication <https://medium.com/multiple-views-visualization-research-explained/mobiletrendvis-a948fa65bccd>

### 10.3.2. Interventions

- Lonni Besançon gave a TEDx talk on work conducted at Aviz with Pierre Dragicevic and Tobias Isenberg [11]. Watch the talk here: <https://www.youtube.com/watch?v=pDHomZ8FEoU>.
- Jean-Daniel Fekete: Panel at Imaginascience 2019, « Faire parler les données : le défi de la data visualisation », Annecy, October 16, 2019

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

Petra Isenberg collaborated on research to develop a visualization tool to better understand clustering algorithms. The tool is available at <https://educlust.dbvis.de/>.



## CEDAR Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

#### 9.1.1.1. Member of the Organizing Committees

I. Manolescu was a steering committee member for the International Workshop on Misinformation, Computational Fact-Checking and Credible Web in conjunction with The Web Conference 2019.

I. Manolescu was a member of the scientific committee in charge of organizing the Global Forum on AI for Humanity (<http://gfaiih.org>), an international conference organized under the patronage of the French government to discuss the impact and perspectives for AI research on science and the society at large. The conference featured an opening intervention by Cédric Villani and a closing speech by the French president Emmanuel Macron.

### 9.1.2. Scientific Events: Selection

#### 9.1.2.1. Chair of Conference Program Committees

I. Manolescu has been a chair of the tutorial track at the ACM SIGMOD 2019 conference.

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

I. Manolescu has been a member of the program committees of: the IEEE International Conference on Data Engineering (ICDE, demonstrations track) 2019, the DASFAA Conference 2019, the Extended Semantic Web Conference (ESWC) 2019, and the International Conference on Web Engineering (ICWE) 2019.

### 9.1.3. Journal

Y. Diao has been the Editor-in-Chief of the ACM SIGMOD Record.

#### 9.1.3.1. Member of the Editorial Boards

Y. Diao has been an associate editor of the ACM Transactions on Database Systems (TODS).

I. Manolescu has been a member of the editorial board of the Proceedings of Very Large Databases (PVLDB) journal.

### 9.1.4. Invited Talks

I. Manolescu has given the following **keynote talks**:

- "Journalistic Dataspaces: Data Management for Journalism and Fact-Checking", keynote talk at the EDBT (Extending Database Technologies) Conference 2019 [28].
- "Computational fact-checking: problems, state of the art and perspectives", keynote at EGC (Extraction and Gestion de Connaissances, the French-speaking knowledge extraction and knowledge management conference) 2019 [27].

### 9.1.5. Leadership within the Scientific Community

- Y. Diao and I. Manolescu are members of the **PVLDB Endowment Board**, the entity in charge of organizing the publication of the prestigious PVLDB journal (A\* in the CORE ranking) and of organizing the yearly PVLDB conference.
- Y. Diao has been the Chair of the ACM SIGMOD Research Highlight Award, a member of the ACM SIGMOD Executive Committee, and a member of the ACM SIGMOD Software Systems Award Committee.
- I. Manolescu is a member of the steering committee of **BDA**, the entity in charge of organizing: the yearly informal Bases de Données Avancées (BDA) conference, mostly attended by members of the French-speaking data management scientific community; and a summer school on Big Data Management, every two years.

### 9.1.6. Scientific Expertise

I. Manolescu has been part of the HCERES visiting committee of the Laboratoire Informatique de Grenoble (LIG) on December 2-4.

### 9.1.7. Research Administration

I. Manolescu has become the scientific director of **LabIA**, an initiative by the DINUM (Direction Interministérielle du Numérique) whose goal is to apply AI research and technology solutions to problems raised by the public administration, at the local or regional level. LabIA ran a selective application process which funded a dozen projects to be carried over by technology company (contractors) and four to be solved by research teams working together with the promoters (teams involved in public administration). The research projects funded by LabIA are respectively proposed by: the Cour de Cassation (the highest jurisdiction of the state), the Direction Générale de Contrôle de la Concurrence et de la Répression des Fraudes (DGCCRF, the national consumer watchdog agency), la SHOM (Service Hydrographique de la Marine, the seabed mapping service of the Marine) and the IGN (Institut Géographique National), in particular the team that is in charge of producing the detailed, dynamic information of the positioning of every fragment in the Earth crust.

I. Manolescu has been a member of **Inria Commission d’Evaluation** until the summer of 2019. As a consequence, she participated to the hiring committees for junior researchers (CRCN) of the Inria Lille and Inria Grenoble research centers, in May 2019; she has also participated to the final executive committee meeting that decided on the hires, in Paris, in June 2019.

I. Manolescu has been a member of a hiring committee that recruited a full-time Assistant Professor in Data Management at **Ecole Polytechnique**, and she has also headed another committee that recruited a part-time Assistant Professor in Data Science at Ecole Polytechnique.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

I. Manolescu is a part-time (50%) professor at Ecole Polytechnique, where she teaches:

- Master: I. Manolescu, “Database Management Systems”, 52h, M1, École Polytechnique.
- Licence: I. Manolescu, “Giant Global Graph”, 18h, L3, École Polytechnique.

She also teaches on appointment outside of Ecole Polytechnique:

- Master: I. Manolescu, “Architectures for Massive Data Management”, 20h, M2, Université Paris-Saclay.

M. Buron and P. Guzewicz are Teaching Assistants at Ecole Polytechnique. Further, P. Guzewicz also taught 12h of lab in the M2 course “Architectures for Massive Data Management” mentioned above.

### 9.2.2. Supervision

PhD in progress: Maxime Buron: "Raisonnement efficace sur des grands graphes hétérogènes", since October 2017, François Goasdoué, Ioana Manolescu and Marie-Laure Mugnier (GraphIK Inria team in Montpellier)

PhD: Tien-Duc Cao, "Toward Automatic Fact-Checking of Statistic Claims", Université de Paris Saclay, 26/09/2019, Ioana Manolescu and Xavier Tannier (LIMICS, Université de Paris-Sorbonne).

PhD in progress: Ludivine Duroyon: "Data management models, algorithms & tools for fact-checking", since October 2017, François Goasdoué and Ioana Manolescu (Ludivine is in the Shaman team of U. Rennes 1 and IRISA, in Lannion)

PhD in progress: Paweł Guzewicz: "Expressive and efficient analytics for RDF graphs", since October 2018, Yanlei Diao and Ioana Manolescu.

PhD in progress: Qi Fan: "Multi-Objective Optimization for Data Analytics in the Cloud", since December 2019, Yanlei Diao.

PhD in progress: Enhui Huang: "Interactive Data Exploration at Scale", since October 2016, Yanlei Diao and Anna Liu (U. Massachussets at Amherst, USA).

PhD in progress: Vincent Jacob: "Explainable Anomaly Detection in High-Volume Stream Analytics", since December 2019, Yanlei Diao.

PhD in progress: Luciano di Palma, "New sampling algorithms and optimizations for interactive exploration in Big Data", since October 2017, Yanlei Diao and Anna Liu (U. Massachussets at Amherst, USA)

PhD in progress: Khaled Zaouk: "Performance Modeling and Multi-Objective Optimization for Data Analytics in the Cloud", since October 2017, Yanlei Diao.

### 9.2.3. Juries

- I. Manolescu has been part of the PhD committee of Adnène Belfodil, who defended his PhD thesis titled "Exceptional Model Mining for Behavioral Data Analysis" at INSA Lyon, on October 24, 2019.

## 9.3. Popularization

### 9.3.1. Articles and contents

I. Manolescu has been interviewed in the following general-audience media publications:

- "**L'intelligence artificielle signe-t-elle la fin du journalisme ?**", Science et Avenir special issue on IA, Sept 25 (dated November) 2019
- "**Fake news: ces technologies qui les traquent**", Industrie et Technologies, Feb 5, 2019
- "Les algorithmes à l'assaut de la désinformation", Science et Avenir, January 29, 2019
- "**Les seniors partagent sept fois plus de «fake news» que les jeunes sur Facebook**", in Le Figaro, January 2019

### 9.3.2. Interventions

- Ioana Manolescu participated to a social science conference "**Post-vérité et intox: où allons-nous?**", organized by Fondation Maison des sciences de l'homme (FMSH) and Cité des Sciences, in February 2019 ([presentation slides](#), [présentation video](#))
- I. Manolescu presented her career and research at the "**Rendez-vous des jeunes mathématiciennes et informaticiennes**" (RJMI, a math and CS event organized for high-school female students) in October 2019.
- M. Buron, V. Jacob and I. Manolescu presented data management research to a group of 6 interns (13 years old, one-week long *stage de 3e*) in December 2019.

## **CELESTE Project-Team**

# **8. Dissemination**

## **8.1. Promoting Scientific Activities**

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

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

Semaine SEME - Orsay 14/01-18/01-2019, <https://www.math.u-psud.fr/semi2019/index.php>. G. Stoltz was part of the organizing and scientific committees. C. Keribin was part of the scientific committee.

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

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

- S. Arlot was member of the steering committee of the 4th Junior Conference on Data Science and Engineering at Paris-Saclay (Sept. 2019), CentraleSupélec, Paris-Saclay campus, Gif-sur-Yvette.
- C. Keribin is member of steering committee of the the bi-monthly Seminar of probability and statistics (Laboratoire de mathématiques d'Orsay)
- C. Giraud is co-organiser (with E. Kuhn) of the conference StatMathAppli at Fréjus (1-6 september 2019)
- C. Giraud is local member of scientific committee of the Institut Pascal (year around program)

#### *8.1.2.2. Reviewer*

We performed many reviews for various international conferences.

### **8.1.3. Journal**

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

S. Arlot is associate editor of Annales de l'Institut Henri Poincaré B – Probability and Statistics.

#### *8.1.3.2. Reviewer - Reviewing Activities*

We performed many reviews for various international journals.

### **8.1.4. Invited Talks**

- S. Arlot, Changepoint Workshop, Nov. 2019, Institut des Systèmes Complexes, Paris.
- S. Arlot, Thematic week "Data and Analytics for Short-Term Operations", Feb. 2019, Isaac Newton Institute for Mathematical Science, Cambridge, UK.
- C. Keribin, Some asymptotic properties of model selection criteria in the latent block model. 12th Scientific meeting CLADAG 2019, Cassino (Italie), September 11 – 13, 2019
- C. Giraud, Community detection and sequential learning, IOPS 2019, Bordeaux, June 19-21, 2019
- C. Giraud, Sequential learning in random graph, Genova, May 2019.
- P. Pamphile, Maintenance cost forecasting for a fleet of vehicles, IMDR, Paris, April 2019

### **8.1.5. Research Administration**

S. Arlot coordinates the math-AI (mathematics for artificial intelligence) program of the Labex Mathématique Hadamard and is member of the executive committee of Fondation Mathématique Jacques Hadamard (FMJH).

S. Arlot is member of the steering committee of the Paris-Saclay Center for Data Science.

S. Arlot is member of the prefiguration group of the Computer Science Graduate School of University Paris-Saclay.

P. Massart is Director of the Fondation Mathématique Jacques Hadamard (FMJH).

C. Giraud has coordinated the math-SV (mathematics for life science) program of the Labex Mathématique Hadamard and is member of the executive committee of Fondation Mathématique Jacques Hadamard (FMJH).

C. Giraud is member of the scientific committee of the Labex IRMIA (Strasbourg)

C. Giraud is local member of the scientific committee of the Pascal Institute (Saclay)

C. Giraud is member of the prefiguration group of the Mathematics Graduate School of University Paris-Saclay.

C. Giraud is member of the steering committee of the Mathematics Modelisation and Biodiversity chair.

C. Giraud is in charge of the whole master program in Mathematics of Paris Saclay.

C. Giraud is in charge of the Statistics and Machine Learning track in the master program in Mathematics of Paris Saclay.

## 8.2. Teaching - Supervision - Juries

### 8.2.1. Teaching

Licence: S. Arlot, Probability and Statistics, 68h, L2, Université Paris-Sud

Master: S. Arlot, Statistical learning and resampling, 30h, M2, Université Paris-Sud

Master: S. Arlot, Probability and Statistics M2 seminar, 30h, M2, Université Paris-Sud

Master: S. Arlot, Preparation to French mathematics agrégation (statistics), 50h, M2, Université Paris-Sud

Master: C. Giraud, High-Dimensional Statistics, 45h, M2, Université Paris-Sud

Master: C. Giraud, Theoretical Guidelines in Data Analysis, 45h, M2, Université Paris-Sud

Master: C. Giraud, Lecture Group, 25h, M2, Université Paris-Sud

Master: C. Giraud, Mathematics for AI, 75h, M1, Université Paris-Sud

### 8.2.2. Supervision

PhD in progress: Guillaume Maillard, Aggregated cross-validation, started Sept. 2016, co-advised by S. Arlot and M. Lerasle

PhD in progress: El Mehdi Saad, Interactions between statistical and computational aspects in machine learning, started Sept. 2019, co-advised by S. Arlot and G. Blanchard

PhD in progress: Tuan-Binh Nguyen, Efficient Statistical Testing for High-Dimensional Models, co-advised by S. Arlot and B. Thirion

PhD in progress: Rémi Coulaud, Forecast of dwell time during train parking at station, started Oct. 2019, co-advised by G. Stoltz and C. Keribin, Cifre with SNCF

PhD in progress: Olivier Coudray, Fatigue aided-design, started Nov. 2019, co-advised by C. Keribin and P. Pamphile, Cifre with PSA

PhD: Solène Thépaut, Problèmes de clustering liés à la synchronie en écologie, Université Paris Saclay, Dec. 2019, C. Giraud.

PhD: Théophile Olivier, Le rôle de la diversité et des perturbations environnementales sur la stabilité temporelle des communautés animales en milieu naturel, Museum National Histoire Naturelle, Sep. 2019, co-advised by E. Porcher and C. Giraud.

PhD in progress: Yann Issartel, Non-parametric estimation in random networks, started Sep. 2017, C. Giraud.

PhD in progress: Solenne Gaucher, Sequential learning in random networks, started Sep. 2018, C. Giraud.

### 8.2.3. Juries

S. Arlot: referee for the HdR of Servane Gey, Université Paris Descartes, 07/02/2019.

S. Arlot: member of the PhD committee of Solène Thepaut, Université Paris-Sud, 06/12/2019.

C. Giraud: many HDR and PhD juries as referee or member of the committee

## **8.3. Popularization**

### **8.3.1. Interventions**

- Public exhibitions: S. Arlot is member of the steering committee of a general-audience exhibition about artificial intelligence, that is co-organized by Fermat Science (Toulouse), Institut Henri Poincaré (IHP, Paris) and Maison des Mathématiques et de l'Informatique (MMI, Lyon).

## COMETE Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific events organisation

#### 9.1.1.1. Member of the organizing committee

Catuscia Palamidessi is member of:

The Scientific Advisory Board of **ANSSI**, the French National Cybersecurity Agency. Since 2019.

The Scientific Advisory Board of **CISPA**, the Helmholtz Center for Information Security. Since 2019.

The Executive Committee of **SIGLOG**, the ACM Special Interest Group on Logic and Computation. 2014-19.

The Steering Committee of **CONCUR**, the International Conference in Concurrency Theory. Since 2016.

The Steering Committee of **ETAPS**, the European Joint Conferences on Theory and Practice of Software. Since 2006.

The Steering Committee of **EACSL**, the European Association for Computer Science Logics. Since 2015.

The Steering Committee of **FORTE**, the International Conference on Formal Techniques for Distributed Objects, Components, and Systems. Since 2014.

**The IFIP Technical Committee 1** – Foundations of Computer Science. Since 2007.

**The IFIP Working Group 1.7** – Theoretical Foundations of Security Analysis and Design. Since 2010.

**The IFIP Working Group 1.8** – Concurrency Theory. Since 2005.

Frank D. Valencia is member of:

The steering committee of the International Workshop in Concurrency **EXPRESS**. Since 2010.

Konstantinos Chatzikokolakis is member of:

The steering committee of the **Privacy Enhancing Technologies Symposium**. Since 2018.

### 9.1.2. Scientific events selection committee

#### 9.1.2.1. Chair of conference program committee

Konstantinos Chatzikokolakis:

is serving as PC chair (with Carmela Troncoso as co-chair) of **PETS 2020**: The 20th Privacy Enhancing Technologies Symposium, July 14 – 18, 2020 Montréal, Canada.

### 9.1.2.2. Member of conference program committees

Catuscia Palamidessi is/has been a member of the program committees of the following conferences and workshops:

**CCS 2020.** The ACM Conference on Computer and Communications Security. Orlando, USA, November 9-13 2020.

**CSF 2020.** The 33rd IEEE Computer Security Foundations Symposium. Boston, MA, USA, June 22-26, 2020.

**PETS 2020.** The 20th Privacy Enhancing Technologies Symposium. Montréal, Canada, July 14 – 18, 2020.

**FORTE 2020.** The 40th IFIP International Conference on Formal Techniques for Distributed Objects, Components, and Systems. University of Malta, Valletta, June 15-19, 2020.

**FSTTCS 2019.** 39th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science. Indian Institute of Technology Bombay, December 11–13, 2019

**FACS 2019.** The 16th International Conference on Formal Aspects of Component Software. Amsterdam, The Netherlands, 23-25 October 2019.

**PETS 2019.** The 19th Privacy Enhancing Technologies Symposium. Stockholm, Sweden, July 16 – 20, 2019.

**LICS 2019.** The Thirty-Fourth Annual ACM/IEEE Symposium on Logic in Computer Science. Vancouver, Canada, 24–27 June 2019.

**CSF 2019.** The 32nd IEEE Computer Security Foundations Symposium. Hoboken, NJ, USA, June 24-27, 2019.

**SAC 2019** (Security track). The 34th ACM/SIGAPP Symposium On Applied Computing. Limassol, Cyprus, 8-12 April 2019.

**TML 2020.** Towards Trustworthy ML: Rethinking Security and Privacy for ML. Addis Ababa, Ethiopia, April 26, 2020.

**EXPRESS/SOS 2020.** Combined 27th International Workshop on Expressiveness in Concurrency and 17th Workshop on Structural Operational Semantics. Vienna, Austria, August 31, 2020.

**PPAI 2020.** The rAAI Workshop on Privacy-Preserving Artificial Intelligence. New York, USA, February 7, 2020.

**PPML 2019.** Privacy Preserving Machine Learning (ACM CCS 2019 Workshop). London, UK, November 15, 2019.

**WPES 2019.** Workshop on Privacy in the Electronic Society. London, UK, November 11, 2019.

**APVP 2019.** Atelier sur la Protection de la Vie Privée. Cap Hornu, France, July 9-11, 2019.

**WIL 2019.** 3rd Women in Logic Workshop. Cap Hornu, France, Vancouver, Canada, June 23, 2019.

Frank D. Valencia is/has been a member of the program committees of the following conferences and workshops:

**CP-DP-19:** Doctoral Program of the 25th International Conference on Principles and Practice of Constraint Programming. Stamford, CT, USA, Sep 30 - Oct 4, 2019.

**CONCUR 2019:** The 30th International Conference on Concurrency Theory. Amsterdam, Netherlands, August 26-31, 2019.

**AAMAS 2019:** International Conference on Autonomous Agents and Multiagent Systems. Montreal, Canada, 13th-17th of May 2019.



### 9.1.3. Journals

#### 9.1.3.1. Member of the editorial board

Catuscia Palamidessi is:

(2019-) Member of the Editorial Board of the *Journal of Computer Security* IOS Press. Since 2019.

Member of the Editorial Board of the *Proceedings on Privacy Enhancing Technologies* (PoPETs), published by De Gruyter. Since 2017.

Member of the Editorial Board of *Mathematical Structures in Computer Science*, published by the Cambridge University Press. Since 2006.

Member of the Editorial Board of *Acta Informatica*, published by Springer. Since 2015.

Member of the Editorial Board of the *Electronic Notes of Theoretical Computer Science*, published by Elsevier Science. Since 2000.

Member of the Editorial Board of *LIPICs: Leibniz International Proceedings in Informatics*, Schloss Dagstuhl–Leibniz Center for Informatics. Since 2014.

Konstantinos Chatzikokolakis is:

Editorial board member of the *Proceedings on Privacy Enhancing Technologies* (PoPETs), a scholarly journal for timely research papers on privacy.

#### 9.1.3.2. Reviewing

The members of the team regularly review papers for international journals, conferences and workshops.

### 9.1.4. Other Editorial Activities

Catuscia Palamidessi is/has been:

Co-editor (with Anca Muscholl and Anuj Dawar) of the special issue of *Logical Methods in Computer Science* dedicated to selected papers of *ICALP 2017*.

Co-editor (with Alexandra Silva and Natarajan Shankar) of the special issue of *Logical Methods in Computer Science* dedicated to selected papers of *LICS 2015* and *LICS 2016*.

Frank D. Valencia has been:

Co-editor of the special issue on *Mathematical Structures in Computer Science* dedicated to the best papers from the 12th International Colloquium on Theoretical Aspects of Computing.

### 9.1.5. Participation in other committees

Catuscia Palamidessi has been serving in the following committees:

External Member of the committee for the promotion to full professor of Prof. Kévin Huguenin. HEC Lausanne, Switzerland.

Member of the committee for associate professor positions in the Datalogi Dept., Aalborg Univ., Denmark. 2019.

Member of the panel for the Research Evaluation for Development 2019 (RED19) of the Department of Computer Science and Engineering at the University of Gothenburg, Sweden.

Chair of the Nominating Committee for the 2019 renewal of the office holders of *SIGLOG*, the ACM Special Interest Group on Logic and Computation.

Member of the committee for the *Alonzo Church Award* for Outstanding Contributions to Logic and Computation. From 2015. In 2018 Palamidessi is the president of this committee.

Reviewer for the projects proposal for the program PRIN, sponsored by the Italian MIUR (“Ministero dell’Istruzione, dell’Università e della Ricerca”). Since 2005.

Member of the *EAPLS PhD Award* Committee. From 2010.

### 9.1.6. Invited talks

Catuscia Palamidessi has given invited talks at the following conferences and workshops:

**Journées Nationales du GDR Sécurité Informatique**. Paris, France, June 2019.

**MFPS XXXV**, special session on Probabilistic Programming. London, UK, June 2019.

**AI & Society: From principles to practice**. CIFAR-UKRI-CNRS workshop. London, UK, June 2019.

**5th France-Japan Cybersecurity workshop**. Kyoto, Japan, April 2019.

Frank Valencia has given the following invited talk:

- **EXPRESS/SOS 2019**. Combined 26th International Workshop on Expressiveness in Concurrency and 16th Workshop on Structural Operational Semantics. Amsterdam, Netherlands, August 26, 2019.

### 9.1.7. Service

Catuscia Palamidessi has served as:

Member of the committee for the assignment of the Inria International Chairs. From 2017.

Member of the Commission Scientifique du Centre de Recherche Inria Saclay. From 2018.

Member of the hiring committee for Maître de Conférence, Ecole Polytechnique, 2019.

Frank Valencia has served as:

Directeur adjoint de l'UMR 7161, le Laboratoire d'Informatique de l'Ecole Polytechnique (LIX). May 2016 - Nov 2019.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Master : Frank D. Valencia has been teaching the undergraduate course "Computability", 45 hours, at the Pontificia Universidad Javeriana de Cali, Colombia. July 27 - Nov 1, 2019.

Master : Frank D. Valencia has been teaching the masters course "Foundations of Computer Science", 45 hours, at the Pontificia Universidad Javeriana de Cali, Colombia. Jan 27 - Jun 1, 2019

Master : Catuscia Palamidessi has been teaching the masters course on "Foundations of Privacy", 24 hours, at the MPRI, Sept-Nov 2019.

### 9.2.2. Supervision

PhD in progress (2019-) Federica Granese. Co-supervised Catuscia Palamidessi and Daniele Gorla. Thesis subject: Security in Machine Learning.

PhD in progress (2019-) Ganesh Del Grosso. Co-supervised by Catuscia Palamidessi and Pablo Piantanida. Thesis Subject: Privacy in Machine Learning.

PhD in progress (2018-) Natasha Fernandez. Co-supervised Konstantinos Chatzikokolakis, Catuscia Palamidessi, and Annabelle McIver. Thesis subject: Privacy Protection Methods for Textual Documents.

PhD in progress (2018-) **Santiago Quintero**. Co-supervised by Frank Valencia and Catuscia Palamidessi. Thesis Subject: Foundations of Group Polarization.

PhD in progress (2017-) Marco Romanelli. Co-supervised by Konstantinos Chatzikokolakis, Catuscia Palamidessi, and Moreno Falaschi (University of Siena, Italy). Thesis subject: Application of Information Flow to feature selection in machine learning.

PhD in progress (2017-) Anna Pazzi. Co-supervised by Konstantinos Chatzikokolakis and Catuscia Palamidessi. Thesis subject: Local Differential Privacy.

PhD in progress (2017-) **Sergio Ramirez**. Co-supervised by Frank Valencia and Camilo Rueda, Universidad Javeriana Cali. Thesis subject: Quantitive Spatial Constraint Systems.

### 9.2.3. *Juries*

Catuscia Palamidessi has been reviewer and member of the board at the PhD defense for the thesis of the following PhD student:

Mohamed Maouche (INSA, Lyon). PhD thesis reviewer and member of the committee board at the PhD defense. Title of the thesis: *Protection against Re-identification Attacks in Location Privacy*. Defended in November 2019.

Raphaëlle Crubrillé (IRIF, Université Paris Diderot). Member of the committee board at the PhD defense. Title of the thesis: *Distances comportementales pour les programmes probabilistes d'ordre supérieur*. Defended in June 2019.

Vittoria Nardone (University of Sannio, Italy). PhD thesis reviewer. Title of the thesis: *Formal Methods for Android Applications*. Supervised by Antonella Santone. Defended in January 2019.

### 9.2.4. *Other didactical duties*

Catuscia Palamidessi has been:

External member of the scientific council for the PhD in Computer Science at the University of Pisa, Italy. Since 2012.

## 9.3. Popularization

### 9.3.1. *Education*

Konstantinos Chatzikokolakis and Catuscia Palamidessi have designed, and coordinate, a course on the Foundations of Privacy at the **MPRI**, the Master Parisien pour la Recherche en Informatique. University of Paris VII. A.Y. Since 2015.

Catuscia Palamidessi has been:

- Invited speaker at **PLMW@POPL 2019**, the Programming Logic Mentoring Workshop 2019 (affiliated to POPL 2019). This workshop aims at encouraging graduate students and senior undergraduate students to pursue careers in programming language research, and at educating them on the research career.
- A participant in the round table on fairness, Interpretability, and Privacy in AI at the **CIFAR-UKRI-CNRS workshop**. London, June 2019.

Frank Valencia has:

- Welcomed the students of bachelor program of École Polytechnique to Inria center. Sept 12, 2019.
- Welcomed visitors from ACOFI, the Colombian Association of Faculties of Engineering to Inria center. April 8, 2019.

### 9.3.2. *Interventions*

Catuscia Palamidessi has given an invited talk at:

- **Safety and AI**. DATAIA Workshop. Palaiseau, France, September 2019.

## COMMANDS 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

- F. Bonnans: PGMO Days, EDF'Lab Palaiseau, Dec. 3-4, 2019.

#### 9.1.2. Journal

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

- F. Bonnans: Associate Editor: Math. & Appl. / Annals of the Academy of Romanian Scientists (AOSR)

### 9.2. Teaching - Supervision - Juries

#### 9.2.1. Teaching

Master :

F. Bonnans: *Numerical analysis of partial differential equations arising in finance and stochastic control*, 18h, M2, Ecole Polytechnique and U. Paris 6, France.

F. Bonnans: *Optimal control of ordinary differential equations*, 15h, M2, Optimization master (U. Paris-Saclay) and Ensta, France.

A. Kröner : *Optimal control of partial differential equations*, 20h, M2, Optimization master (U. Paris-Saclay), France.

L. Pfeiffer: *Optimal control of ordinary differential equations*, 18h, M2, Optimization master (U. Paris-Saclay) and Ensta, France.

L. Pfeiffer: *Optimisation continue et combinatoire*, 17h, Ensta, France.

#### 9.2.2. Supervision

Finished PhD : A. Le Rhun, *Optimal and robust control of hybrid vehicles*. Started September 2016 (IFPEN fellowship), finished December 2019, F. Bonnans and P. Martinon.

PhD in progress : G. Bonnet, *Efficient schemes for the Hamilton-Jacobi-Bellman equation*. Started Oct. 2018. F. Bonnans and J.-M. Mirebeau, LMO, U. Orsay.

PhD in progress : P. Lavigne, *Mathematical study of economic equilibria for renewable energy sources*. Started Oct. 2018. F. Bonnans and L. Pfeiffer.

### 9.3. Popularization

- F. Bonnans: codirection of a joint Allistene-Ancre commission (contribution to the national strategy for research), Numerics and Energy committee (2017-2019).
- F. Bonnans: Dimitrie Pompeiu Prize Committee (Academy of Romanian Scientists).

## 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.

## DEDUCTEAM Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

#### 9.1.1.1. Member of the Organizing Committees

Deducteam has organized the kick off meeting of Logipedia on 21-23 January 2019 in Cachan.

Frédéric Blanqui and Olivier Hermant organized the **11th International School on Rewriting (ISR)** in Paris on 1-6 July 2019. The school offered to 37 participants from 8 countries, 69 hours of lectures in two parallel sessions, given by 15 lecturers from 6 countries.

Valentin Blot co-organized the **Facets of realizability** workshop on 1-3 July 2019, bringing together 22 researchers from 6 countries.

Frédéric Blanqui is Workshop Chair of the ACM/IEEE Symposium on Logic in Computer Science (LICS).

### 9.1.2. Scientific Events: Selection

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

Gilles Dowek has been a member of the program committee of the Nasa Formal Methods Symposium (NFM'19) and Interactive Theorem Proving (ITP'19).

Frédéric Blanqui has been member of the program committee of the 16th International Colloquium on Theoretical Aspects of Computing (ICTAC'19), the 6th Workshop on Proof eXchange for Theorem Proving (PxTP'19), and of Large Mathematical Libraries (LML'19).

Valentin Blot was a member of the program committee for the french conference "Journées Francophones des Langages Applicatifs" 2020.

#### 9.1.2.2. Reviewer

Guillaume Burel reviewed articles submitted to PxTP'19 and LOPSTR'19.

Valentin Blot reviewed articles submitted to LICS'19.

Bruno Barras reviewed an article submitted to CSL'20.

### 9.1.3. Journal

#### 9.1.3.1. Reviewer - Reviewing Activities

Guillaume Burel reviewed an article for Logical Methods in Computer Science.

Bruno Barras reviewed articles submitted to the Annals of Mathematics and Artificial Intelligence and Mathematical Structures in Computer Science

### 9.1.4. Invited Talks

Gilles Dowek has been invited to the meeting Big proofs in Edinburgh, where he has given a talk on Logipedia.

Gilles Dowek has participated to the meeting of the Proof society in Swansea where he has given a talk on Logipedia.

Gilles Dowek has given talk on Logipedia in Lille, Strasbourg, Beijing, Rio de Janeiro, and in the virtual "Laboratoire International de Recherche en Informatique et Mathématiques Appliquées".

Frédéric Blanqui gave talks at Gunma University (Japan) and Tohoku University (Japan).

Guillaume Genestier gave a seminar at the logic group of Chalmers University (Sweden).



Valentin Blot gave an invited talk at a realizability workshop on 18-20 September 2019 in Marseille, and a talk at the IRIF semantics working group.

### 9.1.5. Leadership within the Scientific Community

Frédéric Blanqui is member of the Steering Committees of LICS, TYPES and ISR.

### 9.1.6. Scientific Expertise

Bruno Barras reviewed a research proposal submitted to the Dutch National Research Organization (NWO).

### 9.1.7. Research Administration

Frédéric Blanqui is co-director of the pole 4 of the doctoral school STIC of the University Paris-Saclay.

Frédéric Blanqui is member of the committee of the doctoral school of the ENS Paris-Saclay.

Frédéric Blanqui is in charge of following PhD students at LSV.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

- Master: Frédéric Blanqui, formal languages, 21h, M1, ENSIIE, France
- Master: Frédéric Blanqui, rewriting theory, 14h, M1, ENS Paris-Saclay, France
- Master: Frédéric Blanqui,  $\lambda$ -calculus and theories in first-order logic, 18h, M1/M2, ENS Paris-Saclay, France
- Master: Bruno Barras, Proof Assistants, 12h, M2, MPRI, France
- Master: Gabriel Hondet, rewriting theory TD, 14h, M1, ENS Paris-Saclay, France
- Licence: Gabriel Hondet, operating systems and architecture TD, 22.5h, L3, ENS Paris-Saclay, France
- Licence: Gabriel Hondet, programming TD, 12h, L3, ENS Paris-Saclay, France
- License: Gaspard Férey, Théorie des Langages, 44h, L3, EISTI
- IUT: Yacine El Haddad, Programmation Web Côté Serveur, 62h, IUT of Orsay

### 9.2.2. Supervision

- PhD in progress: Guillaume Genestier, termination in  $\lambda\Pi$ -calculus modulo theory, 01/10/17, Frédéric Blanqui and Olivier Hermant.
- PhD in progress: Mohamed Yacine El Haddad, using automated provers in proof assistants, 05/01/18, Frédéric Blanqui and Guillaume Burel.
- PhD in progress: Gabriel Hondet, translating PVS proofs to Dedukti, 01/10/19, Frédéric Blanqui and Gilles Dowek.

### 9.2.3. Juries

Bruno Barras and Valentin Blot have participated to the PhD jury of Youssef El Bakouny from Université St-Joseph, Beirut (Lebanon).

## 9.3. Popularization

### 9.3.1. Articles and contents

Articles

- The synthesis article Algorithmes et modèles : l'histoire d'une convergence, written a decade ago has been published in Pierre Mounoud, Leçons de mathématiques d'aujourd'hui : Volume 5 (Cassini, 2019).

**Books**

- Gilles Dowek, *Ce dont on ne peut parler, il faut l'écrire : Langues et langages* (Le Pommier, 2019)

**Manuscripts**

- Gilles Dowek, *How the physical Church-Turing thesis changed the concept of machine*, manuscript, 2019.
- Gilles Dowek, *Two consequences of the hypothesis that we are within the world*, manuscript, 2019.
- Gilles Dowek, *Instinct, language, and artificial intelligence*, manuscript, 2019.

**9.3.2. Interventions**

Gilles Dowek has been invited to the PROGRAMme workshop "Machines" where he has presented a paper *How the physical Church-Turing thesis changed the concept of machine*.

Gilles Dowek has been invited to the Conference on Robotics, AI, and Humanity, Science, Ethics, and Policy organized by the Pontifical Academy of Sciences and the Pontifical Academy of Social Sciences where he has presented a paper *Instinct, language, and artificial intelligence*.

Gilles Dowek has been invited at the meeting *Le hasard, le calcul et la vie*, in Cerisy, where he has given a talk *Un Chaos discret*.

Gilles Dowek has been invited to the meeting *Experiencing reality directly in Jerusalem* where he has presented a paper *Two consequences of the hypothesis that we are within the world*.

## DEFI Project-Team

# 8. Dissemination

## 8.1. Promoting Scientific Activities

### 8.1.1. General Chair, Scientific Chair

- P.M Congedo is the Chair of the CWI-Inria workshop at CWI in Amsterdam on September 19, 2019.
- P.M. Congedo is the Chair of UQOP2020 Conference, organized in Paris on March 18-21, 2019.

### 8.1.2. Member of the Organizing Committees

- L. Chesnel co-organizes the Journée de rentrée (2019) of the Centre de Mathématiques Appliquées of École Polytechnique.
- L. Chesnel co-organizes the seminar of the Centre de Mathématiques Appliquées of École Polytechnique.
- L. Chesnel co-organizes the seminar of the Inria teams Defi-M3DISIM-Poems.
- M. Bonazzoli organizes the working group of Defi team.
- J.R. Li is organizer of Ecole d'été d'excellence for Chinese Master's students funded by French Embassy in China, 07/2019.

### 8.1.3. Journal

#### 8.1.3.1. Member of the Editorial Boards

- G. Allaire is member of the editorial boards of
  - Book series "Mathématiques et Applications" of SMAI and Springer,
  - ESAIM/COCV, Structural and Multidisciplinary Optimization,
  - Discrete and Continuous Dynamical Systems Series B,
  - Computational and Applied Mathematics,
  - Mathematical Models and Methods in Applied Sciences (M3AS),
  - Annali dell'Università di Ferrara,
  - OGST (Oil and Gas Science and Technology),
  - Journal de l'École Polytechnique - Mathématiques,
  - Journal of Optimization Theory and Applications.
- P.M. Congedo is Editor of Mathematics and Computers in Simulation, MATCOM (Elsevier).
- H. Haddar is member of the editorial boards of
  - Inverse Problems
  - SIAM Journal on Scientific Computing
  - SIAM Journal of Mathematical Analysis

#### 8.1.3.2. Reviewer - Reviewing Activities

We reviewed papers for top international journals in the main scientific themes of the team.

#### 8.1.4. Invited Talks

- G. Allaire
  - SIAM Geosciences, Houston, March 11-14, 2019.
  - DCAMM seminar, DTU, Copenhagen, April 5, 2019.
  - WCSMO, Beijing, May 20-24, 2019.
  - Mathematical Design of New Materials, Cambridge, June 3-14, 2019.
  - Chalmers Colloquium, Sweden, August 26-30, 2019.
  - Sim-AM, Pavia, September 11-13, 2019.
  - Shape Optimization and Isoperimetric and Functional Inequalities, Levico Terme, September 23-27, 2019.
  - Computational modelling of Complex Materials across the Scales, Glasgow, October 1-4, 2019.
  - New trends in PDE constrained optimization, Linz, October 15-18, 2019.
- M. Bonazzoli
  - Seminar at POEMS lab, ENSTA-ParisTech, Palaiseau, France.
  - ENUMATH 2019, European Numerical Mathematics and Advanced Applications Conference, Egmond aan Zee, Netherlands.
  - Parallel Solution Methods for Systems Arising from PDEs, Marseille, France (Plenary invited talk).
- L. Chesnel
  - Waves conference, Vienna, August 2019.
  - Applied Inverse Problems conference, Grenoble, 2019.
- H. Haddar
  - Applied Inverse Problems conference, Grenoble, July 2019
  - International Conference on Antenna Measurements & Applications, Bali, October 2019
  - New Trends in Analysis and Probability, Sousse, September 2019
  - Workshop in the memory of A. Lechleiter, Bremen, May 2019
  - La journée des rencontres DEFI-MEDISIM-POEMS, December, 2019
- P.M. Congedo
  - Workshop "Numerical simulation of hypersonic flows, July 8, 2019.
  - Seminar at ONERA, Meudon, November 29, 2019.

#### 8.1.5. Leadership within the Scientific Community

- G. Allaire is a board member of Institut Henri Poincaré (IHP). He is the chairman of the scientific council of IFPEN (French Petroleum Institute and New Energies). He is the chairman of the scientific council of AMIES (Agency for Interaction in Mathematics with Business and Society).

#### 8.1.6. Scientific Expertise

- G. Allaire is a member of the "comité national" CNRS, section 41 (mathematics).
- G. Allaire is a member of the scientific board of the Gaspard Monge program on optimization (PGMO) at the Jacques Hadamard Mathematical Foundation.
- J.R. Li is Member of the SIAM Committee on Programs and Conferences 2017-2019.
- J.R. Li is Member Elu of Inria Commission d'Evaluation, 2015-2019.
- M. Bonazzoli was a member of the Evaluation committee for the 2020 call of Inria Associate Teams programme.

- H. Haddar was the president of the evaluation committee for mathematical laboratories at the Universities of Sfax and Sousse (Tunisia)

### 8.1.7. Research Administration

- J.R. Li is correspondent International for Centre de Mathematiques Appliquees, Ecole Polytechnique, 2018-present.
- J.R. Li is responsable for the Ecole Polytechnique part of the French-Vietnam Master Program in Applied Mathematics, 2016-present.
- M. Bonazzoli is the International partnerships Scientific Correspondent for Inria Saclay.

## 8.2. Teaching - Supervision - Juries

### 8.2.1. Teaching

- Master: Grégoire Allaire, Approximation Numérique et Optimisation, for students in the second year of Ecole Polytechnique curriculum: 8 lessons of 1h30.
- Master: Grégoire Allaire, Transport and diffusion, for students in the third year of Ecole Polytechnique curriculum. 9 lessons of 2h jointly with F. Golse.
- Master: Housseem Haddar, Waves and imaging: Concepts, Theory and Applications, Master M2 "mathematical modeling": 9 lessons of 3h.
- Master: Housseem Haddar, Inverse scattering problems, Master M2, ENIT, 10 lessons of 3h.
- Master: Lucas Chesnel, Elementary tools of analysis for partial differential equations, for students in the first year of Ensta ParisTech curriculum, 25 equivalent TD hours.
- Master: Lucas Chesnel, Numerical approximation and optimisation, for students in the second year of Ecole Polytechnique curriculum: 2 TDs of 4h + one project.
- Master: Lucas Chesnel, Modal Modélisation mathématique par la démarche expérimentale, for students in the second year of Ecole Polytechnique curriculum: 5 TDs of 2h.
- Master: Grégoire Allaire, Optimal design of structures, for students in the third year of Ecole Polytechnique curriculum. 9 lessons of 1h30.
- Master: Grégoire Allaire, Theoretical and numerical analysis of hyperbolic systems of conservation laws, Master M2 "mathematical modeling", 8 lessons of 3h.
- Master: Jing Rebecca Li, Lecturer of course Mathematical and numerical foundations of modeling and simulation using partial differential equations French-Vietnam Master in Applied Mathematics, University of Science, Ho Chi Minh City, 9/2019. 2 weeks.
- Master: P.M. Congedo, Numerical methods in Fluid Mechanics, ENSTA ParisTech, 12 h.
- Master: P.M. Congedo, Numerical methods for Hyperbolic Problems, von Karman Institute for Fluid Dynamics, 12 h.
- Doctorat: Housseem Haddar, Inverse problems, Executive Education, Ecole Polytechnique, 9h

### 8.2.2. Supervision

- PhD: K. Napal, On the use of sampling methods and spectral signatures for the resolution of inverse scattering problems (defended, December 2019), L. Audibert, L. Chesnel and H. Haddar.
- PhD: F. Feppon (defended, December 2019) sur l'optimisation topologique de systèmes couplés fluide-solide-thermique, G. Allaire and Ch. Dapogny.
- PhD: M. Kchaw, Higher order homogenization tensors for DMRI modeling (defended July 2019), H. Haddar and M. Moakher
- PhD: B. Charfi, Identification of the singular support of generalized impedance boundary conditions (defended September 2019), S. Chaabane and H. Haddar.

- PhD: F. Sanson, Estimation du risque humain lié à la retombée d'objets spatiaux sur Terre (defended in September 2019), P.M. Congedo, O. Le Maitre.
- PhD: N. Razaaly, Rare Event Estimation and Robust Optimization Methods with Applications to ORC Turbine Cascade (defended in July 2019), P.M. Congedo.
- PhD: G. Gori, Non-ideal compressible-fluid dynamics: developing a combined perspective on modeling, numerics and experiments (defended in January 2019), A. Guardone, P.M. Congedo.
- PhD: J. Carlier, Schémas aux résidus distribués et méthodes à propagation des ondes pour la simulation d'écoulements compressibles diphasiques avec transfert de chaleur et de masse (defended in December 2019), M. Pelanti, P.M. Congedo.
- Ph.D. in progress: S. Houbar sur la cavitation dans le fluide caloporteur induite par les mouvements des assemblages d'un réacteur (CEA, to be defended in 2020). G. Allaire and G. Campioni.
- Ph.D. in progress: M. Boissier, Optimisation couplée de la topologie des formes et de la trajectoire de lasage en fabrication additive (to be defended in 2020). G. Allaire and Ch. Tournier.
- L. Rakotondrainibe sur l'optimisation des liaisons entre pièces dans les systèmes mécaniques (Renault, to be defended in 2020). G. Allaire.
- J. Desai sur l'optimisation topologique de structures au comportement non-linéaire avec des méthodes de déformation de maillage (IRT SystemX, to be defended in 2021). G. Allaire and F. Jouve,
- PhD in progress: H. Girardon, Non destructive testing of PWR tubes using eddy current rotating coils, to be defended in 2021, H. Haddar and L. Audibert
- PhD in progress: M. Rihani, Maxwell's equations in presence of metamaterials (to be defended in 2021), A.-S. Bonnet-BenDhia and L. Chesnel.
- PhD in progress: Chengran Fang, Enabling cortical cell-specific sensitivity on clinical multi-shell diffusion MRI microstructure measurements. (to be defended in 2022) Jing Rebecca Li and Demian Wassermann
- PhD in progress: Nouha Jenhani, Differential sampling methods for defect imaging in periodic layers. (to be defended in 2022) Housseem Haddar and Mourad Bellasoued
- PhD in progress: Amal Labidi, Inverse problems for wave equation with magnetic potential. (to be defended in 2022) Housseem Haddar and Mourad Bellasoued
- PhD in progress: Marwa Mansouri, Inside outside duality for artificial backgrounds. (to be defended in 2022) Housseem Haddar, Lucas Chesnel and Moez Khenissi
- PhD in progress: M. Bihr sur la fabrication additive et l'optimisation topologique de structures (to be defended in 2022) G. Allaire and B. Bogosel.
- PhD in progress: R. Delvaux sur les algorithmes de couplage à convergence super-linéaire entre neutronique, thermohydraulique et thermique (to be defended in 2022) G. Allaire and C. Patricot,.
- PhD in progress: A. Touiti sur l'optimisation de l'anisotropie pour des structures issues de la fabrication additive (to be defended in 2022) G. Allaire and F. Jouve.
- PhD in progress: M. Rivier, optimization under uncertainty through a Bounding-Box concept (to be defended in May 2020), P.M. Congedo.
- PhD in progress: Joao Reis, Advanced methods for stochastic elliptic PDEs (to be defended in October 2020), P.M. Congedo, O. Le Maitre.
- PhD in progress: Anabel Del Val, Advanced bayesian methods for aerospace applications (to be defended in October 2020), P.M. Congedo, O. Le Maitre, O. Chazot, T. Magin.
- PhD in progress: P. Novello, Deep learning for reentry atmospheric flows (to be defended in November 2021), P.M. Congedo, D. Lugato, G. Poette.
- PhD in progress: E. Solai, Virtual Prototyping of the EVE expander (to be defended in October 2021), P.M. Congedo, H. Beaugendre.

- PhD in progress: N. Leoni, Bayesian inference of model error in imprecise models (to be defended in February 2022), P.M. Congedo, O. Le Maitre, M.G. Rodio.

### **8.3. Popularization**

- M. Bonazzoli and L. Chesnel made a presentation in the context of the Fête de la science 2019 to several groups of young students (from 10 to 17 years old).
- M. Bonazzoli was representative for SMAI at the Métiers des Maths stand at the 20th Salon Culture et Jeux Mathématiques.

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

- P.M. Congedo is Deputy Coordinator of "Maths/Engineering" Program of the Labex Mathématiques Hadamard.
- J.R. Li is Member Elu of Inria Commission d'Evaluation, 2015-2019.
- M. Bonazzoli is the International partnerships Scientific Correspondent for Inria Saclay.

#### ***8.3.2. Internal action***

- M. Bonazzoli, H. Haddar and J.R. Li monitored an internship at Defi team for 6 middle school students (one afternoon).

## DISCO Project-Team

# 7. Dissemination

## 7.1. Promoting Scientific Activities

### 7.1.1. Scientific Events: Organisation

#### 7.1.1.1. General Chair, Scientific Chair

Islam Boussaada is co-leading the national research group *Tools for analysis and synthesis of infinite-dimensional systems* (GT OSYDI) of the CNRS/GDR MACS ( <https://gdr-macs.cnrs.fr/groupe-de-travail/osydi>).

#### 7.1.1.2. Member of the Organizing Committees

Catherine Bonnet was member of the organizing committee of SIAM CT19, Chendu China, July 2019.

### 7.1.2. Scientific Events: Selection

- Catherine Bonnet was Associate Editor for the 2019 American Control Conference, Philadelphia, USA and the 2020 American Control Conference, Denver, USA.
- Catherine Bonnet and Islam Boussaada were Associate Editor for the Joint IFAC Conference 7th Symposium on System Structure and Control (SSSC 2019) and 15th IFAC Workshop on Delay Systems, Sinaia, Roumania, Sept 2019.
- Frédéric Mazenc was Associate Editor for the conferences 2019 American Control Conference, Philadelphia, USA and for the European Control Conference 2020, St Petersburg.
- Giorgio Valmorbida was an Associate Editor for the 2019 American Control Conference, Philadelphia, USA and the 2020 American Control Conference, Denver, USA. He was also Associate editor for the 58th Conference in Decision and Control, Nice, France. Silviu Niculescu is the IEEE CSS (Control System Society) representative for the series of IEEE Conferences (nternational Conference on System Theory, Control and Computing.): <http://icstcc2019.cs.upt.ro>

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

- Catherine Bonnet and Giorgio Valmorbida are members of the scientific committee of the GDRI (International Research Group funded by CNRS) SpaDisco since 2017.
- Giorgio Valmorbida is a member of the steering committee of the GDRI (International Research Group funded by CNRS) SpaDisco since 2017.
- Catherine Bonnet and Islam Boussaada were members of the International Program Committee of the Joint IFAC Conference 7th Symposium on System Structure and Control (SSSC 2019) and 15th IFAC Workshop on Delay Systems, Sinaia, Roumania, Sept 2019.

#### 7.1.2.2. Reviewer

The team reviewed papers for several international conferences including IEEE Conference on Decision and Control, IEEE American Control Conference, European Control Conference ...

### 7.1.3. Journal

#### 7.1.3.1. Member of the Editorial Boards

Frédéric Mazenc is member of the editorial boards of the following journals:

- Asian Journal of Control : Editor;
- IEEE Transactions on Automatic Control, Associate Editor;
- European Journal of Control, Associate Editor;
- Journal of Control and Decision, Associate Editor;
- IEEE Control Systems Letters, Associate Editor.



Silviu Niculescu is the Founding Editor and the Editor-in-Chief (since its creation in 2012) of the Springer (hard-cover) book series Advances in Delays and Dynamics ADD@S <https://www.springer.com/series/11914>.

He is Associate Editor at European Journal of Control (since 2011).

#### 7.1.3.2. Reviewer - Reviewing Activities

The team reviewed papers for several journals including SIAM Journal on Control and Optimization, Automatica, IEEE Transactions on Automatic Control, Systems and Control Letters ...

#### 7.1.4. Invited Talks

Giorgio Valmorbida was invited to give a talk in the workshop Scientific Computing Across Scales: Extreme Events and Criticality in Fluid Mechanics in April 15 - 18, 2019, at The Fields Institute 15-17, Toronto, CA.

Frédéric Mazenc was invited to give a talk in the CINVESTAV, IPN: Model Reduction and Predictor Control, in August 2, 2019, Mexico City, Mexico.

#### 7.1.5. Leadership within the Scientific Community

Catherine Bonnet is a member of the IFAC Technical Committees on *Distributed Parameter Systems* and on *Biological and Medical Systems*. She is a member of the management committee of the COST Action FRACTAL (2016-2020).

Silviu Niculescu is the chair of the IFAC TC 2.2 "Linear Control Systems" since 2017 (including 300-350 researchers through the world). The TC is coordinating 4 "Working Groups" (WG) including the WG on "Time-Delay Systems".

#### 7.1.6. Scientific Expertise

Since September 2015, Catherine Bonnet is a member of the Evaluation Committee of Inria and since 2019 of the Bureau of the Evaluation Committee of Inria.

Since September 2016, Islam Boussaada is a member of the Scientific Council of IPSA (Engineering School in Aeronautic and Aerospace approved by CTI).

Since September 2018, Islam Boussaada is a member of the Development Council of Sup'Biotech (Engineering School in Biotechnologies approved by CTI).

Since 2014, Frédéric Mazenc is an expert for the FNRS (Belgium). His mission consists in evaluating research projects funded by this institution.

Since 2012, Frédéric Mazenc is a, expert for the ANVUR (National Agency for the Evaluation of Universities and Research Institutes, Italy). His mission consists in evaluating the contribution of Italian scientists.

Since 2011, Frédéric Mazenc is a, expert for the Romanian National Council for Development and Innovation (Romania). His mission consists in evaluating research projects funded by this institution.

#### 7.1.7. Research Administration

Catherine Bonnet is a member of the

- *Parity Committee* of Inria created since its creation in 2015.
- Bureau du Comité des Projets du CRI Saclay-Ile-de-France since 2018.
- Coordination committee of the Mentoring Program of Inria Saclay-Île-de-France.
- PhD referent committee at L2S, CentraleSupélec.
- Administration council of the association *Femmes et Mathématiques*

Since October 2017, Frédéric Mazenc is Correspondant Inria Saclay A.M.I.E.S., <http://www.agence-maths-entreprises.fr/>. Since September 2019, he is member of "la Commission de Développement Technologique". He is member of the "Conseil du Laboratory of Signal and Systems".

## 7.2. Teaching - Supervision - Juries

### 7.2.1. Teaching

Licence: Islam Boussaada, *Control of bioprocesses*, 27h, 1st year, CentraleSupélec Université Paris-Saclay, France.

Licence: Silviu Niculescu, *Mathematics*, 15h, 1st year, ENSMP Paris, France.

Licence: Silviu Niculescu, *Introduction to optimization*, 30h, 1st year, ESIEE Paris, France.

Licence: Giorgio Valmorbida, *Signal Processing*, 1st year, 43h CentraleSupélec Université Paris-Saclay.

Master: Giorgio Valmorbida, *Tutorials - Modelling, Control, Optimization and Electrical Machines*, 1st and 2nd years, 55.5h, CentraleSupélec Université Paris-Saclay.

Master: Giorgio Valmorbida, *Projects and Internship supervision*, 2nd and 3rd years, 81h, Centrale-Supélec Université Paris-Saclay.

Master: Giorgio Valmorbida, *Nonlinear Systems*, 3h, CentraleSupélec Executive Education, Université Paris-Saclay.

Master : Catherine Bonnet, *Stability properties and stabilization of interconnected dynamical systems involving delays*, 20h, IPSA, France.

Master : Silviu Niculescu, *Signals and Systems*, 12h, ESIEE Paris, France.

Master : Giorgio Valmorbida, *Control*, 40.5, Master MAE (M1), Université Paris-Saclay.

Master : Giorgio Valmorbida, *Stability of Dynamical Systems*, Master ATSI (M2), Université Paris-Saclay.

Doctorat : Silviu Niculescu, *Controlling Delayed Dynamics: Advances in Theory, Methods and Applications*, 7h, CISM Udine, Italy.

### 7.2.2. Supervision

PhD in progress: Souad Amrane, on real pole-placement for retarded functional differential equations, University Mouloud Mammeri. Since 09/2017. Supervisors: Fazia Bedouhene and Islam Boussaada.

PhD in progress: Amina Benarab, Characterization of the exponential decay of linear delay systems solutions, University Paris Saclay. Since 10/2019. Supervisors: Catherine Bonnet, Islam Boussaada and Karim Trabelsi.

PhD: Caetano Cardeliqio, Contributions to the Theory of Time-Delay Systems: Stability and Stabilisation, UNICAMP & Université Paris Saclay, 27 September 2019; Supervisors : Catherine Bonnet and André Fioravanti.

PhD in progress: Leonardo Broering Groff, Commande Périodique Déclenché par Événements, Université Paris-Saclay et UFRGS. Since 03/2017. Supervisors: Giorgio Valmorbida and Joao Manoel Gomes da Silva Jr.

PhD in progress: Jose Castillo, Design, Modeling and control of multi drones for aerial handling, University Paris Saclay, 10/2018, Islam Boussaada and Juan Escareno.

PhD in progress: Naouel Debiane, Bond Graph modeling for robust control and diagnosis of macatronic systems, University of Lille. Since 03/2017. Supervisors: Belkacem Ould-Bouamama and Islam Boussaada.

PhD in progress: Ali Diab, Commande par filtrage non linéaire des systèmes d'assistance direction, Université Paris-Saclay. Since 10/2019. Supervisors: Giorgio Valmorbida and William Pasillas-Lepine.

PhD in progress: Ricardo Falcon Prado, Active vibration control of flexible structures under input saturation through delay-based controllers and anti- windup compensators, University Paris Saclay. Since 10/2019. Supervisors: Islam Boussaada and Sami Tliba.

PhD in progress: Javier Eduardo Pereyra Zamudio, New backstepping design for systems with delay: finite time stabilization, robust stabilization, CINVESTAV, Instituto Politecnico Nacional. Since 10/2019. Supervisors: Sabine Mondié and Frédéric Mazenc.

PhD in progress : Amira Remadna, On pole-placement approach for retarded functional differential equations, University Badji Mokhtar-Annaba. Since 09/2019. Supervisors: Islam Boussaada and Azzedine Benchettah.

Postdoc: Da-Jung Cho, Modelling of bacteria communication, May-August 2019. Supervisors: Catherine Bonnet, Matthias Fuegger and Thomas Nowak.

### 7.2.3. *Juries*

- Catherine Bonnet was member of the Grenoble and Nancy Junior Researcher Inria recruiting committees.
- Catherine Bonnet was President of the PhD thesis of Yanqiao Wei '*Non-asymptotic and Robust fractional order differentiators using generalized modulating functions*', 15 November 2019, INSA Val de Loire.

## 7.3. Popularization

### 7.3.1. *Interventions*

- The team welcomed Sophie Merheb, high-school student of Lycée privé Notre-Dame Les Oiseaux, Verneuil-sur-Seine, for the period 17-26 June 2019.

## **EX-SITU 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*

- ACM CHI 2020, *ACM CHI Conference on Human Factors in Computing Systems*: Theophanis Tsandilas
- ACM UIST 2019, *ACM Symposium on User Interface Software and Technology*: Michel Beaudouin-Lafon, Wendy Mackay
- ACM VRST 2019, *ACM Symposium on Virtual Reality Software and Technology*: Cédric Fleury
- EuroVR 2019, *EuroVR International Conference*: Cédric Fleury
- MOCO 2019, *International Conference on Movement and Computing*: Sarah Fdili Alaoui, Baptiste Caramiaux
- IHM 2019, *Conférence Francophone d'Interaction Homme-Machine*: Sarah Fdili Alaoui

#### *9.1.1.2. Reviewer*

- ACM CHI 2019-20, *ACM CHI Conference on Human Factors in Computing Systems*: Sarah Fdili Alaoui, Cédric Fleury, Baptiste Caramiaux, Michel Beaudouin-Lafon, Wendy Mackay, Julien Gori, Alexander Eiselmayer
- ACM UIST 2019, *ACM Symposium on User Interface Software and Technology*: Theophanis Tsandilas, Cédric Fleury, Julien Gori
- ACM DIS 2019, *Designing Interactive Systems*: Baptiste Caramiaux, Sarah Fdili Alaoui
- ACM ACII, : Baptiste Caramiaux
- IEEE VIS 2019, *IEEE Visualization Conference*: Theophanis Tsandilas, Michel Beaudouin-Lafon
- IEEE VR 2019-20, *Virtual Reality Conference*: Cédric Fleury
- ACM ISS 2019, *ACM International Conference on Interactive Surfaces and Spaces*: Theophanis Tsandilas
- ACM MobileHCI (2019) *The Conference on Human-Computer Interaction with Mobile Devices and Services*: Julien Gori
- ACM NordiCHI (2018) *The Nordic Conference on Human-Computer Interaction*: Julien Gori
- EURASP Eusipco (2019) *European Signal Processing Conference*: Julien Gori
- IEEE SMC (2018) *IEEE International Conference on Systems, Man, and Cybernetics*: Julien Gori
- ACM CHIPLAY 2019, *ACM SIGCHI Annual Symposium on Computer-Human Interaction in Play*: Viktor Gustafsson
- IHM 2019, *Conférence Francophone d'Interaction Homme-Machine*: Theophanis Tsandilas, Wendy Mackay

### **9.1.2. Journal**

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

- Editor for the Human-Computer Interaction area of the ACM Books Series (published with Morgan & Claypool Publishers): Michel Beaudouin-Lafon (2013-)

- TOCHI, *Transactions on Computer Human Interaction*, ACM: Michel Beaudouin-Lafon (2009-), Wendy Mackay (2016-), Baptiste Caramiaux (2019-)
- PloS ONE: Baptiste Caramiaux (2018-)
- JIPS, *Journal d'Interaction Personne-Système*, AFIHM: Michel Beaudouin-Lafon (2009-)
- *Frontiers in Virtual Reality*: Cédric Fleury (2019-)

#### 9.1.2.2. Reviewer - Reviewing Activities

- TOCHI, *Transactions on Computer Human Interaction*, ACM: Theophanis Tsandilas, Julien Gori
- ACM Books Series: Theophanis Tsandilas
- *Frontiers in Robotics and AI*, Virtual Environments section: Cédric Fleury

#### 9.1.3. Invited Talks

- CIO Workshop, Sanderberg, Denmark *Generative Theories of Interaction (in the making)*, 23 January 2019: Michel Beaudouin-Lafon, Susanne Bødker, and Wendy Mackay
- Colloque CNRS Humain et Numérique en Interaction, Paris, *Aura-t-on encore besoin d'interagir avec des ordinateurs ?*, February 2019: Michel Beaudouin-Lafon
- Stanford University, Palo Alto CA *Human-Computer Partnerships*, 27 February 2019: Wendy Mackay
- IHM & AI Workshop, Paris *Partenariats Homme-Machines*, 14 March 2019: Wendy Mackay
- DYSTOPIA, Paris, *L'IA nous rendra-t-elle inhumains ?*, March 2019: Michel Beaudouin-Lafon
- Stanford University, *Unified Principles of Interaction*, March 2019: Michel Beaudouin-Lafon
- CHI 2019 Panel, Glasgow, Scotland *Rigor, Relevance and Impact: The Tensions and Trade-Offs Between Research in the Lab and in the Wild*, April 2019: Wendy Mackay
- MIT CSAIL, *Unified Principles of Interaction*, May 2019: Michel Beaudouin-Lafon
- SystemX, Paris *Partenariats Homme-Machines*, 29 May 2019: Wendy Mackay
- ESPGG, Open Lab Days, *Human-centred Machine Learning in Creative Applications*, June 2019: Baptiste Caramiaux
- University of London Institute, *AI in the Media and Creative Industries*, June 2019: Baptiste Caramiaux
- Aachen University Graduation Keynote *Human-Computer Partnerships*, 17 June 2019: Wendy Mackay
- Creative Industries & AI, Paris *Human-Computer Partnerships*, 21 June 2019: Wendy Mackay
- User Interfaces group, Aalto University, Finland, *A new take on the speed-accuracy tradeoff of Aimed Movements – Implications and Applications for HCI*, October 2019: Julien Gori
- ACM UIST Symposium, New Orleans, Visions talk *A World Without Apps*, October 2019: Michel Beaudouin-Lafon
- AI & Gender Equality Seminar, UNESCO, Paris *Does AI introduce new risks and opportunities for gender equality?*, 2 November, 2019: Wendy Mackay
- LIMSI, *Human-centred Machine Learning*, Novembre 2019: Baptiste Caramiaux
- University of Toronto TUX Sanders Series Talk, *Unified Principles of Interaction*, November 2019: Michel Beaudouin-Lafon
- IRCAM Paris, *State of The art of tools supporting dance learning*, ELEMENT workshop, 2019: Sarah Fdili Alaoui
- ENSAD, Paris, *Live Coding with interactive movement based technologies*, Virtual creativity collective realities, 2019: Sarah Fdili Alaoui

- Aarhus, Denmark, *Live Coding with interactive movement based technologies*, Performing Art Platform, 2019: Sarah Fdili Alaoui
- Aarhus University, Denmark, *Crafting dance and technologies*, 2019: Sarah Fdili Alaoui
- Conservatory of Vicenza, Italy, Workshop on *Music dance and interaction*, 2019: Sarah Fdili Alaoui
- Conservatory of Vicenza, Italy, Master class of *Creation with technologies*, 2019: Sarah Fdili Alaoui
- Stereolux, Nantes, France, Workshop on *Live Coding with interactive movement based technologies* at LAB-DAYS - MovA, 2019: Sarah Fdili Alaoui

#### 9.1.4. Leadership within the Scientific Community

- Information Science and Technology (STIC) Department, Université Paris-Saclay: Michel Beauouin-Lafon (chair since June 2018), Wendy Mackay (member)
- Research division, Université Paris-Saclay: Michel Beauouin-Lafon (advisor for Digital Sciences since June 2018)
- Digiteo RTRA research network, Université Paris-Saclay: Michel Beauouin-Lafon (director since June 2018)
- Computer Science Department, Université Paris-Sud: Michel Beauouin-Lafon (vice-President for research)
- ACM Technology Policy Council: Michel Beauouin-Lafon (vice-chair)

#### 9.1.5. Scientific Expertise

##### International

- HCERES Evaluation: Wendy MACKay, external expert
- NSERC Evaluation: Michel Beauouin-Lafon, external expert
- ACM SIGCHI “Lifetime Service Award” committee chair: Michel Beauouin-Lafon
- ACM “Policy Award” committee adjunct chair: Michel Beauouin-Lafon

##### National

- CNRS INS2I “Cellule ERC”: Michel Beauouin-Lafon, member
- Agence Nationale de la Recherche (ANR), Appel à projets génériques: Sarah Fdili Alaoui, reviewer

#### 9.1.6. Research Administration

Telecom ParisTech, “Comité de la recherche”: Michel Beauouin-Lafon (member)

“Conseil de Laboratoire”, LRI: Wendy Mackay, Cédric Fleury (members)

“Commission consultatives paritaires (CCP)” Inria: Wendy Mackay (President)

“Conseil Scientifique”, LRI: Michel Beauouin-Lafon (member)

CCSU, “Commission Consultative de Spécialistes de l’Université”, Université Paris-Sud: Michel Beauouin-Lafon, Wendy Mackay (members)

“Commission Locaux”, LRI: Theophanis Tsandilas (member)

“Commission Scientifique”, Inria: Theophanis Tsandilas (member)

“Jury de recrutement, Maître de Conférences”, Télécom ParisTech: Michel Beauouin-Lafon (member)

“Assessment committee for associate professors”, Aarhus University: Michel Beauouin-Lafon (member)

“Comité de sélection, Maître de Conférences”, Université Paris-Sud: Cédric Fleury

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

International Masters: Theophanis Tsandilas, *Probabilities and Statistics*, 32h, M1, Univ. Paris-Saclay

Interaction & HCID Masters & Innovation and Entrepreneurship Minor: Sarah Fdili Alaoui, Coordinator

HCID Masters: Sarah Fdili Alaoui, *Innovation & Entrepreneurship Advanced*, 15h, M2, Univ. Paris-Sud

HCID Masters: Michel Beaudouin-Lafon, Wendy Mackay, *Fundamentals of Situated Interaction*, 21 hrs, M1/M2, Univ. Paris-Sud

Interaction & HCID Masters: Sarah Fdili Alaoui, *Creative Design*, 27h, M1 et M2, Univ. Paris-Sud

Interaction & HCID Masters: Michel Beaudouin-Lafon, *Fundamentals of Human-Computer Interaction*, 21 hrs, M1/M2, Univ. Paris-Sud

Interaction & HCID Masters: Michel Beaudouin-Lafon & Cédric Fleury, *Groupware and Collaborative Interaction*, 31.5 hrs, M1/M2, Univ. Paris-Sud

Interaction & HCID Masters: Wendy Mackay, *Career Seminar* 6 hrs, M2, Univ. Paris-Sud

Interaction & HCID Masters: Wendy Mackay, *Design of Interactive Systems*, 21 hrs, M1/M2, Univ. Paris-Sud

Interaction & HCID Masters: Wendy Mackay, *Advanced Design of Interactive Systems*, 21 hrs, M1/M2, Univ. Paris-Sud

Interaction & HCID Masters: Baptiste Caramiaux, *Gestural and Mobile Interaction*, 24 hrs, M1/M2, Univ. Paris-Sud

Polytech: Cédric Fleury, *Projet Java-Graphique-IHM*, 24 hrs, 3st year, Univ. Paris-Sud

Polytech: Cédric Fleury, *Interaction Homme-Machine*, 18 hrs, 3st year, Univ. Paris-Sud

Polytech: Cédric Fleury, *Option Réalité Virtuelle*, 56 hrs, 5th year, Univ. Paris-Sud

Polytech: Cédric Fleury, *Réalité Virtuelle et Interaction*, 48 hrs, “Apprentis” 5th year, Univ. Paris-Sud

### 9.2.2. Supervision

#### PhD students

PhD: Philip Tchernavskij, *Designing and Programming Malleable Software*, Université Paris-Saclay, 3 December 2019. Advisors: Michel Beaudouin-Lafon

PhD: Yujiro Okuya, *CAD Modification Techniques for Design Reviews on Heterogeneous Interactive Systems*, 8 November 2019. Advisors: Patrick Bourdot (LIMSI-CNRS) & Cédric Fleury

PhD: Anna Gogolou, *Iterative and Expressive Querying for Big Data Series*, 15 November 2019. Advisors: Anastasia Bezerianos (ILDA-Inria), Themis Palpanas (Université Paris-Descartes) & Theophanis Tsandilas

PhD in progress: Stacy (Shu-Yuan) Hsueh, *Embodied design for Human-Computer Co-creation*, November 2015. Advisors: Wendy Mackay & Sarah Fdili Alaoui

PhD in progress: Jean-Philippe Rivière, *Embodied Design for Human-Computer Partnership in Learning Contexts*, October 2017. Advisors: Wendy Mackay, Sarah Fdili Alaoui & Baptiste Caramiaux

PhD in progress: Yiran Zhang, *Telepresence for remote and heterogeneous Collaborative Virtual Environments*, October 2017. Advisors: Patrick Bourdot (LIMSI-CNRS) & Cédric Fleury

PhD in progress: Téó Sanchez, *Co-Learning in Interactive Systems*, September 2018. Advisors: Baptiste Caramiaux & Wendy Mackay

PhD in progress: Elizabeth Walton, *Inclusive Design in Embodied Interaction*, November 2018. Advisor: Wendy Mackay

PhD in progress: Miguel Renom, *Theoretical bases of human tool use in digital environments*, October 2018. Advisors: Michel Beaudouin-Lafon & Baptiste Caramiaux

PhD in progress: Han Han, *Participatory design of digital environments based on interaction substrates*, October 2018. Advisor: Michel Beaudouin-Lafon

PhD in progress: Viktor Gustafsson, *Co-adaptive Instruments fo Game Design*, October 2018. Advisor: Wendy Mackay

PhD in progress: Yi Zhang, *Generative Design using Instrumental Interaction, Substrates and Co-adaptive Systems*, October 2018. Advisor: Wendy Mackay

PhD in progress: Martin Tricaud, *Instruments and Substrates for Procedural Creation Tools*, October 2019. Advisor: Michel Beaudouin-Lafon

PhD in progress: Arthur Fages, *Collaborative 3D Modeling in Augmented Reality Environments*, December 2019. Advisors: Cédric Fleury & Theophanis Tsandilas

#### Masters students

Clément Sauvard, “*Designing 3D Scenes with multiple AR views*”: Cédric Fleury & Theophanis Tsandilas

Cyril Crebouw, “*Remote collaboration across wall-sized displays*”: Cédric Fleury & Michel Beaudouin-Lafon

Ellen Sigloch, “*Prototips website*”: Wendy Mackay

Yuyan Jing, “*Coadaptive Map: A Design tool for GIS users*”: Wendy Mackay

Alina Nicolae, “*TweakyTemplate: Reifying template tweaks for book design*”: Wendy Mackay

Wuji Geng, “*Studies of the Interaction Museum: The gap between HCI research and practice*”: Wendy Mackay

Xi Hu, “*Motion Palette: Motion Exploration Support Tool for Dynamic Visual Effects*”: Wendy Mackay

Siba Siddique, “*Investigating User Decision in Human-AI Interaction*”: Baptiste Caramiaux

### 9.2.3. Juries

#### PhD theses

Sylvain Pauchet, University of Toulouse/ENAC “*From surface to surface: Transformations de surface tactile pour l’interaction incarnée dans le cockpit*” (advisor: Stéphane Conversy): Wendy Mackay, reviewer

Hugo Scurto, IRCAM/Sorbonne University “*Designing With Machine Learning for Interactive Music Dispositifs*” (advisor: Frédéric Bevilacqua): Wendy Mackay, reviewer

Emmanouil Giannidakis, Télécom ParisTech, “*Promoting and characterizing the menu to keyboard shortcuts transition*” (advisor: Gilles Bailly): Theophanis Tsandilas, examiner

Julien Casarin, Université de Strasbourg, “*Proposition d’un protocole web pour la collaboration multi-support en environnement 3D*” (advisor: Dominique Bechman): Michel Beaudouin-Lafon, president

Emmanouil Potetsianakis, Télécom ParisTech, “*Amélioration des applications vidéo grâce aux métadonnées temporelles*” (advisor: Jean Le Feuvre): Michel Beaudouin-Lafon, examiner

Maxime Garcia, Université Grenoble Alpes, Inria Rhones Alpes, “*Transfert d’animation : animer des personnages virtuels par le jeu et le mime*” (advisor: Rémi Ronfard): Sarah Fdili Alaoui, invited examiner



## **9.3. Popularization**

### **9.3.1. Articles and contents**

- Radio show “Les P’tits Bateaux” on France Inter public radio: Michel Beaudouin-Lafon (interviews in response to children questions on 5 May, 30 June, 18 August, 24 November 2019)

### **9.3.2. Education**

- Chapter about the Web in a textbook for high-school students: Michel Beaudouin-Lafon [36]

### **9.3.3. Interventions**

- Presentation of research work on dance movement during the dance show “Frame(d)”, at Micadance (25 May 2019) and SUAPS Paris-Sud (June 2019): Rivière Jean-Philippe
- Université Paris-Saclay Learning Center: art-science project with photographer Didier Goupy presenting the portraits of Ph.D students of Université Paris-Saclay. Ph.D. graduation ceremony, Université Paris-Saclay, June 2019; Fête de la Science, Gif-sur-Yvette, October 2019

**GAMMA Project-Team (section vide)**

## GRACE 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

- Tokenomics 2019, International Conference on Blockchain Economics, Security and Protocols, Paris: D. Augot.
- FAB 2019, Second International Symposium on Foundations and Applications of Blockchain, Los Angeles: D. Augot
- ICBC 2019 (IEEE International Conference on Blockchain and Cryptocurrency, Seoul): D. Augot
- CBT 2019 (3rd International Workshop on Cryptocurrencies and Blockchain Technology, Barcelona)
- ECC 2019 (23rd International Workshop on Elliptic Curve Cryptography, Bochum): B. Smith
- Latincrypt 2019 (Santiago de Chile): B. Smith
- C2SI (*Codes, Cryptographie et Sécurité Informatique*) 2019 (Rabat, Morocco) A. Couvreur

#### 9.1.1.2. Reviewer

- Eurocrypt 2019: D. Augot, B. Smith
- Indocrypt 2019 (20th International Conference on Cryptology in India, Hyderabad): D. Augot
- ISIT (International Symposium on Information Theory) 2019: D. Augot, A. Couvreur.
- Latincrypt 2019. A. Couvreur.
- SAC 2019: B. Smith
- STACS 2020: B. Smith

### 9.1.2. Journal

#### 9.1.2.1. Member of the Editorial Boards

- F. Morain is member of the editorial board of the *Applicable Algebra in Engineering, Communication and Computing*, Springer.
- A. Couvreur is member of the editorial board of the *Publications mathématiques de l'Institut de mathématiques de Besançon, Algèbre et Théorie des nombres*.

#### 9.1.2.2. Reviewer - Reviewing Activities

- Applicable Algebra in Engineering, Communication, and Computing: B. Smith
- Journal of Cryptographic Engineering: B. Smith
- Journal of Cryptology: B. Smith
- Publications Mathématiques de Besançon: B. Smith
- Transactions on Mathematical Software: B. Smith
- Designs, Codes and Cryptography: A. Couvreur.
- IEEE, Transactions on Information Theory: A. Couvreur.
- IEEE, Transactions on Communication: A. Couvreur.

### 9.1.3. Invited Talks

- D. Augot was invited to the joint Caen-Rouen ArcoCrypt colloquium.

- F. Morain was invited to give a talk at the seminar of the ARIC project-team in Lyon.
- G. Renault was invited to give the main keynote at PHISIC'19 workshop (Gardanne)
- G. Renault was invited to give a talk at the Workshop on Randomness and Arithmetics for Cryptography on Hardware (Roscoff)
- G. Renault was invited to give a talk at the Journée Internationale Post-Quantique organized by Institut Cyber de Grenoble Alpes.
- B. Smith was invited to give a talk at the Workshop on Arithmetic of low-dimensional abelian varieties at ICERM (Providence, USA)
- B. Smith and A. Couvreur were invited to give a talk in the mini-symposium on isogeny-based cryptography at the SIAM Conference on Applied Algebraic Geometry (Bern, Switzerland)
- B. Smith was invited to give a talk in the Autumn session of *Arithmétique en Plat Pays* (Mons, Belgium)
- A. Couvreur was invited speaker at the conference *WCC (Workshop on Coding and Cryptography) 2019* Saint Jacut de la mer, France.
- A. Couvreur was invited speaker at the conference *NuTMIC (Number Theoretic Methods In Cryptography) 2019*, Paris.

#### 9.1.4. Seminars

D. Augot is member of the scientific committee of the C2 seminar, which is the French wide, now itinerant, seminar of the subgroup “Codage et Cryptographie” of the CNRS GDR group “Informatique mathématique”.

#### 9.1.5. Scientific Expertise

G. Renault was member of the Comité d'Évaluation du LJK (Grenoble) pour l'Hcéres.

#### 9.1.6. Research Administration

- F. Morain is vice-head of the Département d'informatique of Ecole Polytechnique; in charge of years 1 and 2 for Computer Science courses.
- F. Morain is member of the Board of Master Parisien de Recherche en Informatique (MPRI); also a member of the board of the Cybersecurity track in the CS Master of IPParis.
- Recruitment committees:
  - D. Augot participated in a selection committee for an Assistant Professor position at École polytechnique.
  - A. Couvreur is member of the *commission scientifique* of Inria Saclay's research centre.
- Funding
  - D. Augot belongs to the Inria-NomadicLabs committee.
  - D. Augot belongs to MATH-INFO subcommittee of Saclay labex Laboratoire Jacques Hadamard, and has been replaced by A. Couvreur.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Licence : F. Morain, Lectures for INF361: “Introduction à l'informatique”, 15h (equiv TD), 1st year (L3), École polytechnique. Coordinator of this module (350 students).

Licence : B. Smith: *CSE101: Introduction to Computer Programming*, 42h, L1, École polytechnique, France

Licence : G. Renault: INF361, *Introduction à l'informatique*, 50h, L3, École Polytechnique, France.

Master : A. Couvreur : *MPRI 2-13-2: Error Correcting codes and applications to cryptography*.

Master : D. Augot: lectures and labs on crypto in blockchains, 24h, M2, École polytechnique, France.

Master : F. Morain is the scientific leader of the Master of Science and Technology *Cybersecurity: Threats and Defense* of École Polytechnique.

Master : F. Morain and A. Couvreur, INF558, *Introduction to cryptology*, 36h, M1, École Polytechnique.

Master : B. Smith: *INF568: Advanced Cryptography*, 54h, M1, École polytechnique, France

Master : B. Smith and F. Morain: *MPRI 2-12-2: Algorithmes Arithmétiques pour la Cryptologie*, 22.5h, M2, Master Parisien de Recherche en Informatique, France

Master : F. Levy-dit-Vehel, discrete maths, 21h, M1, ENSTA.

Master : F. Levy-dit-Vehel, cryptography, 24h, M2, ENSTA.

### 9.2.2. Supervision

HdR : A. Couvreur, Codes algébriques et géométriques, applications à la cryptographie et à l'information quantique, Paris Diderot University, December 16, 2019.

### 9.2.3. Juries

- D. Augot was member of the thesis committee of Thomas Debris.
- G. Renault was president of the thesis committee of François Boutigny.
- G. Renault was member of the thesis committee of Ramtine Tofighi.
- B. Smith was a member of the thesis committee of Louiza Papachristodoulou (Radboud Universiteit Nijmegen)
- B. Smith was a member of the thesis committee of Joost Renes (Radboud Universiteit Nijmegen)
- B. Smith was a *rapporteur* on the thesis of Yan Bo Ti (University of Auckland).

## 9.3. Popularization

### 9.3.1. Interventions...

- D. Augot was invited to the mathematical colloquium of the University of Besançon.
- Colloque “Blockchains et compétences” à l’Assemblée nationale le 14 mars: D. Augot, who participated to three meetings at Ministry of Finance and Ministry of Industry about blockchains.
- A. Couvreur is *Correspondant de Médiation Scientifique* of Inria Saclay’s research centre.
- A. Couvreur organised the *Fête de la science 2019* at Inria Saclay on october 10 and 11 2019. J. Nardi, S. Bordage, M. Chenu de la Morinerie, M. Romeas participated to the event as volunteers.
- A. Couvreur organised the *Rendez-vous des Jeunes Mathématiciennes et Informaticiennes (RJMI)* at Inria Saclay on october 21 and 22, 2019.

## ILDA Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

- ACM CHI Steering Committee, ACM SIGCHI Conference on Human Factors in Computing Systems: Caroline Appert

#### 10.1.1.2. Member of the Organizing Committees

- IEEE VIS (IEEE Visualization Conference) 2019, 2020: Anastasia Bezerianos (Organization Committee - Workshops co-Chair)

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Chair of Conference Program Committees

- CHI 2020, 38th ACM SIGCHI Conference on Human Factors in Computing Systems: Anastasia Bezerianos (SC - subcommittee chair)

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

- CHI 2020, 38th ACM SIGCHI Conference on Human Factors in Computing Systems: Caroline Appert, Emmanuel Pietriga
- IEEE VIS 2019, Visualization Conference (InfoVis): Anastasia Bezerianos
- TheWebConf (WWW) 2020, 29th Web Conference, research track Web Mining and Content Analysis: Emmanuel Pietriga
- ESWC 2020, 17th Extended Semantic Web Conference: Emmanuel Pietriga
- TheWebConf (WWW) 2019, 28th Web Conference, research track Web Content Analysis, Semantics, and Knowledge: Emmanuel Pietriga
- ESWC 2019, 16th Extended Semantic Web Conference: Emmanuel Pietriga
- EICS 2019, 11th ACM Symposium on Engineering Interactive Computing Systems, Tech Notes, Olivier Chapuis

#### 10.1.2.3. Reviewer

- ACM EICS 2020, SIGCHI Symposium on Engineering Interactive Computing Systems: Emmanuel Pietriga
- ACM CHI 2019, Conference on Human Factors in Computing Systems: Caroline Appert, Olivier Chapuis, Emmanuel Pietriga, Hugo Romat.
- ACM CHI 2020, Conference on Human Factors in Computing Systems: Olivier Chapuis, Vanessa Peña-Araya
- ACM UIST 2019, Interface Software and Technologies Symposium: Olivier Chapuis, Emmanuel Pietriga, Hugo Romat.
- ACM DIS 2019, Designing Interactive Systems: Caroline Appert
- ACM MobileHCI 2019, International Conference on Human-Computer Interaction with Mobile Devices and Services: Caroline Appert, Olivier Chapuis
- IEEE VIS 2019, Visualization Conference (InfoVis): Emmanuel Pietriga, Vanessa Peña-Araya (short papers)

### **10.1.3. Journal**

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

- ACM ToCHI, Transactions on Computer-Human Interaction: Caroline Appert (associate editor)

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

- ACM ToCHI, Transactions on Computer-Human Interaction: Olivier Chapuis
- IEEE TVCG, Transactions on Visualization and Computer graphics: Anastasia Bezerianos

### **10.1.4. Invited Talks**

- Caroline Appert: Lowering the cost of transitions between devices, Microsoft Research Faculty Summit, Seattle, USA, July 2019.
- Anastasia Bezerianos: Interactive visualizations and large displays, Indiana University, USA, December 2019.
- Olivier Chapuis: Multi-user interaction on wall displays, Public lectures on interactive design, Chalmers University, Göteborg, Sweden, November 2019.
- Emmanuel Pietriga: Créativité et visualisation de réseaux sous formes de diagrammes noeuds-liens, École d'été de cartographie et visualisation, Lyon, France, July 2019.

### **10.1.5. Scientific Expertise**

- Evaluator for NSERC Discovery Grants (Canada): Anastasia Bezerianos, Olivier Chapuis

### **10.1.6. Research Administration**

- Deputy Director of the Laboratoire de Recherche en Informatique (LRI): Olivier Chapuis
- President of Inria Saclay - Île de France's Commission for Technological Development (CDT): Emmanuel Pietriga
- Deputy head of Pôle "Données, Connaissances, Apprentissage et Interaction" at École Doctorale Paris Saclay (ED STIC): Caroline Appert
- Member of Conseil de Département (LRI): Anastasia Bezerianos
- Member of Commissions Consultatives de Spécialités d'Université (CCSU) at Université Paris-Sud/Paris Saclay: Anastasia Bezerianos

### **10.1.7. Learned societies**

- Association Francophone d'Interaction Homme-Machine (AFIHM), in charge of the relation with the SIF: Olivier Chapuis.
- SigCHI Paris Local Chapter, chair: Caroline Appert.

### **10.1.8. Hiring committees**

- MCF Hiring committee, Univ. Paris Sud - LIMSI: Caroline Appert
- MCF Hiring committee, Univ. Technologique Troyes - Tech-CICO: Caroline Appert

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

### **10.2.1. Teaching**

Ingénieur: Emmanuel Pietriga, Data Visualization (INF552), 36h, 3A/M1, École Polytechnique.

Ingénieur: Caroline Appert, Data Visualization (INF552), 18h, 3A/M1, École Polytechnique.

Ingénieur: Vanessa Peña-Araya, Data Visualization (INF552), 16h, 3A/M1, École Polytechnique.

Master: Emmanuel Pietriga, Data Visualization, 24h, M2 Informatique Décisionnelle, Univ. Paris-Dauphine.

Master: Caroline Appert, Evaluation of Interactive Systems (Advanced), 21h, M2 Interaction, Univ. Paris-Sud.

Master: Anastasia Bezerianos, Evaluation of Interactive Systems (Intro), 16h, M2 Interaction, Univ. Paris-Sud.

Master: Anastasia Bezerianos, Programming of Interactive Systems, 21h, M2 Interaction, Univ. Paris-Sud.

Master: Anastasia Bezerianos, Career Seminar, 21h, M2 Interaction, Univ. Paris-Sud.

Master: Anastasia Bezerianos, Augmented Reality and Tangible Interaction, 12h, M2 Interaction, Univ. Paris-Sud.

Master: Anastasia Bezerianos, Interactive Information Visualization, 10.5h, M2 Interaction, Univ. Paris-Sud.

Master: Anastasia Bezerianos, HCI Project, 21h, M2 Interaction and HCID, Univ. Paris-Sud.

Master: Anastasia Bezerianos, Intro aux Systèmes Interactives, 15h, M1 Informatique, Univ. Paris-Sud.

Master: Eugénie Brasier, Programming of Interactive Systems, 10h30, M2 Interaction and HCID, Univ. Paris-Saclay.

Master: Eugénie Brasier, Career Seminar, 10h30, M2 Interaction and HCID, Univ. Paris-Saclay.

Master: Emmanuel Courtoux, Fundamentals of HCI, 21h, M2 Interaction and HCID, Univ. Paris-Saclay.

Master: Emmanuel Courtoux, Digital Fabrication, 21h, M2 Interaction and HCID, Univ. Paris-Saclay.

Master: Raphaël James, Programming of Interactive Systems, 12h, Univ. Paris-Saclay.

Master: Raphaël James, Fundamentals of HCI, 21h, Univ. Paris-Saclay.

Master: Tong Xue, Design of Interactive Systems, 21h, Univ. Paris-Saclay.

Licence: Eugénie Brasier, Algorithmique, 18h, PeiP2, Polytech.

License: Raphaël James, Algorithm/C/C++, 2h, Polytech.

### 10.2.2. Supervision

PhD in progress : Emmanuel Courtoux, Tangible Collaborative Interaction for Wall-sized Displays, since October 2019, Advisors: Olivier Chapuis, Caroline Appert

PhD in progress : Eugénie Brasier, Interaction techniques for remote manipulation in multi-display environments, since October 2018, Advisors: Caroline Appert

PhD in progress : Raphaël James, Environnements de réalité physique et augmentée utilisés dans l'analyse visuelle collaborative, since October 2018, Advisors: Anastasia Bezerianos, Olivier Chapuis, Tim Dwyer

PhD in progress : Tong Xue, Interactive Visualization for Data Journalism, since October 2018, Advisors: Anastasia Bezerianos, Emmanuel Pietriga

PhD in progress : Marie Destandau, Interactive Visual Exploration of Webs of Data, since October 2017, Advisors: Emmanuel Pietriga

PhD (defended) : Anna Gogolou, Iterative and expressive querying for big data series, October 2016 - November 2019, Advisors: Anastasia Bezerianos, Themis Palpanas

PhD (defended [76]) : Hugo Romat, Visual exploration and interactive manipulation techniques for collections of heterogeneous data and documents, June 2016 - November 2019, Advisors: Caroline Appert, Emmanuel Pietriga

PhD Internship: Nicole Barbosa Sultanum (from University of Toronto), Navigation and exploration of multivariate and dynamic graphs, 3 months, Advisor: Anastasia Bezerianos



Master 2 Internship: Marzieh Rafiei, Wall displays in Virtual Reality, 6 months, Advisors: Olivier Chapuis

Master 2 Internship: Emmanuel Courtoux, Tangible interaction for wall displays, 6 months, Advisors: Olivier Chapuis, Caroline Appert

### 10.2.3. *Juries*

PhD: Thibault Raffailac, Université de Lille: Emmanuel Pietriga (examineur)

PhD: Yujiro Okuya, Université Paris-Sud: Caroline Appert (president)

PhD: Gaëlle Richer, Université de Toulouse: Caroline Appert (reviewer)

PhD: Khanh Duy Le, Chalmers University at Göteborg: Olivier Chapuis (reviewer)

## 10.3. Popularization

### 10.3.1. *Articles and contents*

- 2019-06-29: France 2 (TV) - 20h30 le samedi, Le premier pas sur la lune, <https://www.france.tv/france-2/20h30-le-samedi/1016245-le-premier-pas-sur-la-lune.html>
- 2019-06-12: Ciel & Espace - Sanctuary, le projet français qui vise à faire de la Lune un lieu de la mémoire humaine, <https://www.cieletespace.fr/actualites/sanctuary-le-projet-francais-qui-vise-a-faire-de-la-lune-un-lieu-de-la-memoire-humaine>
- 2019-05-13: France 2 (TV) - Télématin, Sanctuary (11'30-15'30), <https://www.france.tv/france-2/telematin/981641-telematin.html>
- 2019-04-22: France 3 (TV) - Soir 3, Humanité : la Lune comme sanctuaire, [https://www.francetvinfo.fr/sciences/espace/humanite-la-lune-comme-sanctuaire\\_3411135.html](https://www.francetvinfo.fr/sciences/espace/humanite-la-lune-comme-sanctuaire_3411135.html)
- 2019-03-29: Science & Avenir - Sanctuary : le projet fou d'envoyer un selfie ou sa dédicace sur la Lune, [https://www.sciencesetavenir.fr/espace/systeme-solaire/sanctuary-le-projet-fou-d-envoyer-un-temoignage-artistique-et-scientifique-sur-la-lune\\_122541](https://www.sciencesetavenir.fr/espace/systeme-solaire/sanctuary-le-projet-fou-d-envoyer-un-temoignage-artistique-et-scientifique-sur-la-lune_122541)
- 2019-03-18: Inria.fr - Sanctuary : une trace sur la Lune pour le cinquantenaire de la mission Apollo 11, <https://www.inria.fr/fr/sanctuary-pour-laisser-une-trace-sur-la-lune>
- 2019-03-16: Ouest France - Climat. Ce que les Français font déjà, ce qu'ils se déclarent prêts à faire (Storifier), <https://www.ouest-france.fr/politique/grand-debat-national/climat-ce-que-les-francais-font-deja-ce-qu-ils-se-declarent-prets-faire-6264587>
- 2019-02-15: Métro parisien, La fresque du couloir de la station Montparnasse-Bienvenue (ZRaildar), <http://80ans.cnrs.fr/ressource/la-fresque/>

## LIFEWARE Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

Chetan Aditya was the co-organiser of a thematic workshop entitled "From Bench to Bedside" at the Center for Interdisciplinary research, Paris, April 2019.

Grégory Batt was a co-organizer of the thematic session entitled "Predictive approaches for biological systems engineering" at the JOBIM conference, Nantes, July 2019.

François Fages and Sylvain Soliman were scientific co-chairs of

- **the Constraints and Life Sciences Track of CP'2019** 25th International Conference on Principles and Practice of Constraint Programming, Stamford, CT, USA, September 30 to October 4, 2019.

François Fages was scientific co-chair of

- Workshop on Computational Systems Biology for Complex Disease **CSBCD**, ENS Paris-Saclay, Cachan, France, 28-29 Nov. 2019.
- **Formal methods for the synthesis of biomolecular circuits** Shonan Village, Japan, 2-6 Sep 2019.
- **France-Taiwan Summer School on New Strategies in Medical Diagnosis and Precision Medicine**, NTU, Taipei, Taiwan, 9-10 July 2019.

### 10.1.2. Scientific Events: Selection

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

- Grégory Batt was a member of the program committee of the IFAC Conference on Foundations of Systems Biology in Engineering (FOSBE 2019), Valencia, Spain, and of the scientific committee of Advanced Lecture Course on Computational Systems Biology summer school, Aussois, France.
- François Fages was PC member of
  - **CIBCB'19** 16th IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology – Certosa di Pontignano, Siena - Tuscany, Italy, July 9-11, 2019
  - **CMSB'19** 17th International Conference on Computational Methods in Systems Biology. Trieste, Italy, September 2019.
  - **HSB'19**, 6th International Workshop on Hybrid Systems and Biology, will be held at the Charles University, Prague (CZ) on the 6th and 7th April 2019, and is colocated with ETAPS 2019.
  - **BIOINFORMATICS'19** 10th International Conference on Bioinformatics Models, Methods and Algorithms" co-located with **BIOSTEC'19**, Prague, Czech republic, Feb 2019.
- Jakob Ruess was a PC member of **CMSB'19**, the 17th International Conference on Computational Methods in Systems Biology. Trieste, Italy, September 2019.
- Sylvain Soliman was a PC member of **CSBio 2019** 10th International Conference on Computational Systems-Biology and Bioinformatics — Nice (France), December 4–7, 2019

#### 10.1.2.2. Reviewer

Jakob Ruess was a reviewer for two conferences: *European Control Conference (ECC)* and *Bioinformatics 2020*.

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

François Fages is member of

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

#### 10.1.3.2. Reviewer - Reviewing Activities

Grégory Batt was a reviewer for *Bioinformatics* and *ACS Synthetic Biology* journals.

François Fages made reviews for the journals *Biosystems* and *Transactions on Computational Biology and Bioinformatics*.

Mathieu Hemery made 5 reviews for the journal *Physical Review E*, and was a reviewer for the journals *Physical Review Letters* and *Royal Society Open Science*.

Jakob Ruess was a reviewer for the journals *Entropy* and *Scientific Reports*.

Sylvain Soliman was a reviewer for *Briefings in Bioinformatics*, and for the *Journal of Theoretical Biology*.

### 10.1.4. Invited Talks

- Chetan Aditya gave a presentation entitled "Synthetic optogenetic differentiation system for bioproduction in budding yeast" at the EMBL workshop "Creating is Understanding: Synthetic Biology Masters Complexity", September 2019, Heidelberg, Germany
- Grégory Batt gave the following invited talks:
  - Driving cellular processes with quantitative accuracy using real-time control approaches, 6th Cross Disciplinary Genomics Meeting of Sorbonne University, Nov 2019, Paris, France
  - Driving cellular processes with quantitative accuracy using real-time control approaches, SynGen Series UK, Nov 2019, London, UK
  - An experimental platform for automated calibration of antimicrobial resistance models, APHP/IP AMR STORM, Oct 2019, Paris, France
  - Balancing a genetic toggle switch by real-time control and periodic stimulations, International Workshop on Control Engineering and Synthetic Biology, Sept 2019, Oxford, UK
  - Experimental and computational methods for modeling cellular processes, Shonan meeting on Formal methods for the synthesis of biomolecular circuits, Sept 2019, Shonan, Japan
  - Driving cellular processes with quantitative accuracy using real-time control approaches, Seminar of Unité Physico Chimie Curie, Jan 2019, Paris, France
- François Bertaux gave an invited talk at the JOBIM thematic session entitled "Methods for single-cell omics data analysis", Nantes, July 2019.
- Andjela Davidovic gave a presentation entitled "Calibration of stochastic biochemical models using single-cell video-microscopy experiments" at the Stochastic models for biology conference (BioHasard 2019), August 2019, Rennes, France
- François Fages gave invited talk to
  - **Turing-completeness of Chemical Reaction Networks in Natural cells and Artificial vesicles (keynote CSBio 2019)** The 10th International Conference on Computational Systems-Biology and Bioinformatics. Nice, France. December 4 to 7, 2019
  - **Cells as Analog Chemical Computers: Turing Completeness and Synthesis** Formal methods for the synthesis of biomolecular circuits Shonan Village, Japan, 2-6 Sep 2019.

- **Modeling and Design of Biological Systems**, France-Taiwan Summer School on New Strategies in Medical Diagnosis and Precision Medicin, NTU, Taipei, Taiwan, 9-10 July 2019.
- **La Cellule un Calculateur Chimique** Journées scientifiques Inria, Lyon, 5-7 juin 2019.
- **La Cellule un Calculateur Chimique** Dassault-Systèmes, Vélizy, June 4th 2019.
- **Calculs Analogiques dans les Programmes Biochimiques Naturels et Synthétiques** Colloque d’ouverture 50 ans du Laboratoire Jacques-Louis Lions, Roscoff, France, 4-8 mars 2019.
- **Calculs analogiques dans les réseaux biochimiques naturels et synthétiques** Prix La recherche - 15th edition. Université Paris Dauphine, 4 Feb. 2019.
- Jakob Ruess gave an invited talk at the SYMBIONT meeting entitled "Molecular noise shapes bacteria-phage ecologies", Paris, April 2019.

### 10.1.5. Leadership within the Scientific Community

- Grégory Batt is co-animator of the working group on Symbolic Systems Biology (GT Bioss).
- Grégory Batt is a member of
  - the Technical Committee on Systems Biology of IEEE and CSS societies
  - the scientific board of the French research network on Bioinformatics (GdR BIM)
  - the scientific committee of the Advanced Course on Computational Systems Biology summer school, in Aussois
- François Fages is member of
  - the Steering Committee of the International Conference on Computational Methods in Systems Biology, CMSB, since 2008.
  - the Scientific Committee of the Doctorate School ED 474 FIRE, ex Frontiers in Life Sciences, FdV
  - the Scientific Committee of the Summer School **Modélisation Formelle de Réseaux de Régulation Biologique** Ile de Porquerolles du 23 au 28 juin 2019 .

### 10.1.6. Scientific Expertise

François Fages was

- member of the Jury for Inria Awards 2019
- evaluator of two DFG grant proposals
- reviewer of a program proposal from Institut Pascal - Paris Saclay
- reviewer of professorship application, Indraprastha Institute of Information Technology - Delhi, India.

### 10.1.7. Research Administration

- Grégory Batt is the deputy director of the department of Computational Biology at Institut Pasteur
- François Fages is member of the “Comité des Projets du centre” Inria Saclay-IdF, and Inria representative for **Doctorate School Institut Polytechnique de Paris**
- Sylvain Soliman is member of the “Commission Scientifique” of Inria Saclay-IdF

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Summer school: François Fages (teacher 6h) **Modélisation Formelle de Réseaux de Régulation Biologique**, Ile de Porquerolles.

Summer school: Jakob Ruess (teacher 6h) Blackboard course on Optimally learning dynamical models from data at the "Advanced lecture course on computational systems biology" in Aussois, France, April 2019.

Master: Grégory Batt (coordinator and teacher: 35h) and Jakob Ruess (25h), *Computational Biology*, M1, Interdisciplinary Approaches to Life Sciences (AIRE-LiSc).

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

Master: François Bertaux (co-coordinator and teacher: 20h), *Systems Biology*, M1, Master Interdisciplinary Approaches to Life Sciences (AIRE-LiSc).

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

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

Bachelor 3: François Fages (co-coordinator module and teacher 4h30) and Sylvain Soliman (co-coordinator module, teacher 4h30) and Mathieu Hemery (TD 10h) *CSE 301b: Constraint Logic Programming*.

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

L1: Julien Martinelli (teacher 64h) Mathematics and Calculus, Univ. Paris Descartes

### 10.2.2. Supervision

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

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

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

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

PhD in progress : Elisabeth Degrand, "Chemical Programming in Non-living Vesicles", ED IPP, Ecole Polytechnique, Oct. 2019, F. Fages & S. Soliman (50-50%)

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

PhD in progress : Eléa Greugny, "Development and Implementation of a Mathematical Model of Inflammation in the Human Skin", ED IPP, Ecole Polytechnique, Aug. 2019, F. Fages & J. Bensaci & G. Stamatias, Johnson&Johnson Santé Beauté France (1/3-2/3))

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

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

Master's Thesis: Oriane Bargain, "Graph matching, theory and SAT implementation", TU Dresden, Germany, Sep. 2019, F. Fages & S. Soliman (50-50%)

Master's Thesis: Elisabeth Degrand, "Evolving Chemical Reaction Networks", KTH Stockholm, Sweden, June 2019, F. Fages & M. Hemery (50-50%)

### 10.2.3. Juries

- Grégory Batt participated in the juries of
  - PhD Antoine Barizien, Ecole Polytechnique and Institut Pasteur, *Rapporteur*, Paris, May 2019
  - PhD Mathilde Koch, Ecole Polytechnique and INRA, *Examineur*, Paris, November 2019
- François Fages participated in the juries of
  - HDR Sabine Pérès, Université Paris-Saclay, *Reviewer*, 18 Nov. 2019
  - HDR David Safranek, Mazaryk Univ., Czech Republic *Reviewer*, July 2019
  - HDR Sriram Krishnamachary, Indraprastha Institute of Information Technology, Delhi, India, *Reviewer*, April 2019
  - PhD Adrien Husson, Université Paris-Diderot, *Rapporteur*, 16 Dec. 2019
  - PhD Jorgelindo da Viegua Moreira, Université Paris-Saclay, *Rapporteur*, 18 April 2019
  - Master Thesis, Oriane Bargain, Graph matching, theory and SAT implementation, Technische Universität Dresden, Germany, *Supervisor* October 2019
  - Master Thesis, Zi-Jun Lin, National Taiwan University, *Reviewer*, July 2019
  - Master Thesis, Wei-Chih Huang, National Taiwan University, *Reviewer*, July 2019
  - Master Thesis, Elisabeth Degrand, Evolving Chemical Reaction Networks, Kungliga tekniska hö'gskolan, Stockholm, Sweden, *Supervisor* April 2019,

## 10.3. Popularization

### 10.3.1. Articles and contents

- For a Festschrift in honor of Catuscia Palamidessi, François Fages was unexpectedly inspired to compose a small music score and write a short essay on information leakage in music scores [10].
- Jakob Ruess gave an **interview** for the Swiss Institute of Bioinformatics (SIB) as a past laureate of the SIB Award.

### 10.3.2. Interventions

- Eléonore Bellot, Mathieu Hemery and Elise Weill Duflos participated at Fête de la Science at Inria SIF, Oct. 2019
- François Fages has received college school students for a visit to our research team with the question "Can we program any function ?", answered negatively by proving Cantor's theorem.
- Mathieu Hemery has animated debates with college school students on Science and Ethics at Inria and Association Arbre des Connaissances, Oct. 2019.

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

François Fages has created several BIOCHAM interactive notebooks that are integrated in the current release of BIOCAHM-4 to illustrate and exercise the main concepts of analog chemical computer and chemical programming, as taught in his Master course at MPRI.

## **M3DISIM Project-Team**

# **9. Dissemination**

## **9.1. Promoting Scientific Activities**

### **9.1.1. Scientific events organisation**

#### *9.1.1.1. General chair, scientific chair*

F. Clément, Session *Biomathématiques, Bioinformatique et Biophysique pour la reproduction*, ReproSciences 2019 Toulouse (France), April 24-26

D. Chapelle, M. Genet: Session co-chairs at the 6th International Conference on Computational and Mathematical Biomedical Engineering (CMBE2019), Sendai City (Japan), June 10-12

#### *9.1.1.2. Member of organizing committees*

J.M. Allain, Member of the workshop Biomechanics from cells to tissues organising committee

D. Chapelle, Chair of the organizing committee of the VPH2020 conference (Paris, August 2020)

F. Clément, ReproSciences 2019, Toulouse (France), April 24-26

M. Genet, D. Chapelle, Co-organizers of the Paris-Saclay University Biomechanics Seminar Series (Until June 2019)

P. Moireau, Member of the organizing committee of the VPH2020 conference (Paris, August 2020)

### **9.1.2. Scientific events selection**

#### *9.1.2.1. Reviewer*

J.M. Allain, Member of the European Society of Biomechanics conference scientific committee

R. Chabiniok, reviewer for FIMH2019

M. Genet, reviewer for the 10th international conference on Functional Imaging and Modeling of the Heart (FIMH, June 6-8, 2019, Bordeaux)

### **9.1.3. Journal**

#### *9.1.3.1. Member of editorial boards*

D. Chapelle, Member of the editorial board of journal *Computers & Structures*

D. Chapelle, Member of the editorial board of journal *ESAIM: M2AN*

F. Clément *Frontiers*, review editor (Systems Endocrinology)

P. Le Tallec, Member of the editorial board of journal *Computer Methods in Applied Mechanics and Engineering*

P. Le Tallec, Member of the editorial board of journal *Computer and Structures*

#### *9.1.3.2. Reviewer - Reviewing activities*

J.M. Allain, reviewer for “Acta Biomaterialia”, “Journal of Anatomy”, “Journal of Biomechanics” and “Journal of the Mechanical Behavior of Biomedical Materials”

R. Chabiniok, reviewer for “Philosophical Transactions of the Royal Society A”

F. Clément, reviewer for “Endocrinology”, “PloS Comp. Biol.”, “Appl. Math. Mod.”

M. Genet, reviewer for “Acta Biomaterialia” and “Inverse Problems in Science & Engineering”

D. Chapelle, reviewer for “Biomechanics and Modeling in Mechanobiology”, “Computers & Structures”, “International Journal for Numerical Methods in Biomedical Engineering”

S. Imperiale, reviewer for “Numerische Mathematik” and “Proceeding of the royal society A”



P. Moireau, reviewer for “Journal of Computational Physics”, “Biomechanics and Modeling in Mechanobiology”

#### 9.1.4. Invited talks

F. Clément. Invited seminar at MaiAGE (France), invited mini-symposium talk to Equadiff, Leiden, The Netherlands

M. Genet, invited keynote at the 90th Annual Meeting of the International Association of Applied Mathematics and Mechanics (GAMM, February 18-22), Vienna, Austria

M. Genet, invited keynote at the francilian mechanics meeting (RFM, Mai 27-28), Fontainebleau

M. Genet, invited keynote at the “Biomechanics from cell to tissue” workshop (November 8), Gif-sur-Yvette

P. Le Tallec, invited speaker at at the 13th International Conference on Advanced Computational Engineering and Experimenting (ACEX, July 1-5), Athens, Greece

D. Chapelle, invited lecturer at iHeart workshop (22-24 July), Varese, Italy

P. Moireau, invited lecture at the GDR MAMOVI 2019 days, Tours, France

P. Moireau, invited lecture at BME symposium 2019, Ecole Polytechnique, France

P. Moireau, invited seminars at LMA Marseille France and CMAP Polytechnique, France

#### 9.1.5. Leadership within the scientific community

D. Chapelle, Member of the board of directors of the VPH Institute

D. Chapelle, Member of the steering committee of the BioMedical Engineering (BME) Institute coordinated by Ecole Polytechnique

F. Clément, member of the direction and scientific board of **GdR REPRO** (Integrative and translational approaches of human and animal reproduction)

F. Clément, expert of the **BCDE** (Cell Biology, Development and Evolution) ITMO (Multi Organization Thematic Institute) of the French National Alliance for Life and Health Sciences **Aviesan**.

P. Moireau, Member of the steering committee of Department of Mathematics of Université Paris Saclay and Jacques Hadamard Foundation

#### 9.1.6. Scientific expertise

J.M. Allain, Reviewer for the NSERC (Canadian ANR)

R. Chabiniok, Reviewer for Swiss National Science Foundation

F. Clément, member of the INRA DR2 admissibility and admission juries “Agronomie, biologie et amélioration des plantes, sciences du numérique, sciences économiques et sociales”

M. Genet, Reviewer for the Swedish Foundation for Strategic Research

S. Imperiale, Consultant for CEA

P. Moireau, Reviewer for **ISCD** (Data science Institute, Paris Sorbonne Université)

P. Moireau, Reviewer for ANR and Member of the evaluation committee 46 "Numerical models, simulations, applications"

P. Moireau, member of the MAP5 Paris Descartes, MCF (assistant professor) admission jury

#### 9.1.7. Research administration

J.M. Allain, Scientific Advisory Board, chair BioMecAM

R. Chabiniok, in charge of the objectives of Inria Associate team ToFMODE (with UT Southwestern Medical center Dallas, USA)

D. Chapelle, Head of Science of Inria Saclay-Ile-de-France, and member of the Inria Evaluation Committee



P. Moireau, Member of the LMS board of direction

P. Le Tallec, Director of the Laboratory of Solid Mechanics at Ecole Polytechnique

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Bachelor: J.-M. Allain, Supervision of the introductory projects in physics, 15h, B1, Ecole Polytechnique, France

Bachelor: J.-M. Allain, “Classical mechanics”, 24h, B2, Ecole Polytechnique, France

Bachelor: J.-M. Allain, “Advanced labwork”, 12h, B3, Ecole Polytechnique, France

Bachelor: M. Genet, “Continuum Mechanics I”, B3, 40h, École Polytechnique, France

Bachelor: M. Genet, “Continuum Mechanics II”, B3, 40h, École Polytechnique, France

Bachelor: S. Imperiale, “MA102 – Analyse pour les EDP”, 24h, B3, ENSTA ParisTech, France

Bachelor: P. Le Tallec, “Mécanique des Milieux Continus 2. ”, 24h, L3, École Polytechnique, France

Bachelor: P. Le Tallec, “Mechanics of Continuous Media and Structure. ”, 24h, Y4, Shanghai Jiao Tong Elite Institute of Technology, China

Master: J.-M. Allain, “Statistical mechanics: application to cell motility”, 20h, M2, Ecole Polytechnique, France

Master: D. Chapelle, “Biomechanical Modeling of Active Tissues”, 33h, M2, Université Paris-Saclay, France

Master: M. Genet, “Plasticity and Fracture”, 18h, M1, Ecole Polytechnique, France

Master: P. Le Tallec, “Solid and Continuum Mechanics”, 12h, M1, Master of Nuclear Energy, Université Paris-Saclay, France

Master: P. Moireau, “Biomechanical Modeling of Active Tissues”, 8h, M2, Université Paris-Saclay, France

Master: P. Moireau, “Méthodes et problèmes inverses en dynamique des populations”, 16h, M2, UPMC, France

Master: P. Moireau, “AMS305 – Complétion de données et identification dans les problèmes gouvernés par des équations aux dérivées partielles”, 16h, M2, Université Paris-Saclay, France

### 9.2.2. Supervision

PhD: F. Caforio, “Modélisation mathématique et numérique de la propagation d’ondes élastique dans le coeur”, supervisors: D. Chapelle and S. Imperiale, defended in January

PhD: F. Kimmig, “Multi-scale modeling of muscle contraction – From stochastic dynamics of molecular motors to continuum mechanics, in interaction with experimental assays”, supervisors: M. Caruel and D. Chapelle, defended in December

PhD: F. Robin “Multiscale modeling of the morphodynamics in ovarian follicles”, supervisors: F. Clément & Romain Yvinec [INRA], defended in September

PhD: F. Wijanto, “Multiscale Mechanics of soft tissues”, supervisors: J.-M. Allain and M. Caruel, defended in December

PhD in progress: G. Ballif “Stochastic multiscale modeling in developmental and reproductive biology”, started October 2019, supervisors: F. Clément & R. Yvinec [INRA]

PhD in progress: J. Manganotti, “Energy preserving cardiac circulation models”, started october 2019, supervisors: S. Imperiale and P. Moireau,

PhD in progress: N. Tueni, “Multiscale properties of the passive cardiac muscle”, started 01/2018, supervisors: J.M. Allain and M. Genet

PhD in progress: C. Giraudet, “Cornea biomechanics”, started 10/2018; supervisors: J.M. Allain and P. Le Tallec

PhD in progress: E. Berberoglu (ETHZ, Switzerland), “Image Guided Computational Cardiac Mechanics”, started February 2017, supervisors: M. Genet and S. Kozerke (ETHZ, Switzerland)

PhD in progress: C. Della Valle, “Modélisation et estimation des dynamiques d’assemblage de protéines”, supervisors: M. Doumic and P. Moireau

PhD in progress: M. Gusseva, “Cardiac Biomechanical Modeling for Chronic Ventricular Loading”, supervisors: R. Chabiniok, D. Chapelle, T. Hussain, started in December 2017

PhD in progress: A. Le Gall, “Cardiac modelling for monitoring purposes during general anaesthesia and at Intensive Care Unit”, supervisors: R. Chabiniok, D. Chapelle, E. Gayat, started in November 2016

PhD in progress: C. Patte, “Lung multiscale poromechanical modeling: from breathing to pulmonary fibrosis-induced chronic remodeling”, supervisors: M. Genet and D. Chapelle, started November 2017

PhD in progress: J. Joachim “Développement d’une nouvelle méthode d’administration automatisée des médicaments utilisés chez les patients sous anesthésie générale basée sur un monitoring totalement non-invasif”, supervisor: E. Gayat, started September 2018

### 9.2.3. *Juries*

J.M. Allain, PhD Jury of T. Cochereau (referee), Grenoble University, PhD Advisor L. Bailly, March 18

J.M. Allain, PhD Jury of T. Rongsawat (referee), Montpellier University, PhD Advisor H. Sentenac, December 13

D. Chapelle, PhD Jury of M. Pfaller (referee), TUM, PhD Advisor W. Wall, April 26

D. Chapelle, PhD Jury of F. Vallée, PhD Advisor E. Gayat, Sorbonne Université, June 20

D. Chapelle, PhD Jury of T. Boucneau, PhD Advisor X. Maître, Université Paris-Saclay, July 3

F. Clément, PhD Jury of H. Martin, Sorbonne Université, July 15

F. Clément, PhD Jury of A. Perrillat-Mercerot, Université de Poitiers, October 22

P. Moireau, PhD Jury of Lorenzo Sala, PhD Advisor C. Prud’homme, Université de Strasbourg, September 27

P. Moireau, PhD Jury of Sebastian Reyes Riffo, PhD Advisor J. Salomon, Université Paris Dauphine, November 29

P. Moireau, PhD Jury of François Kimmig, PhD Advisor D. Chapelle, Institut Polytechnique de Paris, December 6

## 9.3. Popularization

C. Patte, J. Diaz and J. Manganotti, leading of a scientific activity for the Fête des Sciences day organized by Inria. October 11

C. Patte, creation of a scientific activity for middle and high school students as part of a popularization doctoral mission

C. Patte, supervision of a research activity for the RJMI (Rendez-vous des Jeunes Mathématiciennes et Informatiennes) organized by Inria. October 21 & 22

## MEXICO Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

#### 9.1.1.1. General Chair, Scientific Chair

- Serge Haddad is a member of the steering committee of the International Conference on Application and Theory of Petri Nets and Concurrency.
- PHILIPPE DAGUE co-organized with Franck Delaplace the conference on *Computational Systems Biology for Complex Diseases* on November 28-29, 2019 at ENS Paris-Saclay, which gathered around 80 participants.
- PHILIPPE DAGUE, as responsible of the working group BIODS-IA (Systemic Symbolic Biology and Artificial Intelligence) of the GDR IA, organized the 2019 Day at Orléans on May 27.
- MATTHIAS FUEGGER co-organized the CELLS workshop at DISC'19. The workshop covers topics from computing among a consortium of cells.
- STEFAN HAAR co-directed with Benedikt Bollig the scientific and logistic organisation of the **ForMal** workshop at ENS Paris-Saclay on cross-fertilization between formal methods and machine learning.

#### 9.1.1.2. Member of the Organizing Committees

- STEFAN HAAR was co-chair and SERGE HADDAD was a member of the Scientific Committee (including organisational issues) of the Digicosme Spring School on Formal Methods and Machine Learning held in June at Cachan (**ForMaL**).

### 9.1.2. Scientific Events: Selection

#### 9.1.2.1. Chair of Conference Program Committees

- STEFAN HAAR was co-chair of program committee for the *40th International Conference on Application and Theory of Petri Nets and Concurrency*, Aachen, Germany, June 23-28, 2019.

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

- Serge Haddad was a member of the PC of
  - the workshop PNSE associated with ATPN 2019, Aachen, Germany, and
  - the 12th International Conference on Performance Evaluation Methodologies and Tools (VALUETOOLS 2019), Palma de Mallorca, Spain.
- PHILIPPE DAGUE was a member of the program committee of the *30th International Workshop on Principles of Diagnosis DX'19*, Klagenfurt/Austria, November 2019.
- STEFAN HAAR was
  - a member of the program committee of the *19th International Conference on Applications of Concurrency to Systems Design (ACSD 2019)*, Aachen, Germany, June 23-28, 2019, and
  - a member of the program committee of the *Workshop Algorithms & Theories for the Analysis of Event Data 2019 (ATAED 2019)*.
- MATTHIAS FUEGGER was
  - Steering committee member of IEEE ASYNC'19 and
  - PC member of IEEE ASYNC'19 and IEEE DDECS'19.

- THOMAS CHATAIN was
  - a member of the programm committee of the *19th International Conference on Applications of Concurrency to Systems Design (ACSD 2019)*, Aachen, Germany, June 23-28, 2019, and
  - a member of the program committee of the *1st International Conference on Process Mining (ICPM 2019)*
- LINA YE was a member of the program committee of the *17th International Workshop on Coordination and Self-adaptativeness of Software Applications (FOCLASA 2019)*.
- Stefan Schwoon acted as reviewer for MFCS 2019, FSTTCS 2019, FOSSACS 2019,, TACAS 2019, and STACS 2020.
- LINA YE was
  - a reviewer of the *58th Conference on Decision and Control (CDC 2019)*, and
  - a reviewer of the *the 30th International Workshop on Principles of Diagnosis (DX 2019)*.

### 9.1.3. Journal

#### 9.1.3.1. Member of the Editorial Boards

- STEFAN HAAR is an associate editor for *Journal of Discrete Events Dynamic Systems: Theory and Application (JDEDS)*.

#### 9.1.3.2. Reviewer - Reviewing Activities

- Serge Haddad was a reviewer for the following journals:
  - Journal of Logical and Algebraic Methods in Programming,
  - Innovations in Systems and Software Engineering, and
  - Transactions on Petri Nets and Other Models of Concurrency.
- Thomas Chatain was a reviewer for journals *Journal of Discrete Events Dynamic Systems: Theory and Application (JDEDS)* and *Fundamenta Informaticae*.
- Stefan Schwoon was a reviewer for *Journal of Discrete Event Dynamic Systems (JDEDS)*, *Transactions on Software Engineering (TSE)*, *Petri Nets and Other Models of Concurrency (ToPNoC)*, and *Transactions on Programming Languages and Systems (TOPLAS)*.
- LINA YE is a reviewer for *Journal of IEEE Access (IEEE Access)*.

### 9.1.4. Invited Talks

- Stefan Schwoon gave a talk in the SYBILA seminar of Masaryk University, Brno, on *Diagnosis and Opacity in Partially Observable Systems*.

### 9.1.5. Scientific Expertise

- Serge Haddad is a member of the scientific and administrative council (CSA) of Labex CIMI of Toulouse and a member of the scientific orientation council (COS) of LIS of Marseille (UMR 7020).

### 9.1.6. Research Administration

- Serge Haddad is Head of the Computer Science Department of ENS Paris-Saclay.
- Stefan Haar is the president of Inria's COST-GTRI.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

- MATHIAS FUEGGER,  
Master :

- *Initiation à la recherche*, 10 h EQTD, M1, ENS Paris-Saclay, France
- STEFAN HAAR,
  - Licence : *Langages Formels*, EQTD, L3, ENS Paris-Saclay, France;
  - Master :
    - *Analyse de la dynamique des systèmes biologiques*, 10 h EQTD, M1, Université Paris-Saclay, France
    - *Initiation à la recherche*, 10 h EQTD, M1, ENS Paris-Saclay, France
    - *Module SPECIF*, 12 h EQTD, M1, UPMC, France.

Serge Haddad is head of the Computer Science department of ENS Paris-Saclay. He teaches basic and advanced algorithmics (L3) and probabilistic features of computer science (M1).

STEFAN SCHWOON

- Responsable L3 Informatique, ENS Paris-Saclay
- Enseignement au M1 MPRI : cours *Initiation à la Vérification* (22,5h)
- Enseignement au L3 Info : cours *Architecture et Système* (45h), projet *Programmation orienté objet* (15h), TD *Langages Formels* (22,5h)
- Enseignement à l'Aggrégation Maths Option Informatique: cours *Algorithmique* (22,5h)

### 9.2.2. Supervision

- SERGE HADDAD is supervising with Alain Finkel the PhD thesis of Igor Khmelnsky on Verification of infinite-state systems and machine learning.
- STEFAN HAAR has been supervising, with Co-supervisor Loic Paulevé at LABRI, the PhD theses of HUGUES MANDON, *Models and Algorithms for cellular reprogramming strategies prediction*, ENS Paris-Saclay, defended on Nov. 19, 2019, and JURAJ KOLCÁK, *Parametric Logical Regulatory Networks*, PhD research started in March 2017.
- THOMAS CHATAIN has been supervising, with co-supervisor Josep Carmona at Universitat Politècnica de Catalunya (Barcelona, Spain), the PhD thesis of MATHILDE BOLTENHAGEN, *Optimization Techniques for Conformance Checking and Model Repair in Process Mining*, PhD research started in November 2018.
- LINA YE has been supervising, with Co-supervisor Philippe Dague at LRI, the PhD these of LULU HE, *Robustness Analysis of Real-Time Systems*, PhD research started in February 2019.

### 9.2.3. Juries

- PHILIPPE DAGUE was *garant* and member of the HdR jury of Sabine Peres, and a member of the HdR jury of Jean-Marie Lagniez.
- Serge Haddad was the president of the PhD committee of Mauricio Gonzalez defended at ENS Paris-Saclay in November.
- THOMAS CHATAIN has been a jury member for the PhD defense of SAMY JAZIRI (supervisors Patricia Bouyer-Decitre et Nicolas Markey) at Université Paris-Saclay in September 2019.
- THOMAS CHATAIN has been a jury member for the SIF PhD award (Prix de thèse Gilles Kahn 2019).

## 9.3. Popularization

### 9.3.1. Internal or external Inria responsibilities

- STEFAN HAAR has been the president of COST-GTRI.

## OPIS Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

- F. Malliaros. Organizer of the Summer School in Artificial Intelligence, CentraleSupélec, France, 2019.

#### 10.1.1.2. Member of the Organizing Committees

- H. Talbot. Member of the organizing committee for ICCV 2023 in Paris.
- F. Malliaros. Member of the organizing committee of the International Workshop of Deep Learning for Graphs and Structured Data Embedding (DL4G-SDE), The Web Conference (WWW), San Francisco, California, 2019.
- F. Malliaros. Member of the organizing committee for the special session on Machine Learning with Graphs: Algorithms and Applications, 28th International Conference on Artificial Neural Networks (ICANN), Munich, Germany, 2019.

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Chair of Conference Program Committees

- E. Chouzenoux. Elected member of the EURASIP Signal and Data Analytics for Machine Learning technical committee (since 2018), and of the IEEE Signal Processing Theory and Methods technical committee (since 2017).

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

- E. Chouzenoux. Organization of a special session at the 45th International Conference on Acoustics, Speech, and Signal Processing, ICASSP 2020.
- M. Castella. Organization of a special session at the 27th European Signal Processing Conference, EUSIPCO 2019.
- F. Malliaros. Member of the program committee at International Conference on Artificial Neural Networks, ICANN 2019.
- J.C. Pesquet. Member of the program committee at GRETSI 2019.
- H. Talbot. Member of the board and program committee at the International Symposium in Mathematical Morphology, which took place in Saarbrücken, Germany, July 2019.
- H. Talbot. Member of the program committee at the conference Discrete Geometry for Computer Imagery, which took place in Noisy-le-Grand, France, March 2019.
- M. Vakalopoulou. Member of the program committee at the Joint Urban Remote Sensing Event (JURSE), 2019.

#### 10.1.2.3. Reviewer

The members of the team reviewed numerous papers for several international conferences, such as for the annual conferences on Computer Vision and Pattern Recognition (CVPR), Medical Image Computing and Computer Assisted Intervention (MICCAI), Neural Information Processing Systems (NIPS) and International Conference on Learning Representations (ICLR), IEEE International Conference and Acoustics Speech and Signal Processing (ICASSP), IEEE International Conference on Image Processing (ICIP), IEEE Statistical Signal Processing workshop (SSP), European Signal Processing Conference (EUSIPCO), AAAI Conference on Artificial Intelligence (AAAI), The Web Conference (WWW), Annual Conference of the North American Chapter of the Association for Computational Linguistics (NAACL), International Conference on Web and Social Media (ICWSM), International Conference on Machine Learning (ICML), Conference on Neural Information Processing Systems (NeurIPS), International Conference on Complex Networks and Their Applications (Complex Networks), International Workshop on Graph-Based Natural Language Processing (TextGraphs).

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

- Emilie Chouzenoux: Associate Editor at IEEE Transactions on Signal Processing
- Jean-Christophe Pesquet: Associate Editor of the SIAM Journal on Imaging Sciences
- Hugues Talbot: Editor in Chief, Mathematical Morphology, Theory and Applications (De Gruyter).
- Hugues Talbot: Senior area editor for IEEE Signal Processing Letters.

#### 10.1.3.2. Reviewer - Reviewing Activities

- E. Chouzenoux: IEEE Trans. on Image Processing, IEEE Trans. Signal Processing, SIAM Journal on Imaging Science, Journal of Optimization Theory and Applications, Journal of Global Optimization, Journal of Mathematical Imaging and Vision, Inverse Problems.
- J.-C. Pesquet: IEEE Trans. on Signal Processing, IEEE Trans. on Image Processing, IEEE Trans. on Information Theory (IEEE-TI), Signal Processing, SIAM Journal on Optimization, SIAM Journal on Imaging Sciences, Journal of Mathematical Imaging and Vision, Journal of Optimization Theory and Applications, Mathematical Programming.
- F. Malliaros: IEEE Transactions on Knowledge and Data Engineering (TKDE), Applied Network Science, International Journal on Artificial Intelligence Tools (IJAIT).
- H. Talbot: IEEE Pattern Analysis and Machine Intelligence, IEEE Transaction on Image Processing, Computer Vision and Image Understanding, J. on Mathematical Imaging and Vision, Signal Processing Letters, Transactions on Signal Processing. Reviewer for the conferences ACCV, BMVC, CVPR, ICIP, ICML, ISBI, and NeurIPS (ex-NIPS),.
- M. Vakalopoulou: International Journal of Computer Assisted Radiology and Surgery (IJCARS), IEEE Trans. on Geoscience and Remote Sensing (TGRS), Journal of Selected Topics in Applied Earth Observations and Remote Sensing (JSTARS), ISPRS Journal of Photogrammetry and Remote Sensing, Computer Methods and Programs in Biomedicine (CMPB), Pattern Recognition Letters, Computer Vision and Image Understanding (CVIU), SPIE Optical Engineering (OE), Remote Sensing MDPI.

### 10.1.4. Invited Talks

- E. Chouzenoux:  
Polish academy of science, Warsaw, Poland, November 2019  
University of Edinburgh, UK, October 2019  
AIP 2019, Grenoble, France, July 2019  
SPARS 2019, Toulouse, France, 4 July 2019  
Inria Rennes PANAMA, April 2019  
Imagine ENPC, Champs-sur-Marne, April 2019  
Univ. Paris-Dauphine, Paris, March 2019  
Imaging in Paris, IHP, Paris, February 2019
- J.C. Pesquet:  
BASP Frontiers Workshop, Villars-sur-Ollon, Suisse, February 2019  
Modern Maximal Monotone Operator Theory workshop, Vienna, February 2019  
Workshop on Operator Splitting Methods in Data Analysis, New York, US, March 2019  
Marseille Université, Juin 2019  
International Conference on Optimisation, Berlin, August 2019  
EUSIPCO, A Coruña, Spain, September 2019  
French-German-Swiss Conference on Optimization, Nice, September 2019  
Wavelet and Applications workshop, Brussels, November 2019

- H. Talbot:  
CentraleSupélec: March 2019, November 2019  
Institut Henri Poincaré, Paris, February 2019
- M. Vakalopoulou:  
ARTORG Center for Biomedical Engineering Research, University of Bern, March 2019  
European Society of Thoracic Imaging 2019, May 2019  
Department of Computer Science, Stony Brook University, June 2019  
Electrical & Computer Engineering, University of Houston, June 2019  
France is AI, October 2019  
Intelligence Artificielle et Santé, Faculté de Médecine Paris-Sud, November 2019  
Annual Symposium of Belgian Association for Neuro-Oncology, December 2019

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

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

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

### **10.2.1. Teaching**

- Master : E. Chouzenoux. Foundations of Distributed and Large Scale Computing, 26h, M.Sc. in Data Sciences and Business Analytics, 3rd year CentraleSupélec, MVA ENS Cachan, Master Optimization Paris Sud and ESSEC Business School, FR
- Master: E. Chouzenoux. Advanced Machine Learning, 18h, 3rd year CentraleSupélec, FR
- Master: F. Malliaros. Machine Learning, 27h, M.Sc. in Data Sciences and Business Analytics, CentraleSupélec and ESSEC Business School and M.Sc. in Artificial Intelligence, CentraleSupélec, FR.
- Master: F. Malliaros. Introduction to Machine Learning, 33h, 2<sup>nd</sup> year course at CentraleSupélec, FR.
- Master: F. Malliaros. Mathematical Modeling of Propagation Phenomena – Propagation on Graphs, 15h, 1<sup>st</sup> year course at CentraleSupélec, FR.
- Master: Oyallon, Edouard. Deep Learning, 24h, 3rd year CentraleSupélec, FR
- Master: Oyallon, Edouard. Reinforcement Learning, 24h, 3rd year CentraleSupélec, FR
- Master : J.C. Pesquet. Advanced course on Optimization, 33h, M1, CentraleSupélec, FR
- Master: J.C. Pesquet. Introduction to Optimization, 6h, MVA ENS Cachan, FR
- Master: Talbot, Hugues. Discrete Optimisation, 2nd year course, CentraleSupélec, 30h, EN
- Master: Talbot, Hugues. Big Data, Techniques and Platforms, M.Sc in Data Science and Business Analytics, CentraleSupélec and ESSEC Business School, 30h, EN
- Master: Talbot, Hugues. Optimisation for AI, M.Sc in AI, CentraleSupélec and ESSEC Business School, 30h, EN
- Master: M. Vakalopoulou. Introduction to Visual Computing, 25h, 3rd year CentraleSupélec, FR
- Master: M. Vakalopoulou. Deep Learning, 25h, 3rd year CentraleSupélec, FR
- Master: M. Vakalopoulou. Introduction to Machine Learning, 33h, 2nd year CentraleSupélec, FR

### **10.2.2. Lecturing activities**

- F. Malliaros. Summer School Artificial Intelligence, July 1-12, 2019, CentraleSupélec.
- J.C. Pesquet. Erwin Schrödinger Institute for Mathematics and Physics in Vienna, 4-6 March 2019, Austria.
- M. Vakalopoulou. Summer School on Artificial Intelligence, July 1-12n 2019, CentraleSupélec.



- E. Chouzenoux. Summer School Sparsity for Physics, Signal and Learning, June 24-27, 2019, Inria Paris.

### 10.2.3. Supervision

- PhD (defended) : Huu Dien Khue Le, Algorithmes des directions alternées non convexe pour graphes: inférence et apprentissage, 2016-2019, supervised by N. Paragios.
- PhD (defended) : Riza Alp Guler, Apprentissage de Correspondances Image-Surface, 2016-2019, supervised by I. Kokkinos and N. Paragios.
- PhD (defended) : Marie-Caroline Corbineau, Fast online optimization algorithms for machine learning and medical imaging, 2016-2019, supervised by E. Chouzenoux and J.-C. Pesquet.
- PhD (defended) : Loubna El Gueddari, Parallel proximal algorithms for compressed sensing MRI reconstruction - Applications to ultra-high magnetic field imaging, 2016-2019, supervised by J.-C. Pesquet and Ph. Ciuciu (Inria PARIETAL).
- PhD (in progress) : Abdulkadir Çelikkanat, Representation learning methods on graphs, 2017-2020, supervised by F. Malliaros and N. Paragios.
- PhD (in progress): Yunshi Huang, Majorization-Minimization approaches for large scale problems in image processing, 2018-2021, supervised by E. Chouzenoux and V. Elvira (Univ. Edinburgh).
- PhD (in progress) : Samy Ammari, Imagerie médicale computationnelle en neuro oncologie, 2019-2022, supervised by C. Balleyguier (Institut Gustave Roussy) and E. Chouzenoux.
- PhD (in progress) : Georgios Panagopoulos, Influence maximization in social networks, 2018-2021, supervised by F. Malliaros and M. Vazirgiannis (École Polytechnique).
- PhD (in progress): Surabhi Jagtap, Graph-based learning from multi-omics data, 2019-2022, supervised by F. Malliaros, J.-C. Pesquet, and L. Duval (IFP Energies Nouvelles).
- PhD (in progress): Kavya Gupta, Neural network solutions for safety of complex systems, 2019-2022, supervised by F. Malliaros, J.-C. Pesquet and F. Kaakai (Thales Group).
- PhD (in progress): Maria Papadomanolaki, Change Detection from Multitemporal High Resolution Data with Deep Learning, 2017-2021, supervised by M. Vakalopoulou and with K. Karantzas.
- PhD (in progress): Mihir Sahasrabudhe, Unsupervised and Weakly Supervised Deep Learning Methods for Computer Vision and Medical Imaging, 2016-2020, supervised by N. Paragios.
- PhD (in progress): Théo Estienne, Improving anticancer therapies efficacy through Machine Learning on Medical Imaging & Genomic Data, 2017-2020, supervised by M. Vakalopoulou and N. Paragios.
- PhD (in progress): Enzo Battistella, Development of novel imaging approaches for tumour phenotype assessment by noninvasive imaging 2017-2020, supervised by M. Vakalopoulou and N. Paragios.
- PhD (in progress): Roger Sun, Deep learning and computer vision approaches on medical imaging and genomic data to improve the prediction of anticancer therapies' efficacy, 2017-2020, supervised by M. Vakalopoulou and N. Paragios.
- PhD (in progress): Ana Neacsu, Méthodes d'apprentissage profond inspirées d'algorithmes de traitement du signal, 2019-2022, supervised by J.-C. Pesquet and C. Burileanu (Politehnica Bucarest).
- PhD (in progress): Sagar Verma, Modélisation, contrôle et supervision de moteurs électriques par réseaux de neurones profonds, 2019-2022, supervised by M. Castella and J.-C. Pesquet.
- PhD (in progress): Maïssa Sghaier, clinical Task-Based Reconstruction in tomosynthesis, 2017-2020, supervised by J.-C. Pesquet and S. Muller (GE Healthcare).
- PhD (in progress): Marion Savanier, Reconstruction 3D interventionnelle, 2019-2022, supervised by E. Chouzenoux and C. Riddell (GE Healthcare).

- PhD (in progress): Arthur Marmin, Rational models optimized exactly for chemical processes improvement, 2017-2020, supervised by M. Castella (Telecom Paristech) and J.-C. Pesquet.
- PhD (in progress): Sylvain Lempereur. Analyse quantitative de la morphologie de poissons aux stades larvaire et juvénile. 2017-2020. Supervised by Hugues Talbot and Jean-Stéphane Joly (CNRS).
- PhD (in progress): Daniel Antunes: Contraintes géométriques et approches variationnelles pour l'analyse d'image. 2016-2019. Supervised by Hugues Talbot and Jacques-Olivier Lachaud (U. Savoie-Mont Blanc)
- PhD (in progress): Marie-Charlotte Poilpre: Méthode de comparaison faciale morphologique, adaptée aux expertise judiciaires, basée sur la modélisation 3D. 2017-2020. Supervised by Hugues Talbot and Vincent Nozick (U. Paris-Est)
- PhD (in progress): Thanh Xuan Nguyen. Détection et étude morphologique des sources extragalactiques par analyse variationnelle. 2018-2021. Supervised by Hugues Talbot and Laurent Najman (ESIEE)
- PhD (in progress): Marvin Lerousseau. Apprentissage statistique en imagerie médicale et en génomique pour prédire l'efficacité des thérapies anti-tumorales. 2018-2021. Supervised by Nikos Paragios (Therapanacea), Eric Deutch (IGR) and Hugues Talbot.
- PhD (in progress): Mario Viti. Low-dose assessment of coronal vessel health on CT. 2019-2022. Supervised by Hugues Talbot.

#### **10.2.4. Juries**

The faculty members of the team participated to numerous PhD Thesis Committees, HDR Committees and served as Grant Reviewers. Moreover, they serve regularly as a jury Member to Final Engineering Internship and the Research Innovation Project for students of CentraleSupélec, FR.

## PARIETAL Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

Bertrand Thirion co-organized the “Imagerie médicale et intelligence artificielle ” colloque at Collège de France on April, 23rd, 2019.

Thomas Moreau co-organized the Palaisien seminar: a monthly scientific seminar in statistics and statistical learning bringing together researchers in this field working on the Saclay Plateau. The seminar started in November and brings together about fifty researchers (<http://palaisien.herokuapp.com>).

#### 10.1.1.2. Member of the Organizing Committees

Demian Wassermann: MICCAI 2019, ISMRM 2019

Gaël Varoquaux: PyParis 2019

### 10.1.2. Scientific Events: Selection

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

- Philippe Ciuciu: Chairman of scientific oral sessions in ISBI 2019 (Venice, Italy), program committee of EUSIPCO 2019.
- Gaël Varoquaux: program committee of NIPS, ICML, ICLR, senior program committee IJCAI.
- Alexandre Gramfort: program committee of NIPS, ICML, ICLR.
- Demian Wassermann: ISMRM 2019
- Thomas Moreau: JDSE 2019

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

- Philippe Ciuciu: Senior Area Editor of IEEE OJSP
- Alexandre Gramfort: Editor, NeuroImage, Journal of Machine Learning Research (JMLR), Frontiers in Brain Imaging Methods
- Bertrand Thirion: Editor, Frontiers in Brain Imaging Methods
- Gael Varoquaux: Editor, elife

#### 10.1.3.2. Reviewer - Reviewing Activities

- Philippe Ciuciu is reviewer for Nature Communication, Biological Psychiatry, Plos Computational Biology, Neuroimage, Scientific Reports, Journal of Neuroscience, IEEE TSP/TIP/TMI/TCI/SPL, Frontiers in Neuroscience, MRM, SIAM Imaging Science
- Gaël Varoquaux: Nature Methods, JMLR, PLOS Bio, NeuroImage, NeuroImage Clinical, IEEE TMI, Annals of Applied Statistics, Biological Psychiatry, MedIA, Science
- Alexandre Gramfort: JMLR, PLOS Computational Biology, NeuroImage, IEEE TBME, IEEE TMI, IEEE TSP, MedIA, NIPS, ICML, ICLR, ICASSP, Scientific Reports, Frontiers in Brain Imaging Methods, Journal of Neuroscience Methods
- Bertrand Thirion: Nature communications, Neuroimage, Medical Image Analysis, IEEE TMI, PNAS, PLOS Comp Bio, Brain Structure and Function, NIPS, ICML, IPMI, AISTATS

- Denis Engemann: Brain, PLOS Biology, PLOS Computational Biology, Psychological Medicine, Scientific Reports, Neuroimage, Neuroimage Clinical, Human Brain Mapping, Journal of Machine Learning Research, Brain Topography, Brain Connectivity, Journal of Alzheimer's Disease, Neuroscience of Consciousness, PLOS ONE, Frontiers in Neuroscience, Journal of Computational Neuroscience, Psychiatry and Clinical Neurosciences, Sensors
- Demian Wassermann: NeuroImage, MRM, JMRI, Brain Structure and Function, Cortex, MedIA.
- Thomas Moreau: ICML, NeurIPS, EUSIPCO, JDSE, AISTAT, JMLR, TSP, LSP, JMIV
- Olivier Grisel: JMLR

#### 10.1.4. Invited Talks

- Philippe Ciuciu, Ecole Centrale Nantes, Nov. 2019
- Philippe Ciuciu, I3S/CNRS (Sophia-Antipolis), Oct. 2019
- Philippe Ciuciu, Wavelets & Sparsity XVIII, San Diego, Aug. 2019
- Philippe Ciuciu, Collège de France, Apr. 2019
- Denis Engemann, Max Planck Institute AES, Frankfurt, Germany, Jan. 2019
- Denis Engemann, University of Birmingham, Birmingham, UK, Apr. 2019
- Denis Engemann, University of Glasgow, Glasgow, UK, Jun. 2019
- Denis Engemann, Max Planck Institute CBS, Leipzig, Germany, Nov. 2019
- Alexandre Gramfort at IHP, Paris, France, April. 2019
- Alexandre Gramfort at Univ Genoa, Italy, Sept. 2019
- Alexandre Gramfort at Univ Jyväskylä, Finland, May. 2019
- Alexandre Gramfort at Institut Pasteur, Paris, France, June 2019
- Alexandre Gramfort at National Institute of Health, Washington, USA, Oct. 2019
- Bertrand Thirion at Donders Institute, Netherlands Feb. 2019
- Bertrand Thirion at MRC CBU, Cambridge, UK, Nov. 2019
- Bertrand Thirion at INT, Marseille, Nov. 2019
- Bertrand Thirion at GFAIH, Paris, Oct. 2019
- Bertrand Thirion at Université Paris-Sud, faculté de médecine, Nov. 2019
- Bertrand Thirion at Alan Turing Institute, London, June 2019
- Gael Varoquaux at MNI (Montréal), Nov. 2019
- Gael Varoquaux at SparkAISummit, Amsterdam, Oct. 2019
- Gael Varoquaux at PyData Amsterdam, Oct. 2019
- Gael Varoquaux at Mila (Montréal), Sept. 2019
- Gael Varoquaux at Etalab (Paris), June 2019
- Gael Varoquaux at MGH (Harvard), June 2019
- Gael Varoquaux at Yale, June 2019
- Demian Wassermann at NYU, February 2019
- Demian Wassermann at ERC, June 2019
- Demian Wassermann at BWH (Harvard), June 2019
- Demian Wassermann at Stanford, October 2019
- Thomas Moreau **ISMRM, Educational Session, Montreal, Canada, 2019**: "Best Practices & Pitfalls in Applying Machine Learning to Magnetic Resonance Imaging".
- Thomas Moreau **Télécom ParisTech, SMILE seminar, Paris, France, 2019**: "Multivariate Convolutional Sparse Coding for Electromagnetic Brain Signals".

- Thomas Moreau **ENS Paris-Saclay, Centre de Mathématiques et de leurs Applications, MLMDA seminar, Cachan, France, 2019**: "Multivariate Convolutional Sparse Coding for Electromagnetic Brain Signals".
- Thomas Moreau **Telecom ParisTech, Laboratoire Traitement et Communication de l'Information, seminar, Paris, France, 2019**: "Using the Dictionary Structure for efficient Convolutional Dictionary Learning".
- Thomas Moreau **Centre pour l'Énergie Atomique Saclay, Cosmostat, annual seminar day, Saclay, France, 2019**: "Learning Recurring Patterns in Large Signals with Convolutional Dictionary Learning".

### 10.1.5. Leadership within the Scientific Community

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

### 10.1.6. Scientific Expertise

- Philippe Ciuciu has been reviewer for NWO, The Netherlands (Veni/Vidi/Vici call)
- Philippe Ciuciu has been hired as H2020 expert evaluator for the H2020-WIDESPREAD-2020-5 Twinning RCA programme since Dec 2019.
- Denis Engemann has been reviewer for the Swiss National Science Foundation in 2019
- Alexandre Gramfort has been member of an NSF panel in the USA in January 2019.
- Demian Wassermann FET-OPEN ERCA Action, and DataIA
- Gaël Varoquaux was expert for DataIA

### 10.1.7. Research Administration

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

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

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

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

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

Doctoral School: Alexandre Gramfort, Practical machine learning, 6h, [The mathematics of imaging: the CIRM pre-school](#), Marseille, France

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

Master: Bertrand Thirion, Kshitih Chawla, Thomas Bazeille: tutorial on Nilearn, 8h, INT, Marseille.

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

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

Master: Demian Wassermann, 7h Biomedical Engineering, Msc 2 Biomedical Engineering

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

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

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

Doctoral school: Gaël Varoquaux, representation learning with limited sample, 4h30, Deep Learning Summer School, Warsaw

Doctoral school: Gaël Varoquaux, machine learning for neuroimaging, 3h, Unique days, Montréal

Doctoral school: Gaël Varoquaux, machine learning with scikit-learn, 4h, IBPRIA, Madrid

Master: Thomas Moreau, **Formation continue Telecom ParisTech (7h)** TP pour Machine learning and Python.

Master: Thomas Moreau, **Master Spécialisé courses, Telecom ParisTech (20h)** Assistant TP pour le cours de machine learning avancé.

Master: Thomas Moreau, **Executive Master Statistique et Big Data, Université Paris-Dauphine (9h)** Cours Python pour le machine learning.

Master: Thomas Moreau, **Master Data Science, Université Paris-Saclay (25h)** Cours machine learning associé à un challenge.

Master: Olivier Grisel, **Master Data Science, Université Paris-Saclay (40h)** Cours de Deep Learning.

### 10.2.2. Supervision

Demian Wassermann has defended his habilitation thesis in May 2019.

The following PhD defenses have taken place

Guillermo Gallardo, "Inferring and comparing structural parcellations of the human brain using diffusion MRI", defended Jan 2019, co-directed by Demian Wassermann

Patricio Cerda, "encoding high-cardinality string categories", defended Nov 2019, directed by Gaël Varoquaux

Jérôme Dockes, "large-scale predictive neuroimaging meta-analyses" defended Nov 2019, directed by Gaël Varoquaux & Fabian Suchanek (Telecom)

Pierre Ablin, defended Nov 2019, directed by Alexandre Gramfort

Mathurin Massias defended Dec 2019, directed by Alexandre Gramfort

Loubna El Guedari, defended Dec 2019, directed by Philippe Ciuciu

Ongoing PhD theses

Kamalakar Daddi, "predictive population analysis for mental health", defense planned Oct 2020, directed by Gaël Varoquaux, Denis Engemann & Bertrand Thirion

Alexis Cvetkov Iliev, "embeddings of database entries", defense planned Oct 2022, directed by Gaël Varoquaux & Alexandre Allauzen (ESPCI)

Hicham Janati, 01/10/2017, coadvised by Alexandre Gramfort and Marco Cuturi

Quentin Bertrand, 01/10/2018, coadvised by Alexandre Gramfort and Joseph Salmon

Hubert Banville, 01/10/2018, coadvised by Alexandre Gramfort and Denis Engemann

David Sabbagh, 01/10/2018, coadvised by Alexandre Gramfort and Denis Engemann

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

Hugo Richard, 01/10/2018, coadvised by Bertrand Thirion and Olivier Grisel

Thomas Bazeille, 01/10/2018, advised by Bertrand Thirion

Tuan Binh Nguyen, 01/10/2018, coadvised by Bertrand thirion and Sylvain Arlot

Valentin Iovene, 01/10/2018, advised by Demian Wassermann

Antonia Machlouzarides Shalit, 01/10/2018, co-advised by Demian Wassermann and Bertrand Thirion

Hamza Cherkaoui, 01/10/2017, co-advised by Philippe Ciuciu and Thomas Moreau

Zaccharie Ramzi, 01/02/2019, co-advised by Philippe Ciuciu and Jean-Luc Starck

Anaïs Artiges, 01/10/2019, co-advised by Philippe Ciuciu and Cyril Poupon

Guillaume Daval-Fr erot, 01/11/2019, advised by Philippe Ciuciu

Maeliss Jallais, 01/10/2018, advised by Demian Wassermann

Lucas Martin, 01/10/2019, advised by Bertrand Thirion and Julie Josse.

Chengran Fan, 01/10/2019, co-advised by Demian Wassermann and Jing-Rebecca Li

Gaston Zanitti, 01/11/2019, advised by Demian Wassermann

### 10.2.3. *Juries*

Bertrand Thirion has been involved in the following committees:

- PhD - Florian Tilquin / University of Strasbourg
- PhD - Han Bossier / University of Ghent
- Habilitation - Laurent Oudre / Universit  Paris XIII

Philippe Ciuciu has been involved in the following committees:

- PhD - Marica Pesce (reviewer) / Heriot-Watta University, Edinburgh
- PhD - Christian El Hajj (reviewer) / Ecole Centrale Nantes.

Denis Engemann has been involved in the following committees:

- PhD - Laura Sophie Imperatori, IMT School for Advanced Studies Lucca, Lucca, Italy
- MD - Cyril Touchard, Universit  Paris Diderot (Paris 7)

Gael Varoquaux has been involved in the following committees:

- PhD - Beyrem KHALFAOUI / Mines ParisTech

Alexandre Gramfort has been involved in the following committees:

- PhD - Benjamin Donnot / LRI, Universit  Paris-Sud
- PhD - Belhal Karimi / CMAP, Polytechnique
- PhD - Pedro Rodrigues (reviewer) / GIPSA Lab, Grenoble
- PhD - Kostiantyn Maksymenko (reviewer) / Inria, Sophia
- MD - Cyril Touchard, Universit  Paris Diderot (Paris 7)

Demian Wassermann has been involved in the following committees:

- PhD-midterm - Katrin Rojkova / Universit  Paris-Sorbonne
- Habilitation - Daniel Margulies / Universit  Paris-Sorbonne

## 10.3. Popularization

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

- Philippe Ciuciu has been member of the Inria Saclay scientific commission since 2016
- Denis Engemann has been managing the Twitter accounts of Parietal and the MNE software since 2017
- Alexandre Gramfort is in charge of the Paris-Saclay Center for Data Science
- Alexandre is a Member of the technical development committee of Inria Saclay since Dec 2018
- Bertrand Thirion, head of the Dataia Convergence Institute since January 1st, 2019

- Gaël Varoquaux was Member of the technical development committee of Inria Saclay until Dec 2018
- Gaël Varoquaux is member of the doctoral monitoring committee of Inria Saclay
- Gaël Varoquaux is member of the steering committee of the Paris-Saclay Center for Data Science
- Thomas Moreau: Co-organisation of the weekly Parietal team seminar bringing together the 45 members of the team for short presentations and a longer scientific presentation.
- Gaël Varoquaux is in charge of the scikit-learn consortium

### ***10.3.2. Internal action***

- Guillaume Lemaître, Marie Telenczuk, et Lucie Liu have taught a 1-day training on data-science with Python in Nov 2019.

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

- Guillaume Lemaître, Gael Varoquaux, Olivier Grisel started developing new teaching material for MOOC of Scikit-learn to be hosted in 2020 on the FUN platform in collaboration with Loic Esteve and the team members of the Inria Learning Lab).



## PARSIFAL Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

Dale Miller is currently General Chair for the ACM/IEEE Symposium on Logic in Computer Science (LICS).

#### 10.1.1.2. Member of the Organizing Committees

Dale Miller is member of the Steering Committee for CPP, FSCD, and LFMTP and is a member of the Executive Committee of the ACM Special Interest Group on Logic and Computation (SIGLOG).

Gabriel Scherer is part of the Steering Committee of the ML Family Workshop and the OCaml Workshop.

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Chair of Conference Program Committees

Dale Miller was program committee co-chair for the workshop on Logical Frameworks and Meta Languages: Theory and Practice (LFMTP), 2019, Vancouver, Canada.

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

- Gabriel Scherer: JFLA 2020.
- Beniamino Accattoli: LSFA 2019.
- Dale Miller is a PC member for the 10th International Joint Conference on Automated Reasoning (IJCAR-2020), the 23rd International Conference on Logic for Programming, Artificial Intelligence and Reasoning (LPAR-23), and the Workshop on Trends, Extensions, Applications and Semantics of Logic Programming (TEASE-LP).

#### 10.1.2.3. Reviewer

- Gabriel Scherer: POPL 2020, ESOP 2020.
- Lutz Straßburger: FoSSaCS 2020, CSL 2020, TABLEAUX 2019, WoLLIC 2019, LICS 2019.
- Beniamino Accattoli: FoSSaCS 2020, POPL 2020, ICALP 2019, ICTAC 2019, PPDP 2019, FSCD 2019, CSL 2019, LSFA 2019.

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

Dale Miller is on the editorial board of the Journal of Automated Reasoning (Springer) and the Journal of Applied Logic (Elsevier). He has also been an editor for a special issue of FSCD 2017 for Logical Methods in Computer Science.

### 10.1.3.2. Reviewer - Reviewing Activities

- Lutz Straßburger: APAL, ToCL, BSL, LMCS.
- Beniamino Accattoli: LMCS, TCS.
- Dale Miller has served on the evaluation committee for the EATCS Distinguished Dissertation Award and the EACSL Ackermann Award. He was also the Chair of the Herbrand Award Committee of the Association for Automated Reasoning.

### 10.1.4. Invited Talks

- Beniamino Accattoli has been invited speaker at FSCD 2019.
- Dale Miller has been an invited speaker at the Workshop on Proof Theory for Automated Deduction, Automated Deduction for Proof Theory (23-25 October 2019, Funchal, Madeira) and the Third Tübingen Conference on Proof-Theoretic Semantics, 27-30 March 2019.

### 10.1.5. Scientific Expertise

- Lutz Straßburger: reviewer for the Israel Science Foundation.
- Dale Miller has been a member of an international review panel for the Distinguished Professor Grant at the Swedish Research Council.
- Gabriel Scherer: reviewer for ANR.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Licence : G. Scherer, “*Introduction à la programmation fonctionnelle*”, 50h, L1, Paris 8 (Vincennes - Saint Denis), France

Master: B. Accattoli, “*Logique linéaire et paradigmes logiques du calcul*”, 18h, M2, Master Parisien de Recherche en Informatique (MPRI), France.

Master: D. Miller, “*Logique linéaire et paradigmes logiques du calcul*”, 18h, M2, Master Parisien de Recherche en Informatique (MPRI), France.

Summer School: G. Scherer, “*Programmation fonctionnelle en OCaml*”, 12h, public d’ingénieurs de recherche, formation ANF (CNRS), France

Summer School: L. Straßburger: “*Introduction to Deep Inference*”, 10h, ESSLLI 2020, Riga, Latvia

Summer School: B. Accattoli, “ *$\lambda$ -Calculus and Reasonable Cost Models*”, 15h, Escuela de Ciencia Informaticas (ECI 2019), Buenos Aires, Argentina.

### 10.2.2. Supervision

- PhD in progress: Marianela Morales, “Combinatorial Proof Theory for Modal Logic”, 1/10/2019, Lutz Straßburger.
- PhD in progress: Maico Leberle, “Call-by-need and Reasonable Cost Models”, Beniamino Accattoli.
- PhD completed: Ulysse Gérard, “Computing with relations, functions, and bindings”, 18 October 2019, Ecole Doctorale de l’Institut Polytechnique de Paris, advised by Dale Miller.
- PhD in progress: Matteo Manighetti, “Structural proof theory for induction in linear logic”, advised by Dale Miller since 1/10/2017.
- PhD in progress: Marianela Morales, “Combinatorial Proof Theory for Modal Logic”, 1/10/2019, Lutz Straßburger

### 10.2.3. Juries

Dale Miller was a reportor for the PhD thesis of Aurore Alcoei (ENS Lyon, 17 October 2019).

## **10.3. Popularization**

### ***10.3.1. Interventions***

G. Scherer and M. Manighetti participated the “Fête de la Science” exhibit at Inria Saclay on the whole day of October 11th, 2019.

G. Scherer presented the research domain of certified programming to an audience of computer security professionals at the “Pass the Salt” conference in Lille, on Wednesday July 3rd.

## PETRUS Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

#### 9.1.1.1. Member of the Organizing Committees

- Luc Bouganim: Co-organizer of Ecole thématique BDA Masses de Données Distribuées, Aussois, June 2020
- Iulian Sandu Popa: Colloque National Capteurs et Sciences Participatives (CASPA), Paris, 1-4 avril 2019

### 9.1.2. Scientific Events Selection

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

- Nicolas Anciaux: VLDB'19, SIGMOD'19
- Luc Bouganim: EDBT'2020
- Philippe Pucheral: DATA'19, MOBILITY'19, MEDES'19
- Iulian Sandu Popa: ICDE'20, SSDBM'19, IEEE MobileCloud'19, DATA'19, BDA'19 demo
- Guillaume Scerri: BDA'19

### 9.1.3. Journal

#### 9.1.3.1. Member of the Editorial Boards

- Nicolas Anciaux: Associate Editor of the VLDB Journal

#### 9.1.3.2. Reviewer - Reviewing Activities

- Iulian Sandu Popa: Journal of Internet Services and Applications
- Guillaume Scerri: ACM Transactions on Privacy and Security

### 9.1.4. Research Administration

- Philippe Pucheral: Member of the HDR committee of the STV doctoral school (UVSQ) since 2014
- Philippe Pucheral: Member of the steering committee of the ED STIC doctoral school of University Paris-Saclay, 'Data, Knowledge and Interactions' committee (about 250 PhD students) since 2014
- Philippe Pucheral: Member of the bureau of the DAVID lab board since 2016
- Nicolas Anciaux: Member of the Council of the Doctoral College of the University Paris-Saclay
- Nicolas Anciaux: Member of the "Bureau du comité des projets" at Inria saclay
- Nicolas Anciaux: Member of the DATAIA Convergence Institute Program Committee since 2018.
- Nicolas Anciaux: Correspondent for the Doctoral school ED STIC of University Paris-Saclay at Inria Saclay
- Nicolas Anciaux: Responsible for the 'Mission Jeunes Chercheurs' (MJC) at Inria Saclay
- Nicolas Anciaux: Responsible for the 'Formation par la Recherche' (FPR) at Inria Saclay
- Nicolas Anciaux: Member of the bureau of the DAVID lab board
- Luc Bouganim: Member of the Scientific Commission (CS) of Inria Saclay-IDF (Cordi-S, Post-Doc, Delegation)
- Luc Bouganim: Member of the Commission for Technological Development (CDT) of Inria Saclay-IDF

- Luc Bouganim: Member of the admission committee for DR2 at Inria
- Luc Bouganim: Member of the recruitment committee for CRCN at Inria
- Luc Bouganim: Member of the recruitment committee of associate professor at ITU Copenhagen
- Iulian Sandu Popa: Member of the Commission for Technological Development (CDT) of Inria Saclay-IDF
- Iulian Sandu Popa: Member of the recruitment committee for an MCF (Maître de Conférences) position at CNAM
- Iulian Sandu Popa: PhD thesis referent for the ED STIC doctoral school of University Paris-Saclay
- Guillaume Scerri: PhD thesis referent for the ED STIC doctoral school of University Paris-Saclay

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

- Licence : Iulian Sandu Popa, Bases de données (niveau L3), 96, UVSQ, France. Guillaume Scerri, Initiation aux bases de données (niveau L2), 63, UVSQ, France. Guillaume Scerri, Fondements de l'informatique (niveau L1), 36, UVSQ, France. Guillaume Scerri, Théorie des Langages (niveau L2), 45, UVSQ, France.
- Master : Iulian Sandu Popa, Bases de données relationnelles (niveau M1), Gestion des données spatiotemporelles (niveau M2), Sécurité des bases de données (niveau M2), 96, UVSQ, France. Philippe Pucheral, responsable of the DataScale master, courses in M1 and M2 in databases and in security, introductory courses for jurists, UVSQ, France. Guillaume Scerri, Bases de données relationnelles (niveau M1), 36, UVSQ, France. Guillaume Scerri, Sécurité et bases de données pour juristes, 4.5, UVSQ, France. Guillaume Scerri, Sécurité, 18, UVSQ, France.
- Engineers school : Nicolas Anciaux, courses on Databases (module IN206, niveau M1), 21, and Advanced databases (module ASI13, niveau M2), 24, at ENSTA ParisTech. Nicolas Anciaux, Systèmes d'Information "privacy by design" (niveau M1), 30, at ENSIIE Evry, France. Luc Bouganim, Systèmes d'Information "privacy by design" (niveau M1), 42, ENSIIE Evry, France. Luc Bouganim, Bases de données relationnelles (niveau M1), 32, ENSTA, France.

### 9.2.2. Supervision

- PhD : Julien Loudet, Distributed and Privacy-Preserving Personal Queries on Personal Clouds, UVSQ, October 2019, Luc Bouganim and Iulian Sandu Popa
- PhD: Axel Michel, Secure Distributed Computations, INSA CVL, April 8, 2019, Benjamin Nguyen and Philippe Pucheral
- PhD in progress: Riad Ladjel, Secure Distributed Computation for the Personal Cloud, October 2016, Nicolas Anciaux, Philippe Pucheral and Guillaume Scerri
- PhD in progress: Dimitris Tsoulovos, Privacy-by-design Middleware for Urban-scale Mobile Crowd-sensing, April 2017, Nicolas Anciaux and Valérie Issarny (Inria Mimove)
- PhD in progress: Robin Carpentier, Secure and efficient data processing in trusted execution environments for the personal cloud, October 2018, Nicolas Anciaux, Iulian Sandu Popa and Guillaume Scerri

### 9.2.3. Juries

- Nicolas Anciaux : Jury Member of the PhD of Rémy Delanaux (University Lyon I)
- Philippe Pucheral : President of the PhD jury of Karima RAFES (Paris-Saclay University, 25/01/2019)
- Philippe Pucheral : President of the PhD jury of Duc CAO (Paris-Saclay University, 26/09/2019)

### 9.3. Popularization

- Nicolas Anciaux: “Sécurité des données personnelles, démonstration de la box ‘DomYcile’ développée par PETRUS et Hippocad pour le département des Yvelines, Journées du Patrimoine 2019 à l’Inria Rocquencourt, Sept. 2019.
- Nicolas Anciaux: Demonstration of the ‘DomYcile’ home-box, Inria stand, European Big Data Value Forum (EBDVF19), organized by BDVA in collaboration of the European Commission, Oct. 2019.
- Round table on ”Personal Dataspaces” at European Big Data Value Forum (EBDVF19), organized by BDVA in collaboration of the European Commission, Oct. 2019. The round table is chaired by Marko Turpeinen (Director EIT Digital Finland). Intervention of N. Anciaux about ”Empowerment and Big Data on personal data: from data portability to personal agency”.
- Nicolas Anciaux: séminaire LINC à la CNIL. "Solutions de cloud personnel : sécurité, vie privée, et perspectives", Nov. 2019.
- Nicolas Anciaux: “PETRUS : Cloud personnel de confiance et gestion de nos données”, Café des Sciences d’Inria, site de Rocquencourt, 11 juin 2019
- N. Anciaux: Panel on ”European Data Protection Law”, 10th Annual Forum of Trans Europ Expert ‘Le droit de l’Union européenne vu d’ailleurs’, Conseil Supérieur du Notariat, Paris. April 2019. Round table chaired by J. Sénéchal (Dir. pôle “Droit des contrats” at TEE) and N. Martial-Braz (Dir. pôle “Droit de la propriété intellectuelle at TEE), with B. Amaudric du Chaffaut (Deputy General Counsel at Google France) on GDPR evolution in Europe, F. Nicola (Prof. at Washington College of Law) on the echo of GDPR in California and N. Anciaux (researcher at Inria) on technical-juridical challenges of the GDPR.

## POEMS Project-Team

## 9. Dissemination

### 9.1. Promoting Scientific Activities

#### 9.1.1. Scientific Events: Organisation

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

- Several members of POEMS team were members of the scientific committee of the WAVES conference, organized in Vienna in August 2019.
- J.-F. Mercier co-organized a summer school on "*Wave propagation in complex and microstructured media*" at Cargèse (Corsica), August 20th to 30th, 2019
- A.-S. Bonnet-Ben Dhia co-organized a workshop entitled "*Advanced Theoretical and Numerical Methods for waves in structured Media*" in Marseille in June 2019, in the framework of the GDR Ondes. They were about 90 attendees.

##### 9.1.1.2. Member of the Organizing Committees

- S. Chaillat is a co-animator of the topic "*Modeling and simulation*" of the GDR Ondes.
- J.-F. Mercier is a co-animator of the topic "*Effective dynamics of microstructured media*" of the GDR MecaWaves.

#### 9.1.2. Journal

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

- A. S. Bonnet-Ben Dhia is an associate editor of SIAP (*SIAM Journal of Applied Mathematics*).
- M. Bonnet is an associate editor of *Engineering Analysis with Boundary Elements*, *Journal of Optimization Theory and Application* and *Journal of Integral Equations and Applications*. He is in the editorial board of *Inverse Problems* and *Computational Mechanics*.
- P. Ciarlet is an editor of ESAIM:M2AN (*Mathematical Modeling and Numerical Analysis*).
- P. Joly is a member of the Book Series Scientific Computing of Springer Verlag.

##### 9.1.2.2. Reviewer - Reviewing Activities

The team members regularly review papers for many international journals.

#### 9.1.3. Research Administration

- E. Lunéville was chair of the *Applied Mathematics Department* (UMA) at ENSTA Paris until September 2019.
- A. S. Bonnet-Ben Dhia is deputy-chair of the *Applied Mathematics Department* (UMA) at ENSTA Paris since October 2019.
- P. Ciarlet is coordinator of the *Mathematics in Computational Science and Engineering Program* of the Mathematics Hadamard Labex (LMH).
- E. Bécache is a deputy chair of the Doctoral School EDMH since December 2019.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

The permanent members of POEMS are involved in the engineering program at ENSTA Paris, the master program "*Analyse, Modélisation et Simulation*" (AMS) and the master program "*Modélisation et Simulation en Mécanique des Structures et Systèmes Couplés*" (MS2SC) of Université Paris-Saclay.

Eliane Bécache

- *Fonctions de variable complexe*, ENSTA (1st year)
- *Introduction à la discrétisation des équations aux dérivées partielles*, ENSTA (1st year)
- *La méthode des éléments finis*, ENSTA (2nd year) and Master AMS (M1)
- *Analyse et approximation par éléments finis d'EDP*, ENSTA (2nd year) and Master AMS (M1)
- *Résolution des problèmes de diffraction par équations intégrales*, ENSTA (3rd year), Master AMS (M2) and Master MS2SC (M2)

Marc Bonnet

- *Problème inverses et Identification*, Master MS2SC (M2)

Anne-Sophie Bonnet-Ben Dhia

- *Fonctions de variable complexe*, ENSTA (1st year)
- *Théorie spectrale des opérateurs autoadjoints*, ENSTA (2nd year) and Master AMS (M1)
- *Propagation et diffraction dans les guides d'ondes*, ENSTA (3rd year) and Master AMS (M2)
- *Non Destructive Testing*, Master "Acoustical Engineering" (M2)
- *Propagation des ondes élastiques dans les solides*, Master MS2SC (M2)

Laurent Bourgeois

- *Outils élémentaires pour l'analyse des équations aux dérivées partielles*, ENSTA (1st year)
- *Fonctions de variable complexe*, ENSTA (1st year)
- *Complétion de données et identification dans les problèmes gouvernés par des équations aux dérivées partielles*, ENSTA (3rd year) and Master AMS (M2)

Stéphanie Chaillat

- *Introduction à l'environnement UNIX*, ENSTA (1st year)
- *Systèmes d'exploitation*, ENSTA (1st year)
- *Introduction à la discrétisation des équations aux dérivées partielles*, ENSTA (1st year)
- *Résolution des problèmes de diffraction par équations intégrales*, ENSTA (3rd year), Master AMS (M2) and Master MS2SC (M2)
- *Equations intégrales et multipôles rapides*, Ecole doctorale MODES (Univ. Paris Est, Marne la Vallée)

Colin Chambeyron

- *Remise à niveau en maths*, Licence (1st year), Paris-Dauphine University
- *Outils mathématiques*, Licence (L1), Paris-Dauphine University
- *Analyse - Optimisation*, Licence (L1), Paris-Dauphine University
- *Algèbre linéaire*, Licence (L2), Paris-Dauphine University

Patrick Ciarlet

- *Analyse et approximation par éléments finis d'EDP*, ENSTA (2nd year) and Master AMS (M1)
- *Préformation filière ModSim*, ENSTA (3rd year)
- *Modèles mathématiques et leur discrétisation en électromagnétisme*, ENSTA (3rd year) and Master AMS (M2)

Luiz Faria

- *La méthode des éléments finis*, ENSTA (2nd year) and Master AMS (M1)



Sonia Fliss

- *La méthode des éléments finis*, ENSTA (2nd year) and Master AMS (M1)
- *Introduction à la discrétisation des équations aux dérivées partielles*, ENSTA (1st year)
- *Homogénéisation périodique*, ENSTA (3rd year), Master AMS(M2), Masters ANEDP, M4S
- *Propagation des ondes dans des milieux périodiques*, ENSTA (3rd year) and Master AMS (M2)

Laure Giovangigli

- *Introduction aux probabilités et aux statistiques*, ENSTA (1st year)
- *Martingales et algorithmes stochastiques*, ENSTA (2nd year)
- *Calcul stochastique*, ENSTA (3rd year) and Master MMMEF (M2)

Christophe Hazard

- *Outils élémentaires d'analyse pour les équations aux dérivées partielles*, ENSTA (1st year)
- *Théorie spectrale des opérateurs autoadjoints*, ENSTA (2nd year) and Master AMS (M1)

Patrick Joly

- *Introduction à la discrétisation des équations aux dérivées partielles*, ENSTA (1st year)
- *Fonctions de variable complexe*, ENSTA (1st year)
- *Analyse fonctionnelle*, ENSTA (2nd year) and Master AMS (M2)
- *Propagation des ondes dans des milieux périodiques*, ENSTA (3rd year) and Master AMS (M2)

Maryna Kachanovska

- *Fonctions de variable complexe*, ENSTA (1st year)
- *Analyse fonctionnelle*, ENSTA (2nd year) and Master AMS (M1)
- *Modèles mathématiques et leur discrétisation en électromagnétisme*, ENSTA (3rd year) and Master AMS (M2)

Nicolas Kielbasiewicz

- *Programmation scientifique en C++*, ENSTA (2nd year) and Master AMS (M1)
- *Projet de simulation numérique*, ENSTA (2nd year) and Master AMS (M1)
- *Calcul scientifique parallèle*, ENSTA (3rd year) and Master AMS (M2)

Eric Lunéville

- *Introduction au calcul scientifique*, ENSTA (2nd year).
- *Programmation scientifique en C++*, ENSTA (2nd year) and Master AMS (M1)
- *Projet de simulation numérique*, ENSTA (2nd year) and Master AMS (M1)
- *Propagation et diffraction dans les guides d'ondes*, ENSTA (3rd year) and Master AMS (M2)

Jean-François Mercier

- *Outils élémentaires d'analyse pour les équations aux dérivées partielles*, ENSTA (1st year)
- *Fonctions de variable complexe*, ENSTA (1st year)
- *Théorie spectrale des opérateurs autoadjoints*, ENSTA (2nd year) and Master AMS (M1)

Axel Modave

- *Calcul scientifique à haute performance*, ENSTA (2nd year) and Master AMS (M1)
- *Calcul scientifique parallèle*, ENSTA (3rd year) and Master AMS (M2)

### 9.2.2. Supervision

PhD: Yohanes Tjandrawidjaja, "*Quelques contributions à l'analyse de la Half-Space Matching Method pour les problèmes de diffraction et son extension aux plaques 3D élastiques*", December 2019, A.-S. Bonnet-Ben Dhia, S. Fliss and V. Baronian

PhD in progress: Sandrine Paolantoni, "*Analyse spectrale et simulation numérique de la diffraction électromagnétique par des métamatériaux*", October 2016, C. Hazard

PhD in progress: Emile Parolin, "*Non overlapping domain decomposition methods with non local transmission conditions for electromagnetic wave propagation*", October 2017, P. Joly and X. Claeys

PhD in progress: Clément Bénéteau, "*Asymptotic analysis of time harmonic Maxwell equations in presence of metamaterials*", October 2017, S. Fliss and X. Claeys

PhD in progress: Hajer Methenni, "*Mathematical modelling and numerical method for the simulation of ultrasound structural health monitoring of composite plates*", October 2017, S. Fliss and S. Impériale

PhD in progress: Damien Mavaleix-Marchessoux, "*Modeling of the fluid-structure interaction resulting from a remote underwater explosion*", December 2017, M. Bonnet and S. Chaillat

PhD in progress: Nicolas Trafny, "*Development of semi-analytical models to predict the noise produced by turbulence-edges interactions*", April 2018, J.-F. Mercier and B. Cotté

PhD in progress: Damien Chicaud, "*Méthodes de décomposition de domaine pour la résolution de problèmes harmoniques d'ondes électromagnétiques en milieux complexes*", October 2018, P. Ciarlet and A. Modave

PhD in progress: Mahran Rihani, "*Équations de Maxwell en présence de méta-matériaux*", November 2018, A.-S. Bonnet-Ben Dhia and L. Chesnel

PhD in progress: Akram Beni Hamad, "*Propagation d'ondes électromagnétiques dans les câbles coaxiaux*", Septembre 2019, S. Imperiale, P. Joly and M. Khenissi

PhD in progress: Jean-François Fritsch, "*Imagerie dans les guides d'ondes enfouis*", Octobre 2019, L. Bourgeois and C. Hazard

PhD in progress: Amandine Boucart "*Modélisation d'une couche mince de nanoparticules réparties aléatoirement pour les ondes électromagnétiques*", Octobre 2019, S. Fliss and L. Giovangigli

## 9.3. Popularization

### 9.3.1. Internal or external Inria responsibilities

- A.-S. Bonnet-Ben Dhia is a member of the *bureau du comité des équipes-projets* (BCEP)
- P. Joly is a member of the *commission consultative paritaire scientifique* of Inria
- M. Kachanovska is a member of the *comité scientifique* of Inria-Saclay

### 9.3.2. Education

- Permanent members of POEMS are involved in the management of the engineering program at ENSTA Paris, the program in applied mathematics at IP Paris, the master 2 program "*Analyse, Modélisation et Simulation*" (M1 AMS) and the master 2 program "*Modélisation et Simulation en Mécanique des Structures et Systèmes Couplés*" (M2 MS2SC) of Université Paris-Saclay:
  - M. Bonnet: co-chair of the M2 MS2SC;
  - L. Bourgeois: co-chair 1A ENSTA until August 2019; co-responsible 2A ENSTA since Septembre 2019; co-chair of the M1 in applied mathematics since Septembre 2019;
  - P. Ciarlet: co-chair 3A ENSTA; deputy head of the M2 AMS until August 2019; coordinator of the master program in applied mathematics at IP Paris;
  - S. Fliss: co-chair of the M2 AMS since septembre 2019.

### 9.3.3. Interventions

- P. Joly presented a talk entitled "*Mathématiques autour de la musique et d'un piano*" during a scientific session at the *Musée des arts et métiers* (March 12, 2019 at Paris) and at the IECL (October 17, 2019 at Nancy).

## **RANDOPT Project-Team**

# **10. Dissemination**

## **10.1. Promoting Scientific Activities**

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

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

- Anne Auger: general chair of the ACM-GECCO 2019 conference that took place in July in Prague and welcomed ca. 700 participants.

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

- Dimo Brockhoff: co-organizer of the Lorentz Center Workshop “MACODA: Many Criteria Optimization and Decision Analysis”, September 2019, Leiden, The Netherlands, 42 participants
- Anne Auger, Dimo Brockhoff, Nikolaus Hansen, and Konstantinos Varelak: co-organizers of the Black-Box Optimization Benchmarking workshop (BBOB) at the ACM-GECCO 2019 conference.
- Anne Auger: Organizer of an **invited session** on *Recent Advances on Randomized Derivative Free Optimization* at the EURO conference, Dublin.

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

#### *10.1.2.1. Reviewer*

- Dimo Brockhoff and Nikolaus Hansen: ACM-GECCO 2019

### **10.1.3. Dagstuhl seminar invitations**

- Anne Auger, Dimo Brockhoff and Nikolaus Hansen invited at the Dagstuhl Seminar 19431 on “Theory of Randomized Optimization Heuristics”, October 2019
- Dimo Brockhoff invited at the Dagstuhl Seminar 20031 on “Scalability in Multiobjective Optimization”, January 2020

### **10.1.4. Journal**

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

- Anne Auger, Dimo Brockhoff and Nikolaus Hansen: Associate Editor of the ACM Transactions on Evolutionary Learning and Optimization
- Anne Auger and Nikolaus Hansen: Associate Editor of the Evolutionary Computation Journal
- Anne Auger is guest editor of an Algorithmica special issue of papers selected from the ACM-GECCO’2018 theory track
- Anne Auger is guest editor of the IEEE Transactions on Evolutionary Computation special issue on Theoretical Foundations of Evolutionary Computation

#### *10.1.4.2. Reviewer - Reviewing Activities*

- Dimo Brockhoff: reviewed papers for IEEE Transactions on Evolutionary Computation (IEEEETEC), European Journal of Operational Research (EJOR), Evolutionary Computation, and Journal of Global Optimization

### **10.1.5. Invited Talks**

- Dimo Brockhoff: “Quality Indicator Maximization in Multiobjective Optimization Via Single-Objective Solvers: Unflattened Hypervolume Improvement in the Sofomore Framework”, Jozef Stefan Institute, Ljubljana, Slovenia, April 2019

- Nikolaus Hansen: “How to Evolve Gradient Descent into Evolution Strategies and CMA-ES”, Journée de Rentrée du CMAP, Ecole polytechnique, Paris, October 2019
- Nikolaus Hansen: “How to Evolve Gradient Descent into Evolution Strategies and CMA-ES”, Symposium on Evolutionary Algorithms: Back to the Future and Beyond—Traversing the Ever-Evolving Landscape of Evolutionary Algorithms, Delft, The Netherlands, September 2019
- Nikolaus Hansen: Keynote lecture at the Workshop on Machine-Learning-Assisted Image Formation entitled “From Gradient-Based to Evolutionary Optimization”, Nice, France, June 2019
- Anne Auger: Convergence Results of Adaptive Evolution Strategies: an Overview, Lifeware seminar, January 2019
- Anne Auger: COMO-CMA-ES a linearly convergent multi-objective solver, ICCOP conference, Berlin

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

- Anne Auger, Elected Member of the ACM-SIGEVO executive board
- Dimo Brockhoff: member of the International Advisory Committee for EMO-2019 in East Lansing, USA
- Anne Auger, member of the conseil de laboratoire of the CMAP, Ecole Polytechnique.

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

### **10.2.1. Teaching**

Master: Anne Auger, “Optimization without gradients”, 22.5h ETD, niveau M2 (Optimization Master of Paris-Saclay)

Master: Dimo Brockhoff, “Algorithms and Complexity”, 36h ETD, niveau M1/M2 (joint MSc with ESSEC “Data Sciences & Business Analytics”), CentraleSupélec, France

Master: Anne Auger and Dimo Brockhoff, “Introduction to Optimization”, 31.5h ETD, niveau M2 (MSc Informatique - Parcours Apprentissage, Information et Contenu (AIC)), U. Paris-Saclay, France

Master: Anne Auger and Dimo Brockhoff, “Advanced Optimization”, 31.5h ETD, niveau M2 (MSc Informatique - Parcours Apprentissage, Information et Contenu (AIC)), U. Paris-Saclay, France

### **10.2.2. Tutorials**

- Dimo Brockhoff: tutorial on Evolutionary Multiobjective Optimization, 3h ETD, niveau PhD, ACM-GECCO conference, Czech Republic
- Nikolaus Hansen: tutorial “A Practical Guide to Experimentation”, 3h ETD, niveau PhD, ACM-GECCO conference, Czech Republic
- Nikolaus Hansen: tutorial on “CMA-ES and Advanced Adaptation Mechanisms”, 3h ETD, niveau PhD, ACM-GECCO conference, Czech Republic, with Youhei Akimoto

### **10.2.3. Supervision**

- PhD in progress: Konstantinos Varelas, “Large-Scale Optimization, CMA-ES and Radar Applications”, Dec. 2017, Anne Auger and Dimo Brockhoff
- PhD in progress: Cheikh Touré, “Linearly Convergent Multi-objective Stochastic Optimizers”, Dec. 2017, Anne Auger and Dimo Brockhoff
- PhD in progress: Paul Dufossé, “Constrained Optimization and Radar Applications”, Oct. 2018, Nikolaus Hansen
- PhD in progress: Marie-Ange Dahito, “Mixed-Integer Blackbox Optimization for Multiobjective Problems in the Automotive Industry”, Jan 2019, Dimo Brockhoff and Nikolaus Hansen

- PhD in progress: Eugénie Marescaux, Theoretical Analysis of convergence of multi-objective solvers (2019–), supervisor A. Auger
- PhD in progress: Alann Cheral, “Black-box optimization for the optimization of hyperspectral bandwidth for anomaly detection” (2019–), supervisor A. Auger
- Jingyun Yang, Ecole Polytechnique, since September 2019
- Eugénie Marescaux, ENSTA, April–September 2019
- Julien Bonneville, U. Versailles, March–August 2019

#### **10.2.4. Juries**

- Anne Auger: member of the **PGMO PhD award** scientific committee. Representing the committee for the PGMO PhD award ceremony at the PGMO days
- Dimo Brockhoff: jury member for the PhD thesis of David Gaudrie, École des Mines de Saint-Étienne, October 2019

### **10.3. Popularization**

- Scientific mediation by Cheikh Touré: presentation on poker in the context of the visit of college and high school students to Inria Saclay

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

- Anne Auger: member of the BCEP of Saclay.
- Dimo Brockhoff: member of the CDT committee of Saclay (since February 2019).

## SPECFUN Project-Team

# 8. Dissemination

## 8.1. Promoting Scientific Activities

### 8.1.1. Scientific Events: Organisation

#### 8.1.1.1. General Chair, Scientific Chair

- Alin Bostan is part of the Scientific advisory board of the conference series *Effective Methods in Algebraic Geometry* (MEGA).
- Alin Bostan is part of the scientific committee of the **GDR EFI** (“Functional Equations and Interactions”) dependent on the mathematical institute (INSMI) of the CNRS. The goal of this GDR is to bring together various research communities in France working on functional equations in fields of computer science and mathematics.
- Frédéric Chyzak is member of the steering committee of the *Journées Nationales de Calcul Formel* (JNCF), the annual meeting of the French computer algebra community.
- Frédéric Chyzak was until July 2019 elected member (and chair) of the steering committee of the *International Symposium on Symbolic and Algebraic Computation* (ISSAC, 3-year term).
- Georges Gonthier is a member of the steering committee of the *Certified Programs and Proofs Conference* (CPP).

#### 8.1.1.2. Member of the Organizing Committees

- Alin Bostan co-organizes, with Lucia Di Vizio, the *Séminaire Différentiel* between U. Versailles and Inria Saclay, with a bi-annual frequency ( $\sim 30$  participants per event).
- Alin Bostan co-organizes, with Lucia Di Vizio, the working group *Marches dans le quart de plan*, at Institut Henri Poincaré (Paris), with a bi-monthly frequency ( $\sim 15$  participants per event).

### 8.1.2. Scientific Events: Selection

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

- Alin Bostan and Frédéric Chyzak have served as conference program committee members for the first *Maple Conference*.
- Georges Gonthier has served as a conference program committee members for the first *Workshop on Formal Methods for Blockchains* (FMBC).

#### 8.1.2.2. Reviewer

- Frédéric Chyzak has served as reviewer for the selection of the international conferences CICM 2019, ISSAC 2019, and Maple Conference 2019.
- Alin Bostan has served as reviewer for the selection of the international conferences FPSAC 2019 and Maple Conference 2019.

### 8.1.3. Journal

#### 8.1.3.1. Member of the Editorial Boards

- Alin Bostan is on the editorial board of the *Journal of Symbolic Computation*.
- Alin Bostan is on the editorial board of the *Annals of Combinatorics*.
- Guy Fayolle is associate editor of the journal *Markov Processes and Related Fields*.
- Georges Gonthier is on the editorial board of the *Journal of Formalized Reasoning*.

#### 8.1.3.2. Reviewer - Reviewing Activities

- Alin Bostan has served as a reviewer for the journals: *Journal of Symbolic Computation*, *Journal of Combinatorial Theory, Series A*, *Applicable Algebra in Engineering Communications and Computing*, *Journal of Combinatorial Algebra*, *Annales Henri Lebesgue*, *Annali dell Università di Ferrara*, *Mathematics of Computation*, *Séminaire Lotharingien de Combinatoire*.
- Guy Fayolle has been a reviewer for *Advances in Applied Probability*, *Markov Processes and Related Fields*, *Probability Theory and Related Fields*, *Queueing Systems: Theory and Applications*, *European Journal of Combinatorics*, *Journal of Statistical Physics*, *Physica A*, *Springer Science*.

#### 8.1.4. Invited Talks

- Frédéric Chyzak has been invited to give a talk on his joint work with Alin Bostan about the enumeration of walks with small steps in the quarter plane at the international conference **Transient Transcendence in Transylvania** (Braov, Romania).
- Frédéric Chyzak has been invited to give talks on his joint work with Philippe Dumas about Becker's conjecture on Mahler functions: at the conference **Équations Fonctionnelles et Interactions** (Anglet), during a Seminar on Symbolic Computation at the Academy of Mathematics and Systems Science, Chinese Academy of Sciences (Beijing, China), and at the conference **Differential Galois Theory in Strasbourg** (Strasbourg).
- Frédéric Chyzak has been invited to give a talk on his joint work with Alin Bostan, Pierre Lairez, and Bruno Salvy (AriC) at the **6th Summer School in Symbolic Computation** (Chongqing, China).
- Alin Bostan has been invited to give a talk at the **Algebraic Marvels in Differential Equations**, Universidade Lisboa, Lisbonne, Portugal, February 2019.
- Alin Bostan has been invited to give a talk at the **Combinatorics Seminar**, LaBRI, Bordeaux, March 2019.
- Alin Bostan has been a plenary speaker at the international conference **AofA 2019**, Luminy (France), June 2019.
- Alin Bostan has been a plenary speaker at the international conference **FPSAC 2019**, Ljubljana (Slovenia), July 2019.
- Alin Bostan has been invited to give a series of five lectures at the **Vienna Summer School of Mathematics**, Weissensee, Austria, Sept. 2019.

#### 8.1.5. Leadership within the Scientific Community

##### 8.1.5.1. Regular Research Seminar

The team organizes a **regular seminar**, with roughly 10 talks a year. The topics reflect the team's interests: computer algebra, combinatorics, number theory, formal proofs, and related domains.

##### 8.1.5.2. Research Working Group

In 2018, we have set up a working group **Marches dans le quart de plan** around the study of walks in the quarter plan, a very active research topic in probability theory and enumerative combinatorics in recent years. The working group is organized at Institut Henri Poincaré, with a regularity of two sessions per month. The original purpose was to read the article "On the Nature of the Generating Series of Walks in the Quarter Plane" by T. Dreyfus, C. Hardouin, J. Roques, M. Singer, published in *Invent. Math.* this year. But the reality exceeded expectations: the working group attracted a dozen of people, working either in computer science or pure mathematics, who began to interact and a very good dynamic was created. Altogether, 15 sessions have taken place in 2019.

##### 8.1.5.3. International Conference

Together with Kilian Raschel (CNRS, U. Tours), Alin Bostan co-organized an international conference, **Transient Transcendence in Transylvania**, held in Romania from May 13 to 17, 2019. They took care together of all the infrastructure for this conference: program, invitations, web page, etc. This conference was a unique event in Romania, with a truly exceptional list of speakers, from several continents and countries: South Africa, Germany, Austria, Canada, United States, France, Netherlands, Poland, and of course, Romania. As a natural continuation of the conference, a volume will be published in the Springer collection **PROMS** (Proceedings in Mathematics & Statistics), with Bostan and Raschel as editors.

### 8.1.6. Scientific Expertise

- Guy Fayolle is scientific advisor and associate researcher at the *Robotics Laboratory of Mines ParisTech*.
- Georges Gonthier is taking part in an interministerial survey on the technological roadblocks for blockchains, which has been jointly commissioned to Inria, CEA and IMT by the Ministère de l'Économie, the Ministère de l'Éducation supérieure et de la Recherche, and the Secrétariat d'État au Numérique. He also participates to the Blockchain Taskforce set up by the French government.

### 8.1.7. Research Administration

- Frédéric Chyzak is project coordinator of the ANR project *De rerum natura*.
- Guy Fayolle is a member of the working group for *Computer System Modeling* of the *International Federation for Information Processing (IFIP WG 7.3)*.
- Georges Gonthier serves on the Conseil de l'École Doctorale de Mathématiques Hadamard.

## 8.2. Teaching - Supervision - Juries

### 8.2.1. Teaching

#### Master:

Alin Bostan, *Algorithmes efficaces en calcul formel*, 36h, M2, MPRI, France.

Alin Bostan, *Modern Algorithms for Symbolic Summation and Integration*, 21h, M2, Master d'Informatique Fondamentale de l'ENS de Lyon, France.

Frédéric Chyzak, *Algorithmes efficaces en calcul formel*, 22.5h, M2, MPRI, France.

Pierre Lairez, *Algorithmique avancée (INF550)*, TD, 18h, M2, École polytechnique, France.

Pierre Lairez, *Les bases de la programmation et de l'algorithmique (INF411)*, TD, 40h, M1, École polytechnique, France.

### 8.2.2. Juries

- Alin Bostan has served as an examiner in the PhD jury of Robin Larrieu, *Arithmétique rapide pour des corps finis*, Ecole polytechnique, December 10, 2019.
- Alin Bostan has served as a member of the monitoring PhD committee of Youssef Abdelaziz, Univ. Paris 6.
- Alin Bostan has served as a member of the monitoring PhD committee of Manon Bertin, Univ. Rouen.
- Frédéric Chyzak has served as a reviewer in the PhD jury of Joelle Saade, *Méthodes symboliques pour les systèmes différentiels linéaires à singularité irrégulière*, Université de Limoges, November 5, 2019.
- Frédéric Chyzak has served as a reviewer in the PhD jury of Amélie Trotignon, *Marches sur des réseaux dans des cônes : aspects combinatoires et probabilistes*, Université de Tours, December 6, 2019.
- Pierre Lairez has served as a reviewer in the PhD jury of Josué Tonelli-Cueto, *Condition and Homology in Semialgebraic Geometry*, TU Berlin, November 28, 2019.
- Georges Gonthier has served in the PhD jury of Armaël Guénaud, *Mechanized Verification of the Correctness and Asymptotic Complexity of Programs*, Université de Paris, December 16, 2019.

## 8.3. Popularization

### 8.3.1. Articles and contents

- Georges Gonthier published an interview article *Blockchain: ce que c'est, comment ça marche* in *La Recherche*, **545**, March 2019.
- Georges Gonthier co-wrote with Ivan Odonnat (Banque de France) *L'avenir du bitcoin et de la blockchain*, in *Les Carnets de l'Institut Diderot* (2019).



## TAU Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

Isabelle Guyon - Competition co-chair, ECMLPKDD 2019

Michele Sebag - Area Chair NIPS 2017-2019, ICLR 2020

Flora Jay - PASADENA workshop co-chair, Paris, 2019

#### 10.1.1.2. Member of Organizing Committees

Guillaume Charpiat - Organizing & scientific committee of the ForMaL summer school, at ENS Cachan, June 2019, and of WAISE (Second International Workshop on Artificial Intelligence Safety Engineering) held at SafeComp in September 2019.

Flora Jay - Organizing & scientific committee of Research Program "Ecosystem dynamics : stakes, data and models" at Institut Pascal, Paris-Saclay, 2019.

Isabelle Guyon - Advisory committee [BayLearn 2019](#); Co-organizer NeurIPS 2019 workshop on Challenges in Machine Learning; Co-organizer NeurIPS 2019 NewInML workshop.

Marc Schoenauer - Steering Committee, Parallel Problem Solving from Nature (PPSN); Steering Committee, Learning and Intelligent Optimization (LION).

Michele Sebag - President of Steering Committee, Eur. Conf. on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD).

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Reviewer

All TAU members are reviewers of the main conferences in their respective fields of expertise.

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

Isabelle Guyon - Action editor, *Journal of Machine Learning Research* (JMLR); series editor, *Springer series Challenges in Machine Learning* (CiML).

Marc Schoenauer - Advisory Board, *Evolutionary Computation Journal*, MIT Press, and *Genetic Programming and Evolutionary Machines*, Springer Verlag; Action editor, *Journal of Machine Learning Research* (JMLR).

Michèle Sebag - Editorial Board, *Machine Learning*, Springer Verlag.

Paola Tubaro - Associate Editorial Board *Sociology*, Sage; Co-editor, *Revue Française de Sociologie*, Presses de Sciences Po.

#### 10.1.3.2. Reviewer - Reviewing Activities

All members of the team reviewed numerous articles for the most prestigious journals in their respective fields of expertise.

#### 10.1.4. Invited Talks

Guillaume Charpiat - *Deep Learning for Satellite Imagery* in the Imagine team (ENPC), at Champs-sur-Marne, March 2019; and at LRDE lab (EPITA), at Kremlin-Bicêtre, April 2019; *Deep Learning for Storm Trajectory Prediction and Remote Sensing* at the seminar AI for Climate, at Jussieu (Paris), December 2019.

Cyril Furtlehner - *A machine learning approach to solar wind speed forecasting from solar images*, Machine Learning in Heliophysics conference, Amsterdam September 2019.

Flora Jay - *Machine Learning and Deep Learning for Population Genetics*, Statistics/Machine Learning at Paris-Saclay, Bures-sur-Yvette, Jan 2019; *Inferring Demography? A Deep Learning Approach for Population Genetic Data*, ALPHY 7-8 Feb. 2019; *Génomomes présents, histoires d'antan: Apprentissage profond pour la génétique des populations*, Inria Seminar Unithé ou Café with G Charpiat, Feb 2019; *When AI & Big Data meet life sciences - Advances in research and ethical questions*, Round Table at YLRS2019, Paris, Jun 2019; *Inferring past history from genetic data using ABC and Deep Learning approaches*, Seminar at Lille University, Jan 2019; *Creating Artificial Human Genomes Using Generative Models*, Seminars at LCQB and Evolmol IBENS, Paris, Nov and Dec 2019.

Julien Girard - *Formal validation for machine learning*, DataIA day on Safety & AI, Palaiseau, Sept. 11th.

Isabelle Guyon - Invited talk at 2019 Sackler Colloquium of the Science of Deep Learning, and Keynote IJCNN 2019: "Neural network solvers for power transmission problems" (<https://youtu.be/YBcRzIAFDYU>).

Michèle Sebag - *Meta-Learning*, Kickoff of the Kompetenz Center in Machine Learning, Rhine Ruhr Region, Jan. 2019; *Structural Agnostic Models*, Oberwolfach Symposium on Causality, May 2019; *Artificial Intelligence & Causal Modeling*, CREST Big Data Applications Symposium, Tokyo, Sept. 24, 2019; *Some news and questions about AI and Machine Learning*, Arensberg Symposium, Leuven, Nov. 2019.

Marc Schoenauer - *Intelligence Artificielle Mythes et réalités*, audition par la Fédération Française du Bâtiment, Feb. 13, 2019; *Intelligence Artificielle : du congrès de Dartmouth au rapport Villani*, Séminaire IFPEN, Apr. 4. 2019; *Intelligence Artificielle : de Dartmouth à l'apprentissage profond et au rapport Villani*, Rencontres Franciliennes de Mécanique, May 28, 2019; *A gentle introduction to AI and (Deep) Learning*, Mexican-French Workshop, Aug. 27. 2019, Mexico; *Intelligence artificielle : certification, transparence, et impact sur la société*, Data Science Day, Mines Paris Tech, Sept. 18, 2019; *When Big Data and Machine Learning meet Partial Differential Equations*, CREST Big Data Applications Symposium, Tokyo, Sept. 25, 2019;

Paola Tubaro - *Sélectionnée par une IA ? Algorithmes, inégalités, et les "humains dans la boucle"*, Centre D'Alembert, Orsay, 18/04/2019; *Dans la fabrique des algorithmes : plateformes, micro-travail et dynamiques d'externalisation*, INSEE, 14/05/2019; *The human labour that makes AI possible: An empirical study of micro-work in France*, Alan Turing Institute, London, 22/01/2019; *Que font les big data aux sciences sociales ? Retour sur une 'crise' annoncée*, EHESS, 21/02/2019.

#### 10.1.5. Leadership within the Scientific Community

Isabelle Guyon - President and co-founder of **ChaLearn**, a non-for-profit organization dedicated to the organization of challenge.

Marc Schoenauer - Chair of ACM-SIGEVO (Special Interest Group on Evolutionary Computation), 2015-2019, now in Advisory Board; Founding President (since 2015) of SPECIES (Society for the Promotion of Evolutionary Computation In Europe and Surroundings), that organizes the yearly series of conferences *EvoStar*.

Michèle Sebag - Elected Chair of Steering Committee, ECML-PKDD; Board member, Institut de Convergence DataIA.

Paola Tubaro - Convenor of the Social Network Analysis Group of British Sociological Association; co-founder of European Network on Digital Labor.

### 10.1.6. Scientific Expertise

Guillaume Charpiat - Member of the Inria Saclay Commission Scientifique, and as such, jury committee for grants for PhD theses / postdocs / professor delegations; expertise for DigiCosme grants, ANRT CIFRE PhD grants; for GPU platforms: Jean Zay (GENCI) and Lab-IA (Saclay plateau). Discussion panel of the workshop day IA & Océan-Atmosphère-Climat (IMT Atlantique Rennes), February 6th. Panel of the Machine Learning workshop at CRiP ITES, Deauville, April 5th.

Cécile Germain - Evaluator for the H2020-2016-CNECT program; member of the DFG review panel within Germany's excellence strategy selection process.

Isabelle Guyon - Member of the NeurIPS foundation board.

Marc Schoenauer - Comité Scientifique IA, SCube (Scientipôle Savoirs & Société), Orsay; Scientific Committee, TrackML (see Section 7.6 ); Comité de sélection, Chaire ABEONA-ENS "Biais et Equité en IA"; Conseil Scientifique, IFPEN; Scientific Advisory Board, BCAM, Bilbao, Spain; Scientific Advisory Board, Tara Oceans, Paris.

Michèle Sebag - Hiring juries : LRI; Centrale-Supélec; ENS-Paris; UCA-Nice; U. Freiburg, Germany. Selection juries: Awards NIPS 2019. Propositions NSERC, Canada; Propositions Dpt STIC; Prix de thèse AFIA. Expert Committee from Finland's Minister of Economic Affairs, AI Strategy, February 2019.

### 10.1.7. Research Administration

Isabelle Guyon - Representative of UPSud in the DataIA *Institut de Convergence* Program Committee, University of Paris-Saclay. Responsible of Master AIC (becoming Paris-Saclay master in Artificial Intelligence).

Marc Schoenauer - Deputy Scientific Director of Inria (in French, Directeur Scientifique Adjoint, DSA), in charge of AI.

Michele Sebag - Deputy director of LRI, CNRS UMR 8623; elected member of the Research Council of Univ. Paris-Saclay; member of the STIC department council of Univ. Paris-Saclay; member of the Scientific Council of Labex AMIES, Applications des Mathématiques ds l'Industrie, l'Entreprise et la Société.

Paola Tubaro - Representative of CNRS in the DataIA *Institut de Convergence* Program Committee, University of Paris-Saclay; member of the Board, Maison des Sciences de l'Homme Paris-Saclay; member of CLIP, Institut Pascal, University of Paris-Saclay.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Licence : Philippe Caillou, Computer Science for students in Accounting and Management, 192h, L1, IUT Sceaux, Univ. Paris Sud.

Licence : Aurélien Decelle, Computer Architecture, 42h, L2, Univ. Paris-Sud.

Licence : Aurélien Decelle, Introduction to Machine Learning, 57h, L2, Univ. Paris-Sud.

Licence : François Landes, Mathematics for Computer Scientists, 51h, L2, Univ. Paris-Sud.

Licence : François Landes, Intro to Machine Learning, 48h, L2, Univ. Paris-Sud.

Licence and Polytech : Cécile Germain, Computer Architecture

Licence : Isabelle Guyon: Introduction to Data Science, L1, Univ. Paris-Sud.

Licence : Isabelle Guyon, Project: Resolution of mini-challenges (created by M2 students), L2, Univ. Paris-Sud.

Master : François Landes, Machine Learning, 34h, M1 Polytech, U. Paris-sud.

Master : Aurélien Decelle, Machine Learning, 26h, M1, Univ. Paris-Sud.

Master : Aurélien Decelle, Probability and statistics, 26h, M1, Univ. Paris-Sud.

Master : Aurélien Decelle, Probability, statistics and information theory, M1, Univ. Paris-Sud.

Master : Guillaume Charpiat, Deep Learning in Practice, 24h, M2 Recherche, Centrale-Supelec + MVA.

Master : Isabelle Guyon, Project: Creation of mini-challenges, M2, Univ. Paris-Sud.

Master : Michèle Sebag, Machine Learning, 12h; Deep Learning, 9h; Reinforcement Learning, 12h; M2 Recherche, U. Paris-Sud.

Master : François Landes, Machine Learning, 22h, M2 Recherche, U. Paris-Sud.

Master : Paola Tubaro, Start -up project for engineering students, 24h, Telecom ParisTech.

Master : Paola Tubaro, Sociology of social networks, 24h, M2, EHESS/ENS.

Master : Paola Tubaro, Social and economic network science, 24h, M2, ENSAE.

Doctorate: Paola Tubaro, Research Methods, 12h, University of Insubria, Italy.

Summer school: Guillaume Charpiat, Machine Learning & Deep Learning Tutorial, 4h30, ForMaL, ENS Cachan, June 4th

### 10.2.2. Supervision

HdR - Paola Tubaro, *Decoding the platform society: Organizations, markets and networks in the digital economy*, 11/12/2019, Sciences Po Paris.

PhD - Benjamin DONNOT, *Deep learning methods for predicting flows in power grids : novel architectures and algorithms.*, 13/02/2019, Isabelle Guyon and Antoine Marot (RTE)

PhD - Corentin TALLEC, *Reinforcement Learning and Recurrent Neural Networks: Dynamical approaches*, 7/10/2019, Université Paris-Saclay, Yann Ollivier

PhD - Mandar CHANDORKAR, *Machine Learning in Space Weather*, 14/11/2019, University of Eindhoven, Enrico Camporeale, Cyril Furtlehner, and Michèle Sebag

PhD - Guillaume DOQUET, *Agnostic Feature Selection*, 29/11/2019, Université Paris-Saclay, Michèle Sebag

PhD - Diviyani KALAINATHAN, *Generative Neural Networks to Infer Causal Mechanisms: Algorithms and Applications*, 17/12/2019, Université Paris-Saclay, Michèle Sebag and Isabelle Guyon

PhD - Lisheng SUN, *Meta-Learning as a Markov Decision Process*, 19/12/2019, Université Paris-Saclay, Isabelle Guyon and Michèle Sebag

PhD in progress - Eléonore BARTENLIAN, *Deep Learning pour le traitement du signal*, 1/10/2018, Michèle Sebag and Frédéric Pascal (Centrale-Supélec)

PhD in progress - Victor BERGER, *Variational Anytime Simulator*, 1/10/2017, Michèle Sebag

PhD in progress - Guillaume BIED, *Valorisation des Données pour la Recherche d'Emploi*, 1/10/2019, Bruno Crepon (CREST-ENSAE) and Philippe Caillou

PhD in progress - Leonard BLIER, *Vers une architecture stable pour les systèmes d'apprentissage par renforcement*, 1/09/2018, Yann Ollivier (Facebook AI Research, Paris) and Marc Schoenauer

PhD in progress - Tony BONNAIRE, *Reconstruction de la toile cosmique*, from 1/10/2018, Nabila Aghanim (Institut d'Astrophysique Spatiale) and Aurélien Decelle

PhD in progress - Balthazar DONON, *Apprentissage par renforcement pour une conduite stratégique du système électrique*, 1/10/2018, Isabelle Guyon and Antoine Marot (RTE)

PhD in progress - Victor ESTRADE *Robust domain-adversarial learning, with applications to High Energy Physics*, 01/10/2016, Cécile Germain and Isabelle Guyon.

PhD in progress - Loris FELARDOS, *Neural networks for molecular dynamics simulations*, 1/10/2018, Guillaume Charpiat, Jérôme Hénin (IBPC) and Bruno Raffin (InriaAlpes)

PhD in progress - Giancarlo FISSORE, *Statistical physics analysis of generative models*, 1/10/2017, Aurélien Decelle and Cyril Furtlehner

PhD in progress - Julien GIRARD, *Vérification et validation des techniques d'apprentissage automatique*, 1/10/2018, Zakarian Chihani (CEA) and Guillaume Charpiat

PhD in progress - Nicolas GIRARD, *Satellite image vectorization using neural networks*, 1/10/2017, Yuliya Tarabalka & Pierre Alliez (Inria Sophia-Antipolis) and Guillaume Charpiat

PhD in progress - Armand LACOMBE, *Recommandation de Formations: Application de l'apprentissage causal dans le domaine des ressources humaines*, 1/10/2019, Michele Sebag and Philippe Caillou

PhD in progress - Zhengying LIU, *Automation du design des reseaux de neurones profonds*, 1/10/2017, Isabelle Guyon

PhD in progress - Nizam MAKDOUD, *Motivations intrinsèques en apprentissage par renforcement. Application à la recherche de failles de sécurité*, 1/02/2018, Marc Schoenauer and Jérôme Kodjabachian (Thalès ThereSIS, Palaiseau).

PhD in progress - Marc NABHAN, *Sûreté de fonctionnement d'un véhicule autonome - évaluation des fausses détections au travers d'un profil de mission réduit*, 1/10/2017, Marc Schoenauer and Hiba Hage (Renault)

PhD in progress - Adrian POL *Machine Learning Anomaly Detection, with application to CMS Data Quality Monitoring*, 01/10/2016, Cécile Germain.

PhD in progress - Herilalaina RAKOTOARISON, *Automatic Algorithm Configuration for Power Grid Optimization*, 1/10/2017, Marc Schoenauer and Michèle Sebag

PhD in progress - Théophile SANCHEZ, *Reconstructing the past: deep learning for population genetics*, 1/10/2017, Guillaume Charpiat and Flora Jay

PhD in progress - Pierre WOLINSKI, *Learning the Architecture of Neural Networks*, from 1/9/2016, Yann Ollivier (Facebook AI Research, Paris) and Guillaume Charpiat

PhD in progress - Wenzhuo LIU, *Machine Learning for Numerical Simulation of PDEs*, from 1/11/2019, Mouadh Yagoubi (IRT SystemX) and Marc Schoenauer

PhD in progress - Marion ULLMO, *Reconstruction de la toile cosmique*, from 1/10/2018, Nabila Aghanim (Institut d'Astrophysique Spatiale) and Aurélien Decelle

### 10.2.3. Juries

Marc Schoenauer: Reviewer for Dennis Wilson, IRIT, Université Toulouse; PhD jury of Patricio Cerda Reyes, U. Paris-Saclay, 28/11/2019.

François Landes: PhD rapporteur of Martina Teruzzi (Condensed matter and Machine Learning PhD, at SISSA, Trieste, Italy).

Paola Tubaro: PhD jury of Sophie Balech, U. Paris Nanterre, 09/07/2019; PhD jury of Linda Rua, U. Paris Dauphine, 13/12/2019.

Guillaume Charpiat: half-way PhD committee ("à mi-parcours") of Rodrigo Daudt (ONERA), of Julie Rivet (EPITA) and of Nissim Zerbib (Institut de la Vision)

Isabelle Guyon: PhD jury Justine Falque, U. Paris-Saclay (29/11/2019).

Michele Sebag: Reviewer for A. Chemla (PhD U. Roma & IRCAM); Pierre Fournier (PhD ISIR).

## 10.3. Popularization

### 10.3.1. Articles and contents

- Michèle Sebag - *Il faut dissiper le malentendu sur “les prétentions infondées” de l’intelligence artificielle*, tribune du journal *Le Monde* du 12 août 2019.
- Paola Tubaro - BBC World service, *The ‘microworkers’ making your digital life possible*, 02/08/2019; Radio France Inter, *Travailleurs du clic, les soutiers du clavier*, 23/03/2019; Science & Vie, *La force de l’IA repose sur des travailleurs bien r’eels*, 24/10/2019; AFP/L’Express, *Les travailleurs du clic, petites mains invisibles de l’économie numérique*, 21/06/2019; CNRS Le Journal, *Ces microtravailleurs de l’ombre*, 24/05/2019; Le Monde, *Jobs du clic : la France compte plus de 250 000 micro-travailleurs*, 15/02/2019; L’Humanité Dimanche, *Travailleuse du clic, la double invisibilité*, 02/05/2019.

### 10.3.2. Interventions

- Guillaume Charpiat - *Génomes présents, histoires d’antan: Apprentissage profond pour la génétique des populations*, Inria Seminar Unithé ou Café with Flora Jay, Feb 2019.
- Marc Schoenauer - *Intelligence Artificielle Mythes et réalités*, Classe virtuelle de la Délégation Académique du Numérique Educatif, Feb. 2, 2019; *Intelligence Artificielle Mythes et réalités*, Médiathèque George Sand, Palaiseau, Feb. 9, 2019.
- Michèle Sebag - Journées Scientifiques Inria, Lyon 2019; Centre de Recherches Interdisciplinaires, Workshop on Artificial Intelligence and Women Empowerment (Oct. 2019); CRI, *Open AI: From big data to smart data* (Nov. 2019).
- Paola Tubaro - *Le Micro-Travail en France : derrière l’automatisation, de nouvelles précarités au travail ?* CFE-CGC Orange, Paris, 01/07/2019; *Le Micro-Travail en France*, Fondation Gabriel Péri, Paris, 26/06/2019; *Big data et société : vie privée, travail, inégalités*, Banque de France, 06/06/2019.

## TOCCATA Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

J.-C. Filliâtre, scientific chair and co-organizer of EJCP (École Jeunes Chercheurs en Programmation du GDR GPL) at Strasbourg on June 24–28, 2019. 5 days / 8 lectures / 25 participants. <http://ejcp2019.icube.unistra.fr/>

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Chair of Conference Program Committees

S. Boldo, program co-chair of the 26th IEEE Symposium on Computer Arithmetic (ARITH 2019), Kyoto, Japan. [35]

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

S. Boldo, 11th NASA Formal Methods Symposium (NFM 2019)

J.-C. Filliâtre, 10th International Conference on Interactive Theorem Proving (ITP 2019)

J.-C. Filliâtre, 9th ACM SIGPLAN International Conference on Certified Programs and Proofs (CPP 2020)

J.-C. Filliâtre, European Symposium on Programming (ESOP 2020)

G. Melquiond, 26th IEEE Symposium on Computer Arithmetic (ARITH 2019)

G. Melquiond, 10th International Conference on Interactive Theorem Proving (ITP 2019)

#### 10.1.2.3. Reviewer

The members of the Toccata team have reviewed numerous papers for numerous international conferences.

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

G. Melquiond, member of the editorial board of *Reliable Computing*.

J.-C. Filliâtre, member of the editorial board of *Journal of Functional Programming*.

#### 10.1.3.2. Reviewer - Reviewing Activities

The members of the Toccata team have reviewed numerous papers for numerous international journals.

#### 10.1.4. Invited Talks

G. Melquiond, “Computer Arithmetic and Formal Proofs” [19], at the 30th Journées Francophones des Langages Applicatifs (JFLA 2019).

J.-C. Filliâtre, “Deductive Verification of OCaml Libraries” [17], at the 15th International Conference on integrated Formal Methods (iFM), December 2019, Bergen, Norway.

J.-C. Filliâtre, “Retour sur 25 ans de programmation avec OCaml” [18], at Journées Francophones des Langages Applicatifs (JFLA), January 2019, Les Rousses, France.

J.-C. Filliâtre, “The Why3 tool for deductive verification and verified OCaml libraries”, at Framac/Spark day 2019, Paris, France.

#### 10.1.5. Leadership within the Scientific Community

S. Boldo, elected chair of the ARITH working group of the GDR-IM (a CNRS subgroup of computer science) with J. Detrey (Inria Nancy) and now L.-S. Didier (Univ. Toulon).

J.-C. Filliâtre, chair of IFIP WG 1.9/2.15 verified Software.

#### 10.1.6. Scientific Expertise

G. Melquiond, member of the scientific commission of Inria-Saclay, in charge of selecting candidates for PhD grants, Post-doc grants, temporary leaves from universities (“délégations”).

S. Boldo, member of the program committee for selecting postdocs of the maths/computer science program of the Labex mathématique Hadamard.

S. Boldo has mentored for 1 year a female PhD student of University Paris-Saclay (from epidemiology).

J.-C. Filliâtre, grading the entrance examination at X/ENS (“option informatique”).

C. Marché, member of DigiCosme committee for research and innovation (selection of projects for working groups, post-doc grants, doctoral missions, invited professors)

#### 10.1.7. Research Administration

G. Melquiond, member of the committee for the monitoring of PhD students (“*commission de suivi doctoral*”).

S Boldo, member of the CLFP (“*commission locale de formation permanente*”).

S. Boldo, member of the (national) IES commission.

S. Boldo, member of the CDT commission of Saclay (“*commission de développement technologique*”).

S. Boldo, member of the STIC department commission of Univ. Paris-Sud.

S. Boldo, member of the executive commission for the Digosme Labex.

S. Boldo, deputy scientific director (DSA) of Inria Saclay research center from January 1st, 2019

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Master Parisien de Recherche en Informatique (MPRI) <https://wikimpri.dptinfo.ens-cachan.fr/doku.php>: “Proofs of Programs” <http://www.lri.fr/~marche/MPRI-2-36-1/> (M2), C. Marché (12h).

A. Lanco, *Unix et programmation Web*, 24h, L2, Université Paris-Saclay, France.

G. Melquiond, *Programmation C++ avancée*, 12h, M2, Université Paris-Saclay, France.

J.-C. Filliâtre, *Langages de programmation et compilation*, 25h, L3, École Normale Supérieure, France.



J.-C. Filliâtre, *Les bases de l’algorithmique et de la programmation*, 15h, L3, École Polytechnique, France.

J.-C. Filliâtre, *Compilation*, 18h, M1, École Polytechnique, France.

S. Boldo was invited in the Xavier Leroy’s course at Collège de France on Dec 19th.

### 10.2.2. Supervision

HDR: G. Melquiond, “Formal Verification for Numerical Computations, and the Other Way Around” [11], Université Paris-Sud, Apr. 1st, 2019.

PhD: F. Faissole, “Formalisations d’analyses d’erreurs en analyse numérique et en arithmétique à virgule flottante”, Université Paris-Saclay & Université Paris-Sud, Dec 13th 2019, supervised by S. Boldo and A. Chapoutot. [Not yet on HAL]

PhD: A. Coquereau, “Amélioration de performances du solveur SMT Alt-Ergo grâce à l’intégration d’un solveur SAT efficace”, Université Paris-Saclay & Université Paris-Sud, Dec 16th 2019, supervised by S. Conchon, F. Le Fessant et M. Mauny. [Not yet on HAL]

PhD: M. Roux, “Extensions de l’algorithme d’atteignabilité arrière dans le cadre de la vérification de modèles modulo théories”, Université Paris-Saclay & Université Paris-Sud, Dec 19th 2019, supervised by Sylvain Conchon. [Not yet on HAL]

PhD in progress: R. Rieu-Helft, “Développement et vérification de bibliothèques d’arithmétique entière en précision arbitraire”, since Oct. 2017, supervised by G. Melquiond and P. Cuoq (TrustIn-Soft).

PhD in progress: D. Gallois-Wong, “Vérification formelle et filtres numériques”, since Oct. 2017, supervised by S. Boldo and T. Hilaire.

PhD in progress: Q. Garchery, “Certification de la génération et de la transformation d’obligations de preuve”, since Oct. 2018, supervised by C. Keller, C. Marché and A. Paskevich.

PhD in progress: A. Lanco, “Stratégies pour la réduction forte”, since Oct. 2019, supervised by T. Balabonski and G. Melquiond.

G. Turbiau has been a M1 trainee for 2 months, supervised by S. Boldo.

### 10.2.3. Juries

S. Boldo, member of the Inria CRCN recruiting juries, national one and at Rennes.

S. Boldo, president of the PhD defense of Clothilde Jeangoudoux, Sorbonne University, May 21st

S. Boldo, reviewer of the habilitation of Christoph Lauter, Sorbonne University, May 22nd

S. Boldo, reviewer of the PhD defence of Florent Bréhard, ENS Lyon, July 12th

S. Boldo, reviewer of PhD defence of Damien Rouhling, Université Côte d’Azur, Sept 30th

S. Boldo, president of the PhD defense of Yohan Chatelain, Université Paris-Saclay, Dec 12th

S. Boldo, president of the PhD defense of Armaël Guéneau, Université de Paris, Dec 16th

S. Boldo, member of the PhD defense of Antoine Kaszczyc, Université Paris-Nord, Dec 18th

J.-C. Filliâtre, reviewer of the PhD defense of Y. El Bakouny, “Scallina: On the Intersection of Scala and Gallina”, Université Saint-Joseph, Beirut, Lebanon, December 19, 2019.

J.-C. Filliâtre, president of the PhD defense of L. Blatter “Relational properties for specification and verification of C programs in Frama-C”, University Paris Saclay, September 26, 2019.

## 10.3. Popularization

### 10.3.1. Internal or external Inria responsibilities

S. Boldo has been the scientific head for Saclay for the MECSI group for networking about computer science popularization inside Inria until October 2019.

She was also responsible (with A. Couvreur of the Grace team and M. Quet of the SCM) for the 2019 “Fête de la science” on October 10th and 11th 2019. Teenagers were welcomed on 8 activities ranging from unplugged activities with Duplo construction toys to programming, and from applied mathematics to theoretical computer science.

### **10.3.2. Education**

S. Conchon and J.-C. Filliâtre, together with K. Nguyen and T. Balabonski (members of the LRI team but not members of Toccata), wrote a book “Numérique et Sciences Informatiques, 30 leçons avec exercices corrigés” (Ellipses, August 2019) [36] targeting the new Computer Science programme in the French high school system, which started in September 2019.

S. Boldo gave a talk and was involved in the organization of the “Rencontres des Jeunes mathématiciennes et Informaticiennes” organized in Saclay on Oct 21st and 22nd 2019. About 20 female teenagers were welcomed for two days with talks and exercises to discover research.

### **10.3.3. Interventions**

C. Marché presented an overview of the Why3 tool and its ecosystem at the Paris Open Source Summit in Saint-Denis, Dec. 11, 2019, as part of a workshop “ATELIER Inria : OCaml, Coq, Why 3: pour concevoir codes et infrastructures plus sûrs en C, Java, Javascript, Ada” <https://www.opensourcesummit.paris/conferences.html?date=1576022400>).

S. Boldo gave a talk at a high school in Sceaux on Feb 8th.

S. Boldo presented the floating-point arithmetic at IRIF to the members of the CODYS ANR on April 1st.

## TRIBE Project-Team

# 9. Dissemination

## 9.1. Promoting Scientific Activities

### 9.1.1. Scientific Events: Organisation

#### 9.1.1.1. Member of the Organizing Committees

- Aline C. Viana is **Publicity co-chair** of ESWN 2020; was **Student Travel Grant co-chair** of IEEE Infocom 2019;
- **Emmanuel Baccelli** was co-chair of the RIOT Summit' 19.

### 9.1.2. Scientific Events: Selection

#### 9.1.2.1. Chair of Conference Program Committees

- Aline C. Viana is **TPC co-chair** of Shadow Algotel/Cores 2020; This will be the first time a shadow TPC will be organized for these two French conferences. A shadow TPC aims at providing an educational experience for young PhD graduates, post docs, and junior researchers by simulating a TPC meeting entitled to discuss some papers submitted to Algotel and Cores 2020.

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

- Aline C. Viana is TPC member of Algotal 2020;

### 9.1.3. Journal

#### 9.1.3.1. Member of the Editorial Boards

- Aline C. Viana is an Editorial Board member of Ad Hoc Networks, Elsevier journal since Nov 2029; Urban Computing Spring book series (<http://www.springer.com/series/15552>), since Feb. 2018; an Associate Editor of ACM SIGCOMM Computer Communication Review (ACM CCR), since May 2014; an Editorial Board member of Wireless Communications and Mobile Computing Open Access Journal of John Wiley&Sons and Hindawi since 2016.

#### 9.1.3.2. Reviewer - Reviewing Activities

- **Aline C. Viana** reviewed papers for ACM SIGCOMM CCR Journal, IEEE Transaction on Mobile Computing journal, Elsevier Pervasive and Mobile Computing Journal, and Computer Communication Elsevier Journal.
- **Emmanuel Baccelli** reviewed papers for IEEE IoT Journal, IETF Routing Directory, IFIP/IEEE PEMWN.
- **Cedric Adjih** was a reviewer for ACM SIGCOMM CCR Journal.

### 9.1.4. Invited Talks

- **Aline C. Viana** was invited to give a seminar at (1) the GDR RSD and ASF Winter School, Pleynet, France, in Feb. 2019; (2) the AGRANDA symposium in Salta, Argentina in Sep. 2019; (3) at IFIP TMA 2019 Expert Summit, <https://tma.ifip.org/2019/tma-experts/>.
- **Emmanuel Baccelli** was invited to give talks at the French Ministry of Defence (Innovation Defence Lab), at the Berlin Innovation Agency Smart Cities Meetup, and at Eclipse IoT Day.

### 9.1.5. Standardization

1. **Emmanuel Baccelli** and **Cedric Adjih** have participated at several working groups at IETF during 2019.

2. **Cedric Adjih** has participated at all IETF Hackathons in 2019 (IETF 104, IETF 105, IETF 106), along with **Oumaima Attia**; they were major contributors to
  - LPWAN Hackathon on the SCHC protocol (IPv6 compression for IoT networks), see: <https://github.com/openshc/openshc>
  - NWCRG Hackathon on the SWIF-codec, a sliding-window forward-error correction codec, see: <https://github.com/irtf-nwcr/swif-codec>
3. **Emmanuel Baccelli** has participated at several IETF hackathons during 2019.

### 9.1.6. Scientific Expertise

- **Aline C. Viana** served as (1) Remote evaluator of the *ERC's Starting Grant 2019*; (2) as member of 4 *PhD defense committees* (2 as reviewer and 2 as examiner); (3) as examiner in 4 *PhD mid-term committees* in 2019.
- **Emmanuel Baccelli** served as reviewer for 1 PhD defense committee in 2019.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

- **Aline C. Viana** gave talks/seminars at conferences and workshops, on subjects related to human behavior analysis: (1) the GDR RSD and ASF Winter School, Pleynet, France, in Feb. 2019 (<https://sites.google.com/site/rsdwinterschool/last-editions/asf-winter-school-2019>); (2) the AGRANDA symposium in Salta, Argentina in Sep. 2019 (<http://48jaiio.sadio.org.ar/simposios/AGRANDA>); (3) at IFIP TMA 2019 Expert Summit, in Jun 2019 (<https://tma.ifip.org/2019/tma-experts/>).
- Master : **Emmanuel Baccelli**, “IoT & Security”, summer semester seminar, Freie Universitaet Berlin.
- Master : **Emmanuel Baccelli**, “IoT & Security”, winter semester seminar, Freie Universitaet Berlin.
- Master : **Emmanuel Baccelli**, “Operating Systems for Small Connected Devices in the Internet of Things”, cours magistral, Formation PESTO Corps des Mines, Telecom ParisTech, Paris France
- Engineering School: Cédric Adjih, “Internet of Thing”, 3h practical courses, Telecom SudParis
- Engineering School: Cédric Adjih, “Internet of Thing”, 9h practical courses, ENSEA

### 9.2.2. Supervision

- PhD in progress: Licia Amichi, “Identifying and profiling novelty-seeking behavior in human mobilityModelling exploration factor of human beings”, since Oct. 2018. Advisor: Aline C. Viana
- PhD in progress: Lucas Santos, “Investigating causalities in habits of human visits”, since May 2018. Advisor: Aline C. Viana and Pedro Olmo
- PhD in progress: Douglas Teixeira, “Deciphering Predictability Limits in Human Mobility”, since April 2018. Advisor: Aline C. Viana and Jussara Almeida.
- PhD in progress: Rafael Costa, “Human-enhanced forwarding strategies for Device-to-Device (D2D) communication”, since May 2017. Advisor: Aline C. Viana and Leobino Sampaio.
- PhD in progress: Diego Madriaga, “Short-term Time Series Analysis and Prediction for Anticipatory Networking”, since Jan 2019. Advisor: Aline C. Viana and Javier Bustos.
- PhD in progress: Anne Josiane Kouam Djuigne, “Detection of bypass frauds in cellular network datasets”, since Nov 2019. Advisor: Aline C. Viana and Alain Tchana.
- PhD in progress: Hirah Malik, “Efficient CODing of Meta-information in Information-Centric NETworks”, since Oct. 2017. Advisors: C. Adjih, Michel Kieffer, and Claudio Weidmann
- PhD in progress: Iman Hmedoush, “Connection protocols for the 5G IoT”, since Oct. 2018. Advisors: C. Adjih and Paul Mühlethaler.

### 9.2.3. *Juries*

- **Reviewer for PhD thesis committee:** Aline C. Viana was reviewer for the following PhDs: R. Teles, Industrial IoT (Univ. de Strasbourg, fin 2019). Nadjib Achir was reviewer for the following PhDs: M. Rautu, Déploiement temporaire d'une infrastructure de communication à base de drones (Univ. de Toulouse, octobre 2019).
- **Examiner for PhD thesis committee:** C. Adjih was examiner for the committees of the following PhDs: Safan ALWAN (UPEC, LSSI, Dev. 2019); Aline C. Viana was examiner for the committees of the following PhDs: H. Mazouzi, Algorithms for Tasks Offloading on Multiple Mobile Edge Servers (Univ. Paris 13, Nov 2019); J. Loudet, Distributed and Privacy-Preserving Personal Queries on Personal Clouds (Univ. de Versailles/PETRUS Inria, Oct 2019); J. Munoz, km-scale Industrial Networking (UPMC/EVA Inria, Mar. 2019); A. Boubrima, Deployment and Scheduling of Wireless Sensor Networks for Air Pollution Monitoring (INSA-Lyon/AGORA Inria, Mar. 2019).
- **Examiner for PhD mid-term committee:** Aline C. Viana was examiner for the committees in the following mid-term juries: J. Kamal, Détection d'anomalies comportementales pour les systèmes de transport intelligents et coopératifs, (TPT, Apr. 2019); Y. Du, In-Network Collaborative Mobile Crowd Sensing: a Context-Aware Sensing Group Framework, (UPMC/MIMOVE Inria, Mar. 2019).
- **Examiner for M.Sc. thesis committee:** Aline C. Viana was examiner for the committees in the following M.Sc. jury: W. Z. Xavier, (PUC-MG, Minas Gerais, March 2019).

## 9.3. Popularization

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

1. **Aline C. Viana** was the President of the Scientific Commission at Inria Saclay, responsible for the selection of candidates for the CORDI-S, Post-Doc and Delegation campaigns.
2. **Aline C. Viana** is the coordinator of the ANR MITIK project to start Feb 2020 and was the international coordinator of the EMBRACE associated team of Inria.
3. Together with the members of the team, **Aline C. Viana** has submitted the short proposal of the new team as well as has presented it at the B CEP and CEP, for validation. TRiBE was officially created in Jun 2019.
4. **Aline C. Viana** is a member of B CEP, evaluating Inria teams in process of creation, discussing main issues related to different scientific commissions, discussing changes in the institution.
5. **Aline C. Viana** is co-Coordinator of the mentoring program for researchers at Inria Saclay (<https://project.inria.fr/mentoratscl/>). The program goal is the coach of junior researchers by more experienced ones in order to provide them with a complementary perspective for their career, independently of any hierarchical link.

## TROPICAL Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

- M. Akian is co-chair of the organizing committee of the next 2020 SMAI MODE days, see <http://smai-mode2020.inria.fr/>.
- Stéphane Gaubert is the coordinator of the Gaspard Monge Program for Optimization, Operations Research and their interactions with data sciences (PGMO), a corporate sponsorship program, operated by Fondation Mathématique Jacques Hadamard, supported by Criteo, EDF, Orange and Thales, see <http://www.fondation-hadamard.fr/fr/pgmo/>.

#### 10.1.1.2. Member of the Organizing Committees

- S. Gaubert co-organizes the “Séminaire Parisien d’Optimisation” at Institut Henri Poincaré. <https://sites.google.com/site/spoihp/>.
- A. Sagnier co-organized the **JAMI Workshop, Riemann-Roch theorem in characteristic one and related topics**, Univ. Baltimore, Oct. 2019.

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Chair of Conference Program Committees

- S. Gaubert, Chair of the PGMO days, EDF Lab Paris Saclay, Dec 3-4, 2019. <http://www.fondation-hadamard.fr/fr/pgmo/pgmodays>

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

- Marianne Akian is member of the scientific committee of the next 2020 SMAI MODE days, see <http://smai-mode2020.inria.fr/>.
- S. Gaubert has been a member of the scientific committee of the **JAMI Workshop, Riemann-Roch theorem in characteristic one and related topics**, Univ. Baltimore, Oct. 2019.

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

- S. Gaubert is member of the editorial committee of the collection Mathématiques et Applications, SMAI and Springer.
- S. Gaubert is associate editor of Linear and Multilinear Algebra.
- S. Gaubert is associate editor of RAIRO Operations research.
- S. Gaubert is associate editor of the Journal of dynamics and games.

### 10.1.4. Invited Talks

- M. Akian
  - “Complexity of policy and value iterations for ergodic zero-sum two player games: non-linear Perron-Frobenius methods”, Journées annuelles du GDR MOA, Rennes, October 2019.
- S. Gaubert

- “Condition numbers in nonarchimedean semidefinite programming ...and what they say about stochastic mean payoff games”, Tropical Mathematics group of the London Math. Soc, Birmingham, January 2019.
- “Nonarchimedean convex programming and its relation to mean payoff games”, Game theory conference, CIRM, Luminy, June 2019.
- X. Allamigeon
  - “Tropical geometry meets optimization”, conference “Network Games, Tropical Geometry, and Quantum Communication”, ZIB, Berlin, June 2019

### 10.1.5. Leadership within the Scientific Community

- See Section 10.1.1.1 (coordination of PGMO).

### 10.1.6. Research Administration

- M. Akian :
  - Member of the “comité de liaison SMAI-MODE” since June 2015.
  - Member of the laboratory council of CMAP.
  - Member of the scientific board of Inria.
- S. Gaubert :
  - Chairman of the Gaspard Monge Program for Optimization, Operations Research and their interactions with data sciences (PGMO), see 10.1.1.1 for details.
  - Member of the scientific council of CMAP.
- X. Allamigeon:
  - Member of the scientific committee of Inria Saclay – Ile-de-France.
  - Member of the Applied Mathematics Department committee at Ecole Polytechnique.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

- M. Akian
  - Course “Markov decision processes: dynamic programming and applications” joint between (3rd year of) ENSTA and M2 “Mathématiques et Applications”, U. Paris Saclay, “Optimization”, and shared with Jean-Philippe Chancelier (ENPC), 15 hours each.
- X. Allamigeon
  - Petites classes et encadrement d’enseignements d’approfondissement de Recherche Opérationnelle en troisième année à l’École Polytechnique (programme d’approfondissement de Mathématiques Appliquées) (niveau M1).
  - Cours du M2 “Optimisation” de l’Université Paris Saclay, cours partagé avec Manuel Ruiz (RTE) et Dominique Quadri (LRI, Université Paris Sud).
  - Co-responsabilité du programme d’approfondissement en mathématiques appliquées (troisième année) à l’École Polytechnique.
- S. Gaubert
  - Course “Systèmes à Événements Discrets”, option MAREVA, ENSMP.
  - Course “Algèbre tropicale pour le contrôle optimal et les jeux” of “Contrôle, Optimisation et Calcul des Variations” (COCV) of M2 “Mathématiques et Applications” of Paris 6 University and École Polytechnique.
  - Lecture of Operations Research, third year of École Polytechnique. The lectures notes were published as a book [60].

- O. Saadi
  - Exercises classes in the framework of a “Monitorat”.
- B. Tran
  - Exercises classes for the first year of Bachelor program of Ecole polytechnique in the framework of a “Monitorat”.

### 10.2.2. Supervision

- PhD: Paulin Jacquot, registered at Univ. Paris Saclay since November 2016, thesis supervisor: Stéphane Gaubert, cosupervision: Nadia Oujdane, Olivier Beaude (EDF), the defense took place in Dec. 2019.
- PhD in progress: Benoît Tran, registered at Univ Paris-Est Marne La Vallée, since September 2017, thesis supervisor: Jean-Philippe Chancelier (ENPC), cosupervision: Marianne Akian.
- PhD in progress: Maxime Grangereau, registered at Univ. Paris Saclay since Jan 2018, thesis supervisor: Emanuel Gobet, cosupervision: Stéphane Gaubert.
- PhD in progress: Omar Saadi, registered at Univ. Paris Saclay since October 2018, thesis supervisor: Stéphane Gaubert, cosupervision: Marianne Akian.
- PhD in progress: Marin Boyet, registered at Univ. Paris Saclay since October 2018, thesis supervisor: Stéphane Gaubert, cosupervision: Xavier Allamigeon.
- PhD in progress: Maël Forcier, registered at ENPC since September 2019, thesis supervisor: Vincent Leclère, cosupervision Stéphane Gaubert.

### 10.2.3. Juries

- M. Akian
  - Jury of the 2019 competition for a full professor position in Applied Mathematics at Avignon University.
- S. Gaubert
  - Jury of the 2019 competition for CR positions of Inria Saclay–Île-de-France.
  - Jury of the HdR of Pascale Bendotti (Sorbonne Universités, reviewer, June 2019).
  - Jury of the HdR of Arnau Padrol (Sorbonne Universités, examiner, December 2019).
  - Jury of the PhD thesis of Aiwen Li (Angers, reviewer, Sep 2019).
  - Jury of the PhD thesis of J. Trunk (TU-Berlin, reviewer, Oct 2019),
  - Jury of the PhD thesis of Paul Beaujean (Dauphine, reviewer, Dec. 2019).
  - Jury of the PhD thesis of Paulin Jacquot (Ecole Polytechnique, examiner, Dec. 2019).
  - Jury of the PhD thesis of Arnaud Le Rhun (Ecole Polytechnique, president, Dec. 2019).
- C. Walsh
  - Jury of the PhD thesis of Armando Gutiérrez (Aalto University, pre-examiner, Dec. 2019).

## 10.3. Conferences, Seminars

- M. Akian
  - “Linear algebra and convexity over symmetrized semirings, hyperfields and systems”, SIAM Conference on Applied Algebraic Geometry, Bern, July 2019.
  - “The operator approach to entropy games”, International Workshop on Operator Theory and Applications (IWOTA), Lisbonne, July 2019.
  - “Linear algebra and convexity over symmetrized semirings, hyperfields and systems”, International Conference on Matrix Analysis and its Applications, MAT TRIAD 2019, Liblice, Czech Republic, September 2019.



- “A game theory approach to the existence and uniqueness of nonlinear Perron-Frobenius eigenvectors”, French-German-Swiss (FGS) conference in Optimization, September 2019, Nice.
- “De l’ergodicité des jeux à somme nulle à l’existence et l’unicité de vecteurs propres de Perron non linéaires”, Workshop "Jeux dynamiques: temps discret, temps continu", Fréjus, October 2019.
- “Complexity of policy and value iterations for ergodic zero-sum two player games: non-linear Perron-Frobenius methods”, Journées annuelles du GDR MOA, Rennes, October 2019.
- X. Allamigeon
  - Condition numbers of stochastic mean payoff games and what they say about nonarchimedean semidefinite programming, SIAM Conference on Applied Algebraic Geometry, Bern, July 2019.
- M. Boyet
  - The shadow vertex algorithm solves colorful one-versus-all tropical polynomial systems, PGMO Days, Nov. 21, 2018, Palaiseau.
- S. Gaubert
  - Condition numbers in nonarchimedean semidefinite programming ...and what they say about stochastic mean payoff games, Tropical Mathematics group of the London Math. Soc, Birmingham, January 2019.
  - Nonarchimedean convex programming and its relation to mean payoff games, Séminaire, Université de Perpignan, March 2019.
  - Nonarchimedean convex programming and its relation to mean payoff games, Game theory conference, CIRM, Luminy, June 2019.
  - Dynamics of priority: from emergency call centers to tropical polynomial systems, SIAM Conference on Applied Algebraic Geometry, Bern, July 2019.
  - Dynamic programming operators over noncommutative spaces: an approach to optimal control of switched systems, International Workshop on Operator Theory and Applications (IWOTA), Lisbonne, July 2019.
  - The operator approach to entropy games, French-German-Swiss conference in Optimization, September 2019, Nice.
  - “Convexité ambitropicale – ou comment caractériser les rétracts de Shapley”, Workshop "Jeux dynamiques: temps discret, temps continu", Fréjus, October 2019.
  - From tropical to ambitropical convexity, JAMI Workshop, Riemann Roch in characteristic one and related topics, Baltimore, October 2019.
- P. Jacquot
  - A Privacy-preserving Disaggregation Algorithm for Non-intrusive Management of Flexible Energy, IEEE 58th Conference on Decision and Control, Nice, France, December 2019.
  - Peer-to-Peer Electricity Market Analysis: From Variational to Generalized Nash Equilibrium, PGMO Days, December 2019, EDF Saclay, France.
  - A Privacy-Preserving Disaggregation Algorithm for Nonconvex Optimization based on Alternate Projections, French-German-Swiss Conference on Optimization (FGS), Nice, France, September 2019.
  - Nonatomic Aggregative Games with Infinitely Many Types, Game Theory Seminar, Institut Henri Poincaré, Paris, France, October 2019.

- A Privacy-preserving Method to Optimize Distributed Resource Allocation, Journée de rentrée du CMAP (Invited), Ecole polytechnique, France, October 2019.
- A. Sagnier
  - Talk at University of Strasbourg on «An arithmetic site at the complex place», April 2019
  - Talk at University of Antwerp on «An arithmetic site at the complex place», April 2019
  - Short communication at JAMI 2019 «Riemann-Roch in characteristic one and related topics» on «An arithmetic site at the complex place», Johns Hopkins University, Baltimore, October 2019
- B. Tran
  - “A Min-Plus / SDDP Algorithm for Multistage Stochastic Convex Programming”, The XV international conference on stochastic programming (ICSP 2019), Trondheim, July 2019.
  - “A Min-plus-SDDP Algorithm for Multistage Stochastic Convex Programming”, French-German-Swiss Conference on Optimization (FGS), Nice, France, September 2019.
  - “A Min-plus-SDDP Algorithm for Deterministic Multistage Convex Programming”, 58th IEEE Conference on Decision and Control (CDC 2019), Nice, December 2019.
- C. Walsh
  - “For which ordered vector spaces are all order isomorphisms affine linear?”, Advances in the Geometric and Analytic Theory of Convex Cones, Jeju, Korea, May 27–31, 2019.
  - “Approximability of convex bodies and volume growth in Hilbert geometries”, Perspectives on convex projective geometry, Sète, France, 24–28 June 2019.
  - “For which ordered vector spaces are all order isomorphisms affine linear?”, Positivity X, Pretoria, South Africa, 8–12 July, 2019.
  - “For which ordered vector spaces are all order isomorphisms affine linear?”, 30th International Workshop on Operator Theory and its Applications, IWOTA 2019, Lisbon, Portugal, 22–26 July, 2019.

## 10.4. Popularization

### 10.4.1. Articles and contents

- The collaboration developed by our team since 2014, with Préfecture de Police, on the performance evaluation of the new organization (PFAU, Plate forme d’appels d’urgences) to handle the calls to the emergency numbers 17-18-112 in the Paris area is described in the following article, published on the Inria web site, <https://www.inria.fr/centre/saclay/actualites/gestion-des-appels-d-urgence-une-geometrie-tropicale-pour-les-secours-parisiens>

## XPOP 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

- ALT 2019
- CLAPEM 2019, Merida, Mexico
- useR!2019

### 10.1.2. Journal

#### 10.1.2.1. Member of the Editorial Boards

- Stochastic Processes and their Applications
- Journal of Statistical Planning and Inference
- Journal of Computational and Graphical Statistics

### 10.1.3. Invited Talks

- International Federation of Classification Societies, Thessaloniki, Greece, August 2019.
- useR!2019, Toulouse, France, July 2019.
- R in Official Statistics, Bucharest, Romania, May 2019.
- French Statistical Society, France, Nancy, June 2019.
- Statlearn 2019, Grenoble, France.
- The Big Sick Conference, Zermatt, Switzerland, February, 2019.
- REDIF 2019, La Habana, Cuba, October 2019.
- 4th Workshop on Virus Dynamics, Paris, October 2019.
- ModelBio 2019, Salamanca, Spain, November 2019.

### 10.1.4. Leadership within the Scientific Community

- Eric Moulines is in charge of the academic supervision of the **International Laboratory of Stochastic Algorithms and High-dimensional inference**, National Research University, Higher School of Economics, funded by the Russian Academic Excellence Project.
- Eric Moulines is associate researcher of the **Alan Turing Institute**
- Eric Moulines is elected member of the French Académie des Sciences.
- Julie Josse is visiting researcher at Google France

### 10.1.5. Scientific Expertise

- Marc Lavielle is member of the Scientific Committee of the High Council for Biotechnologies.
- Marc Lavielle is member of the evaluation committee of the **International Center for Mathematics (CIMAT)**, Guanajuato, Mexico.
- Eric Moulines is member of the award committee of foundation "Charles Defforey".

### 10.1.6. Research administration

- Marc Lavielle is member of the Scientific Programming Committee (CPS) of the Institute Henri Poincaré (IHP).

- Eric Moulines is a board member of the Institut de Convergence DataIA.
- Julie Josse is elected member of the R foundation.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Master : Julie Josse, Statistics with R, 48, M2, X-HEC

Master : Eric Moulines, Regression models, 36, M2, X-HEC

Engineering School : Eric Moulines, Statistics, 36, 2A, X

Engineering School : Eric Moulines, Markov Chains, 36, 3A, X

Engineering School : Erwan Le Pennec, Statistics, 36, 2A, X

Engineering School : Erwan Le Pennec, Statistical Learning, 36, 3A, X

Engineering School : Marc Lavielle, Statistics in Action, 48, 3A, X

### 10.2.2. Supervision

PhD defended : Nicolas Brosse, June 2019, Eric Moulines

PhD defended : Geneviève Robin, June 2019, Julie Josse and Eric Moulines

PhD defended : Belhal Karimi, September 2019, Marc Lavielle and Eric Moulines

PhD in progress : Marine Zulian, October 2016, Marc Lavielle

PhD in progress : Wei Jiang , October 2017, Julie Josse and Marc Lavielle

## 10.3. Popularization

### 10.3.1. Internal or external Inria responsibilities

Eric Moulines was member of the Evaluation Committee of Inria.

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

Marc Lavielle developed and maintains the learning platform [Statistics in Action](#). The purpose of this online learning platform is to show how statistics (and biostatistics) may be efficiently used in practice using R. It is specifically geared towards teaching statistical modelling concepts and applications for self-study. Indeed, most of the available teaching material tends to be quite "static" while statistical modelling is very much subject to "learning by doing".

Julie Josse (with Nicholas Tierney and Nathalie Vialaneix) developed and maintains the website [R-miss-tastic](#), A resource website on missing data.