



RESEARCH CENTER  
**Bordeaux - Sud-Ouest**

FIELD

# Activity Report 2019

## Section Dissemination

Edition: 2020-03-21



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## LFANT Project-Team

## 8. Dissemination

### 8.1. Promoting Scientific Activities

#### 8.1.1. Journal

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

X. Caruso is an editor and one of the founders of the journal *Annales Henri Lebesgue*.

J.-M. Couveignes is a member of the editorial board (scientific committee) of the *Publications mathématiques de Besançon* since 2010.

K. Belabas acts on the editorial board of *Journal de Théorie des Nombres de Bordeaux* since 2005 and of *Archiv der Mathematik* since 2006.

H. Cohen is an editor for the Springer book series *Algorithms and Computations in Mathematics (ACM)*.

A. Enge is an editor of *Designs, Codes and Cryptography* since 2004.

##### 8.1.2. Invited Talks

F. Johansson, *Computing with precision*, Tech Talk, Google X, Mountain View, CA, USA (January 2019)

##### 8.1.3. Scientific Expertise

K. Belabas is a member of the “conseil scientifique” of the Société Mathématique de France.

##### 8.1.4. Research Administration

Since January 2015, K. Belabas is vice-head of the Math Institute (IMB). He also leads the computer science support service (“cellule informatique”) of IMB and coordinates the participation of the institute in the regional computation cluster PlaFRIM.

He is an elected member of “commission de la recherche” in the academic senate of Bordeaux University.

He was a member of the “Conseil National des Universités” (25th section, pure mathematics) since 2015 until november 2019.

Since January 2017, A. Enge is “délégué scientifique” of the Inria research centre Bordeaux–Sud-Ouest. As such, he is also a designated member of the “commission d’évaluation” of Inria.

He is a member of the administrative council of the Société Arithmétique de Bordeaux, qui édite le *Journal de théorie des nombres de Bordeaux* et qui soutient des congrès en théorie des nombres.

J.-P. Cerri is an elected member of the scientific council of the Mathematics Institute of Bordeaux (IMB) and responsible for the bachelor programme in mathematics and informatics.

## 8.2. Teaching - Supervision - Juries

### 8.2.1. Teaching

Master: G. Castagnos, *Cryptanalyse*, 60h, M2, University of Bordeaux, France;

Master: G. Castagnos, *Cryptologie avancée*, 30h, M2, University of Bordeaux, France;

Master: G. Castagnos, *Courbes elliptiques*, 30h, M2, University of Bordeaux, France;

Licence: G. Castagnos, *Arithmétique et Cryptologie*, 24h, L3, Université de Bordeaux, France

Master : D. Robert, *Courbes elliptiques*, 60h, M2, University of Bordeaux, France;

Master: X. Caruso and J.-M. Couveignes, *Algorithmique arithmétique, introduction à l'algorithmique quantique*, 60h, M2, University of Bordeaux, France;

Master : K. Belabas, *Computer Algebra*, 91h, M2, University of Bordeaux, France;

Master: J.-M. Couveignes, *Modules, espaces quadratiques*, 30h, M1, University of Bordeaux, France;

Licence : J.-P. Cerri, *Arithmétique et Cryptologie*, TD, 36h, L3, Université de Bordeaux, France

Licence : J.-P. Cerri, *Algèbre linéaire*, TD, 51h, L2, Université de Bordeaux, France

Licence : J.-P. Cerri, *Topologie*, TD, 35h, L3, Université de Bordeaux, France

Master : J.-P. Cerri, *Cryptologie*, Cours-TD, 60h, M1, Université de Bordeaux, France

Licence: J. Kieffer, *Algorithmique Mathématique 2*, 32h, L3, Université de Bordeaux, France

Master: R. Barbulescu, *Arithmetic algorithms for cryptology*, M2, Master Parisien de Recherche Informatique.

Licence, Master : J.-P. Cerri, 2 TER (L3, M1), 1 Projet (M2), Université de Bordeaux, France

Master : J. Asuncion, *Elliptic curves*, TD, 16h, M1, Universiteit Utrecht (Mastermath), Pays-Bas

### 8.2.2. Supervision

Master thesis: Jean-Raphaël Biehler, *Functional encryption*, supervised by Guilhem Castagnos

Master thesis: Béranger Seguin, *Deformations of Galois representations*, supervised by Xavier Caruso

Master thesis: William Dallaporta, *Parametrization of ideals and other algebraic structures by quadratic forms*, supervised by Karim Belabas

PhD in progress: Ida Tucker, *Design of new advanced cryptosystems from homomorphic building blocks*, since October 2017, supervised by Guilhem Castagnos and Fabien Laguillaumie

PhD in progress: Abdoulaye Maiga, *Computing canonical lift of genus 2 hyperelliptic curves*, University Dakar, supervised by Djiby Sow, Abdoul Aziz Ciss and D. Robert.

PhD in progress: Jared Asuncion, *Class fields of complex multiplication fields*, since September 2017, supervised by A. Enge and Marco Streng (Universiteit Leiden).

PhD in progress: Elie Eid, *Computing isogenies between elliptic curves and curves of higher genus*, since September 2018, supervised by Xavier Caruso and Reynald Lercier

PhD in progress: Amaury Durand, *Geometric Gabidulin codes*, since September 2019, supervised by Xavier Caruso

PhD in progress: Jean Kieffer, *Computing isogenies between abelian surfaces*, since September 2018, supervised by Damien Robert and Aurel Page

PhD in progress: Pavel Solomatin *Topics on L-functions*, since October 2014, supervised by B. de Smit and K. Belabas.

PhD in progress: Anne-Edgar Wilke *Enumerating integral orbits of prehomogeneous representations*, since September 2019, supervised by K. Belabas.

PhD in progress: Sudarshan Shinde *Cryptographic applications of modular curves* since October 2016, supervised by R. Barbulescu with Pierre-Vincent Koseleff (Sorbonne Université).

### 8.2.3. Juries

X. Caruso has written a report for the doctoral dissertation by Léo Poyeton, ÉNS de Lyon: *Extensions de Lie  $p$ -adiques et  $(\varphi, \Gamma)$ -modules*.

X. Caruso has written a report for the doctoral dissertation by Christopher Doris, University of Bristol: *Aspects of  $p$ -adic computation*.

X. Caruso has written a report for the doctoral dissertation by Joelle Saade, Université de Limoges: *Méthodes symboliques pour les systèmes différentiels linéaires à singularité irrégulière*.

R. Barbulescu was part of the three members jury of the oral examination in mathematics for math-info the admission examination for ENS de Lyon

D. Robert is a member of the jury of Agregations de Mathématiques. He is also the director of the option “calcul formel” of the Modelisation part of the oral examination.

## 8.3. Popularization

### 8.3.1. Education

Alkindi : R. Barbulescu is one of the three organizers of the Alkindi contest, a contest for 13-to-15 year old students which gathers more than 60000 participants from France and Switzerland. D. Robert and the other members invite the winners of the Bordeaux region for a 2 hour visit each year.

### 8.3.2. Interventions

- from 27/05/2019 to 31/05/2019, X. Caruso supervised a stage at the fablab Coh@bit (at IUT Gradignan) to build some educational material
- 30/06/2019, X. Caruso: *Ramène pas ta science* on a physical experiment demonstrating that the fastest path between two points is an arc of cycloid
- 8-10/10/2019, A. Page: *Fête de la Science* at Inria Bordeaux, activity on cryptography (8 groups of students).
- 17/10/2019, X. Caruso and A. Page: *Village des 80 ans du CNRS*, discussion stand "Quizz des idées reçues" on research in mathematics.
- 19/10/2019, X. Caruso and M.-L. Chabanol: *Village des 80 ans du CNRS* on physical experiment demonstrating that the fastest path between two points is an arc of cycloid
- from 07/04/2019 to 14/04/2019, R. Barbulescu was one of two teachers for a math camp in Kinshasa of 150 students <https://www.cnrs.fr/insmi/spip.php?article3190>.
- from 06/07/2019 to 13/07/2019, R. Barbulescu was the main organiser for a math training camp which gathered the national teams for the International Olympiad of Mathematics of France, Romania and Bulgaria.
- 5/12/2019, D. Robert: small presentations of cryptography for the student of Ecole Normale Supérieure de Lyon.

## CAGIRE Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Member of the Organizing Committees

- Organizer and scientific chair of the mini-symposium "Numerical method for multi-scale fluid problems" at ICIAM 2019 [JJ].

### 10.1.2. Journal

#### 10.1.2.1. Member of the Editorial Boards

- Visualization of Mechanical Processes [PB]
- Advisory Board of International Journal of Heat and Fluid Flow [RM]
- Advisory Board of Flow, Turbulence and Combustion [RM]

#### 10.1.2.2. Reviewer - Reviewing Activities

During 2019, the team members reviewed papers for the following journals:

- AIAA Journal [PB, RM]
- Computer & Fluids [RM]
- Int. J. Heat Fluid Flow [RM]
- Journal of Computational Physics [JJ]
- J. Hydr. Res. [RM]
- Physics of Fluids [FM]
- Phys. Rev. Fluids [RM]
- SIAM Journal on Scientific Computing [VP]

### 10.1.3. Invited Talks

- J. Jung [19]
- R. Manceau [20]

### 10.1.4. Leadership within the Scientific Community

- Rémi Manceau co-organizes the activities of the Special Interest Group 15 (Turbulence modelling) of ERCOFTAC (European Research Community on Flow, Turbulence and Combustion) as a member of the Steering Committee. The main activity of this group in 2019 was the organization of a workshop in Ljubljana, Slovenia.
- Rémi Manceau coordinates the ANR Project MONACO\_2025, a 4-year project started in 2018. The partners are: the institute PPrime, PSA Group and EDF.

### 10.1.5. Scientific Expertise

- Evaluation of one Ecos Sud project [PB]

### 10.1.6. Research Administration

- Co-responsible for the organisation of the LMAP seminar of Mathematics and their Applications [JJ].
- Member of the LMAP council [JJ, PB].
- Member of the IPRA research federation scientific council [RM].
- Vincent Perrier is a member of the CUMI-R.
- Vincent Perrier is a member of the CDT, in charge of the evaluation of software projects at the Inria Bordeaux center.
- Vincent Perrier is an elected member of the Inria evaluation committee, and member of the board.<sup>0</sup>
- Vincent Perrier is a member of the CT3-Num committee of Pau University, in charge of managing the computing resources and projects at Pau University.

<sup>0</sup><https://www.inria.fr/en/inria-evaluation-committee>

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Licence : [JJ], Descriptive statistical, 24h, L1 - MIASHS, Université de Pau et des Pays de l'Adour, Pau, France.

Licence : [JJ], Scientific computing, 40.5h, L2 - Informatique, Université de Pau et des Pays de l'Adour, Pau, France.

Licence : [JJ], Numerical analysis for vectorial problems, 33.75h, L2 - Mathematics, Université de Pau et des Pays de l'Adour, Pau, France.

Master : [JJ], Data analysis, 68h25, M1 - GP, Université de Pau et des Pays de l'Adour, Pau, France.

Master : [JJ], Tools for scientific computing, 48h75, M1 - MMS-MSID, Université de Pau et des Pays de l'Adour, Pau, France.

Master : [JJ], Finite volume methods for hyperbolic systems, 15h, Master ANEDP, ENS, Casablanca, Maroc.

Master: [VP], Numerical analysis of PDE 1, Master MMS, Pau.

Master : "Turbulence modelling" (in English), 27h30, M2 - International Master program Turbulence, Université de Poitiers/Ecole centrale de Lille, France. [RM]

Eng. 3 : "Industrial codes for CFD" (in English), 12h30, 3rd year of engineering school (M2), ENSMA, Poitiers, France. [RM]

Eng. 3 : "Advanced physics-Turbulence modelling for CFD", 16h, 3rd year of engineering school (M2), ENSGTI, France. [RM]

### 10.2.2. Supervision

- PhD in progress : Puneeth Bikkanahally Muni Reddy, "Modelling turbulent flows in natural convection regimes using hybrid RANS-LES approaches, UPPA, October 2018, Rémi Manceau.
- PhD in progress : Gaëtan Mangeon, "Advanced modelling of heat transfer for industrial configurations with or without accounting of the solid wall", UPPA, February 2017, Rémi Manceau.
- PhD in progress : Vladimir Duffal, "Hybrid RANS/LES modelling for unsteady loadings in turbulent flows", UPPA, November 2017, Rémi Manceau.
- PhD in progress : Hassan Al Afailal: "3D simulation of non-reactive internal aerodynamics of spark-ignition engines using an hybrid RANS/LES method", September 2017, Rémi Manceau.
- PhD in progress Saad Jameel : "Turbulence modelling in the mixed and natural convection regimes in the context of automotive applications", UPPA, February 2017, Rémi Manceau.
- PhD in progress : Gustave Sporschill, "Amélioration des modèles pour la turbulence. Applications à la prédiction des écoulements aérodynamiques", UPPA, May 2018, Rémi Manceau.

### 10.2.3. Juries

The participation in the following thesis juries is noted ("referee" in a French doctoral thesis jury is more or less equivalent to an external opponent in an Anglo-Saxon like PhD jury):

- Thomas Kaiser, "Impact of flow rotation on flame dynamics and hydrodynamic stability", University of Toulouse (France), 31 January 2019. Supervisor: T. Poinso [PB, Referee].
- Joao Rodrigo Andrade, "Spectral analysis of the turbulent energy cascade and the development of a novel nonlinear subgrid-scale model for large-eddy simulation", Universidade Federale de Uberlândia (Brazil) and University of Lille (France), 27 March 2019. Supervisors: A. S. Neto, G. Mompean and R.L. Thompson [RM, Referee]
- Adithya Ramanathan Krishnan, "Explicit algebraic subfilter scale modeling for DES-like methods and extension to variable density flows", University of Aix-Marseille 3 April 2019. Supervisor: P. Sagaut [RM, Referee]
- Benjamin Lorendeau, "Amélioration des performances via un parallélisme multi-niveaux sur un code CFD en maillages non structurés", University of Bordeaux (France), 16 December 2019. Supervisor: E. Jeannot [PB, Referee]

## **CARDAMOM Project-Team**

## **9. Dissemination**

### **9.1. Promoting Scientific Activities**

#### **9.1.1. Scientific Events: Organisation**

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

- M. Ricchiuto co-organized the workshop Hywec2 on the hydrodynamics of wave energy converters. The workshop has been organized in the framework of the work packages 3 and 5 of the Excellence Cluster Sysnum as one of two twin events devoted to marine renewable energies organized in Bilbao (the VI Marine Energy Conference, June 25th) and Bordeaux. The event is also supported by the Oceanera-net Midwest and the Fondation Del Duca. Its main goals have been to focus on PDE and numerical modelling techniques, with attention on advanced and recent approaches, and to give an overview of examples of industrial techniques and applications with several European industrial actors. For more info refer to the web <https://hywec2.sciencesconf.org>.

#### **9.1.2. Scientific Events: Selection**

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

Mathieu Colin is a member of the scientific committee of the JEF day's.

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

M. Ricchiuto has co-organized the mini-symposium "Some modern questions in the simulation of advection dominated problems", MS FT-1-10 at the ICIAM conference in Valencia

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

- Mathieu Colin is a member of the board of the journal Applications and Applied Mathematics: An International Journal (AAM)
- M. Ricchiuto is a member of the editorial boards of Computers & Fluids (Elsevier) and of Water Waves (Springer)

##### *9.1.2.4. Reviewer - Reviewing Activities*

We reviewed papers for top international journals in the main scientific themes of the team : Nonlinearity, Water Waves, Analysis and PDE, Comm. Cont. Math., Journal of Scientific Computing, Open Physics, Computational and applied mathematics, Journal of Fluid Mechanics.

## **9.2. Teaching - Supervision - Juries**

### **9.2.1. Teaching**

- License: Nicolas Barral, TD d'Analyse Numérique, 24h, L3, ENSEIRB-MATMÉCA, France
- Master : Nicolas Barral, TD C++, 48h, M1, ENSEIRB-MATMÉCA, France
- Master : Nicolas Barral, Techniques de maillage, 36h, M2, ENSEIRB-MATMÉCA et Université de Bordeaux, France
- License: Héloïse Beaugendre, Encadrement de projets sur la modélisation de la portance, 20h, L3, ENSEIRB-MATMÉCA, France
- Master : Héloïse Beaugendre, TD C++, 48h, M1, ENSEIRB-MATMÉCA, France
- Master : Héloïse Beaugendre, Calcul Haute Performance (OpenMP-MPI), 40h, M1, ENSEIRB-MATMÉCA et Université de Bordeaux, France

- Master : Héloïse Beaugendre, Responsable de filière de 3ème année, 15h, M2, ENSEIRB-MATMÉCA, France
- Master : Héloïse Beaugendre, Calcul parallèle (MPI), 39h, M2, ENSEIRB-MATMÉCA, France
- Master : Héloïse Beaugendre, Encadrement de projets de la filière Calcul Haute Performance, 6h, M2, ENSEIRB-MATMÉCA, France
- Master : Héloïse Beaugendre, Encadrement de projets sur la modélisation de la pyrolyse, 20h, M1, ENSEIRB-MATMÉCA, France
- Master : Héloïse Beaugendre, Projet fin d'études, 4h, M2, ENSEIRB-MATMÉCA, FRANCE
- Master : Mathieu Colin : Integration, M1, 54h, ENSEIRB-MATMÉCA, FRANCE
- Master : Mathieu Colin : Fortran 90, M1, 44h, ENSEIRB-MATMÉCA, FRANCE
- Master : Mathieu Colin : PDE, M1, 30h, University of Bordeaux, FRANCE
- Master : Mathieu Colin : Analysis, L1, 47h, ENSEIRB-MATMÉCA, FRANCE
- Master : Mathieu Colin : projet professionnel and internship responsibility : 15 h, ENSEIRB-MATMÉCA, FRANCE
- Master : Mathieu Colin : Encadrement de projets TER, 20h, ENSEIRB-MATMÉCA, FRANCE
- Master : Mathieu Colin : responsable relation entreprise formation en alternance ENSEIRB-MATMECA (30h)
- Master : Mathieu Colin : suivi d'apprenti en entreprise (28h)
- Master : Mario Ricchiuto, Multiphysics Course, 21h cours magistrale, M2, ENSEIRB-MATMÉCA, FRANCE

### 9.2.2. Supervision

PhD : Umberto Bosi, A unified spectral/hp element depth-integrated Boussinesq model for nonlinear wave-floating body interaction, U. Bordeaux, defended in June 2019, supervised by M. Ricchiuto (see [1])

PhD in progress : E. Solai, Multi-fidelity modeling of an immersive battery cooling system for electric vehicles, started in November 2018, co-supervised by H. Beaugendre and P.M. Congedo

PhD in progress: B. Constant, high order immersed methods for turbulent flows, started in September 2019, supervised by H. Beaugendre

PhD in progress : S. Michel, shallow water simulations with immersed higher order residual methods on adaptive meshes, started in November 2018, supervised by M. Ricchiuto

PhD in progress : G. Bellezza, multi scale modelling for self-healing composite materials, started in February 2019, supervised by M. Ricchiuto and G. Vignoles (LCTS)

PhD in progress : M. Ciallella, bridging shock fitting and embedded methods to handle shock waves in hyperbolic systems, started in October 2019, supervised by M. Ricchiuto and R. Paciorri (U. Roma La Sapienza)

PhD in progress : A. Cauquis, high order shock capturing methods for tsunami simulations, started in November 2019, supervised by M. Ricchiuto and P. Heinrich (CEA)

### 9.2.3. Juries

Héloïse Beaugendre has contributed to the following theses defense:

- Iñigo Bidaguren, BCAM, Bilboa, Spain in June 2019 (as examiner)
- Pierre Trontin HDR, Toulouse University in September 2019 (as examiner)
- Quentin Carmouze, Côte D'Azur University in November 2019 (as reviewer)

Maria Kazolea has contributed to the following theses defense:

- Umberto Bosi PhD, University of Bordeaux, April 2019 (as examiner)

Mario Ricchiuto has participated to the following juries:

- A. Menasria, PhD ENSAM Paritech, in March 2019 (as president)
- Julien Carlier, PhD U. Paris-Saclay, in December 2019 (as reviewer)

## CQFD Project-Team

## 9. Dissemination

### 9.1. Promoting Scientific Activities

#### 9.1.1. Member of the Organizing Committees

Pierrick Legrand is co-organisator of the international conference EA 2019 in Mulhouse <https://ea2019.inria.fr/>.

#### 9.1.2. Chair of Conference Program Committees

F. Dufour is the chair of the Program Committee of the SIAM Conference on Control and Its Applications (CT19) in Pittsburgh, USA, 2019.

#### 9.1.3. Journal

##### 9.1.3.1. Member of the Editorial Boards

P. Del Moral is an associate editor for the journal Stochastic Analysis and Applications since 2001.

P. Del Moral is an associate editor for the journal Annals of Applied Probability since 2018.

F. Dufour is corresponding editor of the SIAM Journal of Control and Optimization since 2018.

F. Dufour is associate editor of the journal Applied Mathematics & Optimization (AMO) since 2018.

F. Dufour is associate editor of the journal Stochastics: An International Journal of Probability and Stochastic Processes since 2018.

F. Dufour is the representative of the SIAM activity group in control and system theory for the journal SIAM News since 2014.

J. Saracco is an associate editor of the journal Case Studies in Business, Industry and Government Statistics (CSBIGS) since 2006.

##### 9.1.3.2. Reviewer - Reviewing Activities

All the members of CQFD are regular reviewers for several international journals and conferences in applied probability, statistics and operations research.

#### 9.1.4. Scientific Expertise

J. Saracco is elected member of the council of the Société Française de Statistique (SFdS, French Statistical Society). A. Genadot is member of the scientific council of the mathematical institute of Bordeaux.

P. Del Moral is a member of the Data Science Foundation of the American Institute of Mathematical Sciences.

#### 9.1.5. Research Administration

J. Saracco is deputy director of IMB (Institut de Mathématiques de Bordeaux, UMR CNRS 5251) since 2015.

M. Chavent is member of the national evaluation committee of Inria.

M. Chavent and Pierrick Legrand are members of the council of the Institut de Mathématique de Bordeaux.

F. Dufour has been the coordinator for the Inria evaluation of the theme "Stochastic Approaches"

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

Licence : P. Legrand, Algèbre, 129h, L1, Université de Bordeaux, France.

Licence : P. Legrand, Espaces Euclidiens, 46,5h, L2, Université de Bordeaux, France.

Licence : P. Legrand, Informatique pour les mathématiques, 30h, L2, Université de Bordeaux, France.

DU : P. Legrand, Evolution Artificielle, Big data, 8h, DU, Bordeaux INP, France.

Licence : A. Genadot, Bases en Probabilités, 18h, L1, Université de Bordeaux, France.

Licence : A. Genadot, Projet Professionnel de l'étudiant, 8h, L1, Université de Bordeaux, France.

Licence : A. Genadot, Probabilité, 30h, L2, Université de Bordeaux, France.

Licence : A. Genadot, Techniques d'Enquêtes, 10h, L2, Université de Bordeaux, France.

Licence : A. Genadot, Modélisation Statistiques, 16.5h, L3, Université de Bordeaux, France.

Licence : A. Genadot, Préparation Stage, 15h, L3, Université de Bordeaux, France.

Licence : A. Genadot, TER, 5h, L3, Université de Bordeaux, France.

Licence : A. Genadot, Processus, 16.5h, L3, Université de Bordeaux, France.

Licence : A. Genadot, Statistiques, 20h, L3, Bordeaux INP, France.

Master : A. Genadot, Savoirs Mathématiques, 81h, M1, Université de Bordeaux et ESPE, France.

Master : A. Genadot, Martingales, 29h, M1, Université de Bordeaux, France.

Licence : F. Dufour, Probabilités et statistiques, 70h, first year of école ENSEIRB-MATMECA, Institut Polytechnique de Bordeaux, France.

Master : F. Dufour, Approche probabiliste et methode de Monte Carlo, 24h, third year of école ENSEIRB-MATMECA, Institut Polytechnique de Bordeaux, France.

### 9.2.2. Supervision

PhD: Hadrien Lorenzo, "Supervised analysis of high dimensional multi block data", supervised by Jérôme Saracco (CQFD) and Rodolphe Thebaut (Inserm), thesis defense: 27/11/19 in Bordeaux.

PhD in progress: Alex Mourer, "Variables importance in clustering", CIFRE Safran Aircraft Engines, supervised by Jérôme Lacaille (Safran), Madalina Olteanu (SAMM, Paris1), Alex Mourer (doctorant), Marie Chavent (CQFD).

PhD in progress: de Nathanaël Randriamihamison, "Contiguity Constrained Hierarchical Agglomerative Clustering for Hi-C data analysis", supervised by Nathalie Vialaneix (MIAT, INRA Toulouse), Pierre Neuvial (IMT, CNRS), Marie Chavent (CQFD) .

PhD in progress: Alexandre Conanec, "Modulation et optimisation statistique de données multi-tableaux : modélisation des facteurs de variations dans la gestion des compromis entre différents jeux de données", supervised by Marie Chavent(CQFD), Jérôme Saracco (CQFD), Marie-Pierre Ellies (INRA).

PhD in progress: Loic Labache , "Création d'un atlas cérébral évolutif de régions fonctionnelles définies à partir d'une cohorte de 297 sujets ayant effectués 20 tâches cognitives en IRMf ", supervised by Jérôme Saracco (CQFD), Marc Joliot (CEA).

PhD in progress: Tiffany Cherchi, "Automated optimal fleet management policy for airborne equipment", Montpellier University, since 2017, supervised by B. De Saporta and F. Dufour.

PhD in progress: Bastien Berthelot, "Algorithmes de traitement du signal pour l'extraction de signatures robustes sur des bio-sinaux", CIFRE THALES, supervised by P. Legrand.

PhD in progress: Jimmy Bondu, "Classification de trajectoires d'objets par apprentissage.", CIFRE THALES, supervised by P. Legrand.

PhD in progress: Camille Palmier , “Nouvelles approches de fusion multi-capteurs par filtrage particulière pour le recalage de navigation inertielle par corrélation de cartes”, CIFRE, supervised by P. Del Moral, Dann Laneuville (NavalGroup) and Karim Dahia (ONERA)

## **9.3. Popularization**

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

Alexandre Genadot is a member of the Commission des emplois de recherche Inria BSO. Pierrick Legrand is a member of the commission consultative section 26 of the IMB.

## GEOSTAT Project-Team

# 10. Dissemination

## 10.1. Introduction

### 10.1.1. Member of the Editorial Boards

- H. Yahia is Review Editor for the journal *Frontiers in Physiology* (Fractal Physiology).

### 10.1.2. Invited Talks

- Journée des Systèmes et de la Matière Complexe 4ème édition, Paris-Saclay, October 2019: G. Attuel gave the presentation *Voir au coeur d'une turbulence forte sans cascade et mourir...*, [link](#).

## 10.2. Introduction

### 10.2.1. Teaching

Master : K. Daoudi, Data mining, 20 hours, M2 MIAGE, University of Lorraine.

Master : A. Rashidi, Introduction to deep learning, 12 hours, M1, course given in the team during D. Singh's visit.

### 10.2.2. Supervision

PhD : A. El Aouni, Lagrangian coherent structures and physical processes of coastal upwelling, Bordeaux University, September 24, 2019, supervisors: H. Yahia, K. Minaoui.

Master : H. Belmajdoub, Upwelling dynamics along the Atlantic coast of Morocco, Rabat University, supervised by A. El Aouni.

PhD in progress : H. Belmajdoub, Upwelling dynamics along the Atlantic coast of Morocco, Rabat University, cosupervised by A. El Aouni.

PhD in progress : Z. El Abidi, caractérisation multicapteur de l'upwelling marocain, Rabat University, cosupervised by A. El Aouni.

## MEMPHIS Project-Team

## 10. Dissemination

### 10.1. Promoting Scientific Activities

#### 10.1.1. Reviewer - Reviewing Activities

Journal of Computational Physics, International Journal of CFD, Journal of Non-linear Analysis B, ASME Journal of Computational and Nonlinear Dynamics, Journal of Fluid Mechanics, Acta Mechanica, AIAA Journal, International Journal Numerical Methods in Fluids, Computers & Fluids, Journal of Engineering Mathematics, European Journal of Mechanics / B Fluids, Journal Européen de Systèmes Automatisés, Applied Mathematics and Computation. Nuclear Science and Engineering, Computer Methods in Applied Mechanics and Engineering, Journal of Theoretical Biology, Computational Optimization and Applications, Applied science, Meccanica, SIAM journal on scientific computing, SIAM journal on uncertainty quantification, Advances in Computational Mathematics.

#### 10.1.2. Invited Talks

Angelo Iollo

1. June 5th, 2019. Journées scientifiques Inria, Lyon.  
<https://project.inria.fr/journeesscientifiques2019/francais-programme/>.
2. May 2019. CIMPA School, Tunis. Science des données pour l'ingénierie et la technologie.  
<https://www.cimpa.info/fr/node/6217>.
3. March 2019. Conférencier invité à la conférence « Fluid-structure interaction », Politecnico di Milano, Milano, 18/3-20/3/2019.  
<http://www1.mate.polimi.it/gazzola/fs.html>.

Tommaso Taddei

1. November 2019. MORTECH 2019, Paris.  
<https://mortech2019.sciencesconf.org/>

#### 10.1.3. Leadership within the Scientific Community

##### 10.1.3.1. Scientific Expertise

Angelo Iollo is an expert for the European Union for the program FET OPEN.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Four members of the team are Professors or Assistant Professors at Bordeaux University and have teaching duties, which consist in courses and practical exercises in numerical analysis and scientific computing. Michel Bergmann (CR) also teaches around 64 hours per year (practical exercises in programming for scientific computing). Tommaso Taddei (CR) also teaches around 50 hours per year (practical exercises in numerical analysis and scientific computing).

### **10.2.2. Supervision**

1. 2019-2022. Giulia Sambataro. Bourse ANDRA. *Component-based reduction strategies for THM equations*. Advisors: Angelo Iollo, Tommaso Taddei.
2. 2018-2021. Michele Giuliano Carlino. Bourse Inria. *Fluid-structure models on Chimera grids*. Advisors: Michel Bergmann, Angelo Iollo.
3. 2018-2021. Antoine Fondanèche. Bourse UB. *Monolithic fluid-structure models on parallel hierarchical grids*. Advisors: Michel Bergmann, Angelo Iollo.
4. 2017-2020. Sebastien Riffaud. *Convergence between data and numerical models*. Advisor: Angelo Iollo.
5. 2017-2020. Luis Ramos Benetti. Bourse ERC Aeroflex (O. Marquet, ONERA). *Monolithic fluid-structure models on parallel hierarchical grids*. Advisors: Michel Bergmann, Angelo Iollo.

### **10.2.3. Juries**

Angeo Iollo: reviewer of 3 PhD theses, president of one PhD jury, member of one PhD jury, in France and abroad.

Michel Bergmann: reviewer of 2 PhD theses.

## REALOPT Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

- François Clautiaux: Conférence Dataquittaine (around 300 participants) in Bordeaux, February 2019
- François Clautiaux: Workshop on Integer Programming and Algorithms in Marne-La-Vallée, November 2019

#### 10.1.1.2. Member of the Organizing Committees

- François Clautiaux: Conférence Dataquittaine (around 300 participants) in Bordeaux, February 2019
- François Clautiaux: Workshop on Integer Programming and Algorithms in Marne-La-Vallée, November 2019

### 10.1.2. Scientific Events: Selection

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

- François Clautiaux: Conference ROADEF 2019, Le Havre
- Pierre Pesneau: INOC 2019, in Avignon

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

- François Clautiaux : editor for Open Journal on Mathematical Optimization (OJMO)

#### 10.1.3.2. Reviewer - Reviewing Activities

- François Clautiaux : European Journal of Operational Research, Discrete Applied Mathematics, Discrete Optimization, International Transactions on Operations Research,
- Aurélien Froger: European Journal of Operational Research, Transportation Science, Computers & Operations Research, Journal of Heuristics
- Ruslan Sadykov: Mathematical Programming, Transportation Science, International Transactions of Operations Research, ACM Transactions on Parallel Computing, Integer Programming and Combinatorial Optimization conference

### 10.1.4. Invited Talks

- François Clautiaux: Invited talk at the ESICUP Workshop, in Mexico (April 10th, 2019)
- Aurélien Froger: Invited talk [10] at the 2nd International Workshop on Synchronisation in Transport, SynchroTrans 2019, in Nantes (September 10th, 2019)
- Ruslan Sadykov: Invited talk [12] at the 9th International Network Optimization conference, invited talk [11] at the POC Autumn School on Advanced BCP Tools

### 10.1.5. Leadership within the Scientific Community

François Clautiaux has been elected president of the French O.R. association, ROADEF.

### 10.1.6. Scientific Expertise

François Clautiaux has been expert for HCERES

François Clautiaux has been expert for the Flanders Innovation and Entrepreneurship Agency.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Licence : François Clautiaux, Projet d'optimisation, L3, Université de Bordeaux, France

Licence : François Clautiaux, Grands domaines de l'optimisation, L1, Université de Bordeaux, France

Master : François Clautiaux, Introduction à la programmation en variables entières, M1, Université de Bordeaux, France

Master : François Clautiaux, Integer Programming, M2, Université de Bordeaux, France

Master : François Clautiaux, Algorithmes pour l'optimisation en nombres entiers, M1, Université de Bordeaux, France

Master : François Clautiaux, Programmation linéaire, M1, Université de Bordeaux, France

Master: Boris Detienne, Combinatoire et routage, ENSEIRB INPB

Licence : Boris Detienne, Optimisation, L2, Université de Bordeaux

Licence : Boris Detienne, Groupe de travail applicatif, L3, Université de Bordeaux

Master : Boris Detienne, Optimisation continue, M1, Université de Bordeaux

Master : Boris Detienne, Integer Programming, M2, Université de Bordeaux

Master : Boris Detienne, Optimisation dans l'incertain, M2, Université de Bordeaux

Licence : Aurélien Froger, Groupe de travail applicatif, L3, Université de Bordeaux, France

Master : Aurélien Froger, Optimisation dans les graphes, M1, Université de Bordeaux, France

Master : Aurélien Froger, Gestion des opérations et planification de la production, M2, Université de Bordeaux, France

Master : Ruslan Sadykov, Introduction to Constraint Programming, M2, Université de Bordeaux, France

Licence : Pierre Pesneau, Grands domaines de l'optimisation, L1, Université de Bordeaux, France

Licence : Pierre Pesneau, Programmation pour le calcul scientifique, L2, Université de Bordeaux, France

Licence : Pierre Pesneau, Optimisation, L2, Université de Bordeaux, France

DUT : Pierre Pesneau, Recherche Opérationnelle, DUT Informatique 2ème année, Université de Bordeaux, France

Master : Pierre Pesneau, Algorithmique et Programmation 1, M1, Université de Bordeaux, France

Master : Pierre Pesneau, Algorithmique et Programmation 2, M1, Université de Bordeaux, France

Master : Pierre Pesneau, Programmation linéaire, M1, Université de Bordeaux, France

Master : Pierre Pesneau, Integer Programming, M2, Université de Bordeaux, France

### 10.2.2. Supervision

HdR : Ruslan Sadykov, Modern Branch-Cut-and-Price, Université de Bordeaux, 4/12/2019.

PhD : Imen Ben Mohamed, Designing Two-Echelon Distribution Networks under Uncertainty [1], Université de Bordeaux, 27/05/2019, Walid Klibi (dir), Ruslan Sadykov (dir), François Vanderbeck (co-dir).

PhD in progress : Alena Shilova, Scheduling for Deep Learning Frameworks from October 2018, Olivier Beaumont (dir) and Alexis Joly (dir)

PhD in progress: Tobias Castanet, Use of Replication in Distributed Games from September 2018, Olivier Beaumont (dir), Nicolas Hanusse (dir) and Corentin Travers (dir).

PhD in progress : Guillaume Marques, Planification de tournées de véhicules avec transbordement en logistique urbaine : approches basées sur les méthodes exactes de l'optimisation mathématique, from September 2017, Ruslan Sadykov (dir)

PhD in progress : Gaël Guillot, Aggregation and disaggregation methods for hard combinatorial problems, from November 2017, François Clautiaux (dir) and Boris Detienne (dir).

PhD in progress : Orlando Rivera Letelier, Bin Packing Problem with Generalized Time Lags, from May 2018, François Clautiaux (dir) and Ruslan Sadykov (co-dir), a co-tutelle with Universidad Adolfo Ibáñez, Peñalolén, Santiago, Chile.

PhD in progress: Mohamed Benkirane, "Optimisation des moyens dans la recombinaison commerciale de dessertes TER" from November 2016, François Clautiaux (dir), Boris Detienne (dir)

PhD in progress: Xavier Blanchot, "Accélération de la Décomposition de Benders à l'aide du Machine Learning : Application à de grands problèmes d'optimisation stochastique two-stage pour les réseaux d'électricité" from September 2019, François Clautiaux (dir), Aurélien Froger (co-dir)

PhD in progress: Johan Levêque, "Conception de réseaux de distributions urbains mutualisées en mode doux", from September 2018, François Clautiaux (dir), Gautier Stauffer (co-dir)

### 10.2.3. *Juries*

- François Clautiaux: external referee for the thesis of Arthur Kramer (Bologna), referee for the thesis of Arnaud Lazare (Université Paris Saclay) jury member for Simon Bélières (Université de Toulouse), Imen Ben Mohamed (Université de Bordeaux) jury member for the habilitation of Ruslan Sadykov (Université de Bordeaux)
- Boris Detienne: jury member for Ikram Bouras (Université de Montpellier) and Imen Ben Mohamed (Université de Bordeaux)
- Ruslan Sadykov: member of of the selection committee of the Maitre de Conference position (Université de Bordeaux)

## 10.3. Popularization

- Local events: Participation to "Journée emploi maths et interaction 2019". This day aims to bring together students, researchers and practitioners in mathematics in the Bordeaux area. <https://uf-mi.u-bordeaux.fr/sites/jemi/>

### 10.3.1. *Interventions*

- Participation to Circuit Scientifique Bordelais (Fête de la Science)
- Participation to the 80th anniversary of CNRS

## **CARMEN Project-Team**

## **9. Dissemination**

### **9.1. Promoting Scientific Activities**

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

Several members of the team were involved in the organization of the 10th international conference on Functional Imaging and Modeling of the Heart (FIMH), that was held at Bordeaux in July 2019.

M. Leguèbe co-organizes the seminar of team “Calcul Scientifique et Modélisation” (IMB, Université de Bordeaux).

Lisl Weynans co-organizes with Edward Vigmond (IHU Liryc) the bi-monthly journal club of the modelling group at Liryc, and organizes a monthly workgroup about applied numerical methods, within the Scientific Computing and Modelling team at IMB (Institut de Mathématique de Bordeaux)

#### **9.1.2. Journal**

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

Mostafa Bendahmane is member of the editorial board of the "Moroccan Journal of Pure and Applied Mathematics", Mark Potse is an associate editor for "Frontiers in Cardiac Electrophysiology" and an Associate editor for "Journal of Electrocardiology".

#### **9.1.3. Invited Talks**

- Lisl Weynans: Mini-symposium on "Numerical methods for interfacial dynamics", ICIAM 2019, Valence, Spain.
- Nejib Zemzemi: Maghrebien Meeting of Young Researchers in Pure and Applied Mathematics, MYRPAM. Hammamet, Tunisia 9-12 December, 2019.
- Mostafa Bendahmane: "Recent progress in inverse problems in electrocardiology", at CAMS, American university of Beirut, Libanon.
- Mark Potse: "Atrial fibrillation dynamics", invited talk at the 2019 International Congress on Electrocardiology, Belgrade, Serbia, 2019.
- Mark Potse: "ECG imaging without imaging", invited talk at the 2019 International Congress on Electrocardiology, Belgrade, Serbia, 2019.
- Lisl Weynans: invited talk on "Hywec 2 : The Hydrodynamics of Wave Energy Convertors", Talence, 2019.
- Lisl Weynans: invited talk at the Seminar of "Institut de Mathématiques de Toulouse", 2019.
- Lisl Weynans: invited talk at the Workshop of ANR RheoSuNN, Ecole Polytechnique, Palaiseau, March 2019.
- Yves Coudière: invited plenary talk at the "9e biennale des mathématiques appliquées et industrielles de la SMAI", Guidel, 2019.
- Nejib Zemzemi: invited talk on "Mathematical Modelling of the electrical activity of the heart from ion-channels to the body surface: Forward and Inverse problems", at Institut de recherche mathématique de Rennes, March 14, 2019.

#### **9.1.4. Research Administration**

Yves Coudière is a deputy director of Directeur IMB (Institut de Mathématiques de Bordeaux, UMR 5251 CNRS, Ub, Bdx-INP). Gathering around 160 permanent members, it organizes the research in mathematics and applications of mathematics in Bordeaux.

Michael Leguebe is the secretary of the CLHSCT (Comité Local Hygiène et Sécurité au travail) of the Inria BSO research center.

Lisl Weynans is a member of the "conseil UFR maths et interactions", a member of the "conseil scientifique IMB" and a member of the "BCP" of the Inria BSO research center.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

The 2 assistant professors and 1 professor of the team teach at several levels of the Bordeaux University programs in Mathematics and Neurosciences (respectively, 192, 192 and 96 h/year on average). The researchers also have a regular teaching activity, contributing to several courses in the Applied Mathematics at the Bachelor and Master levels (usually between 16 and 32 h/year).

The PhD student are used to teach between 32 and 64 h/year, usually courses of general mathematics in L1 or mathematics for biologists in L1 or L2.

Teaching responsibilities at the University of Bordeaux:

- Yves Coudière: Master MAS (Mathématiques Appliquées, Statistiques), parcours MNCHP (Modélisation Numérique Calcul Haute Performance),
- Yves Coudière: Licence Mathématique parcours ingénierie mathématique,
- Lisl Weynans: Mineure Mathématiques du parcours International de la Licence
- Mostafa Bendahmane: Responsable de la mobilité internationale des étudiants de Licence MIASSH.

Courses (L for Bachelor level, M for Master level):

- Numerical analysis (L2)
- Programming for scientific computing with C++ (L3)
- Programming projects with Python (M1)
- Numerical approximation of PDEs: Finite Differences, Finite Elements, Finite Volumes (M1, M2)
- Supervision of programming projects (L3, M1)
- Mathematical modelling in L2 parcours medicine and physics
- Linear Algebra, Optimization under constraints (L2 and Essca school)
- Analysis, L2
- Computational Neurosciences, M2
- Neuropsychology and Psychophysiology, L3
- Graduate program EUR Digital Public Health, Bordeaux University, March 2019. Philosophy of science and the role of numerical models: introductory course in the module Modeling in life science

Courses at doctoral level:

- Liryc summer school, July 2019: Computer modeling of cardiac electrophysiology, 3 hours
- Course of mathematics for medicine students: March 2019, course organized by the Ecole Doctorales EDMi and SVS of Bordeaux University Introductory course of mathematical modelling and parameter estimation techniques in complex models (4h30)

### 9.2.2. Supervision

PhD : Antoine Gérard, Modèles numériques personnalisés de la fibrillation auriculaire , Univ. Bordeaux, July 12th 2019, encadrant: Yves Coudière

PhD in progress : Andony Arrieula, Oct. 2018, encadrant: Mark Potse

PhD in progress: Oumayma Bouhamama, Oct. 2018 , encadrante: Lisl Weynans

PhD in progress : Syed Hassaan Ahmed Bukhari, Oct. 2018, encadrant: Mark Potse

PhD in progress : Amel Karoui, Oct 2017, encadrants: Mostafa Bendahmane and Nejib Zemzemi

PhD in progress : Bachar Tarraf, Oct. 2018, encadrant: Yves Coudière and Michael Leguebe

### 9.2.3. Juries

- Lisl Weynans: member of the Jury for the recruitment of CR Inria, BSO research center.
- Lisl Weynans : member of the jury for the PhD of Umberto Bosi in applied mathematics (Univ. Bordeaux)
- Yves Coudière: chairman of the jury for the PhD of J. Engelhardt in neurology (Univ. Bordeaux)
- Yves Coudière: member of the jury for the PhD of A. Gérard in applied mathematics (Univ. Bordeaux)
- Nejib Zemzemi : member of the jury for the PhD of Rabeb Chamekh in applied mathematics
- Mostafa Bendahmane: member of the jury for the PhD of Mohamed Zagour in applied mathematics.

## 9.3. Popularization

### 9.3.1. Internal or external Inria responsibilities

Coordination of a workgroup entitled "CultureMATH Bordeaux", working on writing dissemination articles for the website <https://culturemath.ens.fr>.

### 9.3.2. Education

Organization of "Moi informaticienne, moi mathématicienne (MIMM)": one week internship at the University for young girls (15-16 year old) interested in maths and informatics.

### 9.3.3. Interventions

- National events: Fête de la Science, Semaine des maths,
- In educational institutions: several talks in high-schools about scientific computing and applied mathematics
- Presentation stand for "Simric" at the 10 years anniversary of the Inria Bordeaux Sud-Ouest centre.
- Modeling stand at the "Journée portes ouvertes de Liryc", 2019.
- Reception of 5 high-school pupils (élèves de 3e, 15 years old).

## **MAGIQUE-3D Project-Team**

# **10. Dissemination**

## **10.1. Promoting Scientific Activities**

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

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

- Hélène Barucq co-organized committee of "Journées Ondes du Sud-Ouest" (JOSO 2019), March, 12-14. <https://hal.archives-ouvertes.fr/JOSO2019>
- Hélène Barucq, Florian Faucher and Ha Pham organized the "Ants workshop on computational helioseismology" in Bordeaux, December, 3-5, <https://project.inria.fr/antsworkshop201912/>
- Hélène Barucq coorganized a minisymposium on "Geophysical Applications" at ICIAM 2019 in Valence, July, 15-19, <https://iciam2019.org/>
- Julien Diaz and Sébastien Tordeux coorganized a minisymposium on "Advanced numerical tools for wave propagation simulation" at ICIAM 2019 in Valence, July, 15-19, <https://iciam2019.org/>
- Julien Diaz coorganized an autumn school on "High performance numerical simulation", <https://project.inria.fr/hpcschool2019/>, in Bordeaux, November, 4-8. This school gathered 30 participants, mainly PhD students and post-doc. It aimed at simulating a physical problem, from its modeling to its implementation in an high performance computing (HPC) framework. The physical problem considered was the harmonic wave propagation. The hands-on sessions were conducted on the Federative Platform for Research in Computer Science and Mathematics (PlaFRIM) machine.

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

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

- Hélène Barucq and Julien Diaz were members of the scientific committee of Waves 2019 <https://waves2019.at>
- Sébastien Tordeux was member of the scientific committee of The international Russian-french workshop, Differential equations and Mathematical Modeling, Khanty-Mansiisk, Russia 25-29 août 2019

### ***10.1.3. Journal***

#### *10.1.3.1. Reviewer*

Members of Magique 3D have been reviewers for the following journals:

- Computer Methods in Applied Mechanics and Engineering
- Geophysics
- Journal of Computational Physics
- Journal of Scientific Computing
- Numerical Methods in Engineering
- Geophysical Journal International
- Computational Geosciences (COMG)

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

Hélène Barucq is elected member of the Liaison Committee of SMAI-GAMNI (Society of Applied and Industrial Mathematics - Group for promoting the Numerical Methods for Engineers).

- Julien Diaz was expert for the evaluation of Millennium Science Initiative project for the government of Chile.
- Since 2017, Hélène Barucq has been chairwoman of a committee which evaluates research projects in Mathematics, Computer Science, Electronics and Optics to be funded by the Regional Council New Aquitaine
- Since 2018, Hélène Barucq has been scientific officer for E2S project. She participates in the evaluation of each E2S call. She is also member of a committee having in charge the recruitment of non permanent researchers for E2S.

- Julien Diaz is elected member of the Inria Technical Committee and of the Inria Administrative Board. Since 2018, he has been the head of the Mescal team of LMAP.
- Justine Labat is elected member of Laboratory Committee of LMAP.
- Victor Péron is appointed member of the CER (Commission des emplois de recherche) of Inria Bordeaux Sud-Ouest.

### 10.2.1. Teaching

Master : Julien Diaz, Transformées, 24h Eq. TD, M1, EISTIA, France

Licence : Rose-Cloé Meyer, Mathématiques appliquées, 22.5h Eq. TD, L1, UPPA, France

Licence : Rose-Cloé Meyer, Développements limités, suites et séries, 19.5h Eq. TD, L2, UPPA, France

Licence : Marc Duruflé, Équations différentielles, 20h Eq. TD, L3, Enseirb-MatMeca, France

Licence : Marc Duruflé, Algorithmique Numérique, 50h Eq. TD, L3, Enseirb-MatMeca, France

Licence : Marc Duruflé, Outils Mathématiques 3-D, 37h Eq. TD, L3, Enscpb, France

Master : Marc Duruflé, Calcul scientifique en C++, 96h Eq. TD, M1, Enseirb-MatMeca, France

Licence : Marc Duruflé, Calcul scientifique en Fortran90, 20h Eq. TD, L3, Enseirb-MatMeca, France

Licence : Nathan Rouxelin, Mathématiques appliquées, 22.5h Eq. TD, L1, UPPA, France

Licence : Nathan Rouxelin, Modèles mathématiques pour l'informatique, 19.5h Eq. TD, L1, UPPA, France

Master : Florian Faucher, Inversion / optimisation, 10.5h Eq. Cours et TD, M2, Université de Pau et des Pays de l'Adour, France

Licence : Justine Labat, Algèbre pour l'informatique, 19.5h Eq. TD, L1, UPPA, France

Licence : Justine Labat, Introduction aux Probabilités, 12.5h Eq. TD, L2, UPPA, France

Licence : Victor Péron, Analyse 2, 39 Eq. TD, L1, UPPA, France

Licence : Victor Péron, Mathématiques appliquées, 15 Eq. TD, L1, UPPA, France

Licence : Victor Péron, Mathématiques appliquées, 19.5 Eq. TD, L1, UPPA, France

Licence : Victor Péron, Analyse numérique des systèmes linéaires, 48.75 Eq. TD, L3, UPPA, France

Licence: Géométrie analytique, 20h Eq. TD, UPPA, France

Master : Victor Péron and Sébastien Tordeux, Analyse numérique des EDP 1: différences finies, 75 eq. TD, Master1, UPPA, France

Master : Victor Péron and Sébastien Tordeux, Introduction aux phénomènes de propagation d'ondes, 38 eq. TD, Master 2, UPPA, France

Master : Robin Tournemene, Math-Info, 64h eq. TD, L3+M1, ENSAM Bordeaux, France

### 10.2.2. Supervision

PhD : Aurélien Citrain, Méthode d'éléments finis hybride pour la simulation des ondes sismiques : couplage des discrétisations Galerkin Discontinue et éléments spectraux, December 16th, Hélène Barucq and Christian Gout (Insa Rouen).

PhD : Justine Labat, Modélisation multi-échelle de la diffraction des ondes électromagnétiques par de petits obstacles, November 28th, Victor Péron and Sébastien Tordeux.

PhD in progress : Alexandre Gras, Hybrid resonance for sensing applications, IOGS, October 2017, Philippe Lalanne(IOGS), Marc Duruflé, Hélène Barucq (Magique 3D)

PhD in progress : Pierre Jacquet, Time domain Full Waveform Inversion involving hybrids numerical method to characterize elasto-acoustic media. ,October 2017, Hélène Barucq and Julien Diaz.

PhD in progress: Victor Martins Gomez, Experimental characterization and modeling of seismo-electromagnetic waves, Université de Pau et des Pays de l'Adour, October 2018, Hélène Barucq and daniel brito (LFCR)

PhD in progress : Rose-Cloé Meyer, Modeling of conducting poro-elastic media using advanced numerical methods , Université de Pau et des Pays de l'Adour, October 2018, Hélène Barucq and Julien Diaz

PhD in progress : Nathan Rouxelin, Advanced numerical modeling of acoustic waves propagating below the surface of the Sun, Université de Pau et des Pays de l'Adour, October 2018, Hélène Barucq and Juliette Chabassier

PhD in progress : Chengyi Shen, Approches expérimentale et numérique de la propagation d'ondes sismiques dans les roches carbonatées, October 2016, Julien Diaz and Daniel Brito (LFCR).

PhD in progress : Margot Sirdey, Méthode de Trefftz pour l'électromagnétisme, October 2019, Sébastien Tordeux and Sébastien Pernet (Onera).

PhD in progress : Vinduja Vasanthan, Tent Pitcher algorithm for space-time integration of wave problems, October 2019, Hélène Barucq and Julien Diaz.

PhD in progress : Stefano Frambati, Isogeometric analysis of sharp boundaries in full waveform inversion, January 2019, Hélène Barucq and Julien Diaz.

Master 2 internship : Ilyas Bouchni, Optimisation de maillage pour l'imagerie sismique, Université de Montpellier, Sept. 2019.

Master 2 internship : Vinduja Vasanthan, Couplage élasto-acoustique en domaine fréquentiel par des méthodes de type Galerkin Discontinues Hybride , Insa Rouen, Sept. 2019.

### 10.2.3. Juries

- Victor Péron : Jérôme Tomezyk (Université Polytechnique Hauts-de-France), Résolution numérique de quelques problèmes du type Helmholtz avec conditions au bord d'impédance ou des couches absorbantes (PML), July 2nd 2019
- Julien Diaz : Soumaya Oueslati (Université de Cergy-Pontoise), "A new variational formulation for electromagnetic scattering problem using integral method with high order impedance boundary condition – Small perturbation of an interface for Stokes system", PhD thesis, June 12th 2019
- Julien Diaz : Aurélien Citrain (Insa de Rouen), "Méthode d'éléments finis hybride pour la simulation des ondes sismiques : couplage des discrétisations Galerkin Discontinue et éléments spectraux", PhD thesis, December 16th 2019
- Sébastien Tordeux : Pierre Schickele (Université de Toulouse),"Modélisation de l'émission EM de faisceaux de câbles complexes dans un environnement 3D", december 18th 2019

## 10.3. Popularization

### 10.3.1. Interventions

- Justine Labat participated in scientific 'speed datings' during the 'Filles et Maths' day at Pau in February 2019.
- Juliette Chabassier participated to the festival Club Med'iation in May 2019.
- Juliette Chabassier participated to many interventions of Louis 14.0, a scientific and artistic show.
- Juliette Chabassier animated a workshop around the virtual piano in La Couronne in Nov 2019.
- Juliette Chabassier, Augustin Ernoult and Alexis Thibault participated to the "Articulations workshop" in Dec 2019.
- Juliette Chabassier participated to a workshop around the Meta-Piano-Teq with Jean Haury in Dec 2019.
- Sébastien Tordeux gave a talk on numerical analysis in the Cercle Sofia Kovalevskaja of Toulouse in May 2019
- Sébastien Tordeux was member of the judging committee for the "Tournois Français des Jeunes Mathématiciennes et Mathématiciens" in May 2019

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

Juliette Chabassier co-created with the Ensemble Les Précieuses the show Louis 14.0 that presents how ancient instruments can be restored via numerical techniques, and played in real time in a musical and theatral show.

## MNEMOSYNE Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Selection

#### 10.1.1.1. Chair of Conference Program Committees

X. Hinaut: Co-organizer of the workshop on language learning at IEEE ICDL-EPIROB 2019, Oslo, Norway, August 2019; of the "Day of the NeuroRobotics Working Group", Nov 2019, Bordeaux, France; Session chair at the CogSci conference, Montréal, Canada. Jul 2019.

N.Rougier: co-chair for the track on Neuroscience and Cognitive science during the SciPy conference (Austin, Texas, USA)

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

X. Hinaut: IROS Workshop on Deep Probabilistic Generative Models for Cognitive Architecture in Robotics, Macau, China. Nov 2019. International Workshop on Cognitive and Neural Systems, Granada, Spain. Oct 2019.

#### 10.1.1.3. Reviewer

X. Hinaut: CogSci'19, ICANN'19, ICDL-Epirob'19, IWANN'19; S. Pagliarini: ICDL-Epirob'19;

### 10.1.2. Journal

#### 10.1.2.1. Member of the Editorial Boards

- Frédéric Alexandre: Academic Editor for PLOS ONE; Review Editor for Frontiers in Neuro-robotics;
- Nicolas Rougier: Editor in chief for ReScience, Academic editor for PeerJ, review editor for Frontiers in Neurorobotics.
- Xavier Hinaut: guest editor in the Journal Advanced Robotics of a special issue on "Machine Learning Methods for High-Level Cognitive-Capabilities-in-Robotics"; guest editor for Frontiers Robotics and AI special issue on "Language and Robotics" <https://www.frontiersin.org/research-topics/8861/language-and-robotics> ; Member of the Editorial Board of Frontiers in Neurorobotics as Review Editor.

#### 10.1.2.2. Reviewer - Reviewing Activities

- F. Alexandre: Elife; EMBC; Frontiers in Neurobotics; Cognitive Computation; PLoS ONE
- Xavier Hinaut: Cognitive Computation, Entropy, Front. in Neurorobotics, Neural Networks, PeerJ, ReScience, IEEE Transactions in Cognitive Developmental Systems (TCDS).
- N.Rougier: Current Biology, PLoS Computational Biology, Journal of Open Science Software, PeerJ

### 10.1.3. Invited Talks

F. Alexandre:

- Invited speaker at the joint workshop between Inria and LIAMA (The Sino-European Laboratory of Computer Science, Automation and Applied Mathematics), Paris, April 3rd, for the talk: "Setting the basis of a bio-inspired Reinforcement Learning";
- talk to the Interdisciplinary and Translational Neuroscience research network (IT-Neuro) of the University of Lorraine, Nancy, April 25th: "Modeling the frontal cortex for motivated decision making";

- Invited talk “A computational model to study the dynamics of representations of rewards in the orbital and medial frontal cortex”, on October 2nd to the 2019 Bordeaux Neurocampus Conference on Reward <http://brainconf.u-bordeaux.fr/>;
- Invited talk “Trusted AI in medicine” and participation to a round table on december 11th in Merignac at MediSpace congress on transfers of technologies and best practices between space, aeronautical and medical industries <https://www.medispace2019.com/en/presentation-2/>

X. Hinaut:

- “How to ground sensorimotor sequence of symbols ? From robot learning languages to songbirds”, ICDL- Epirob workshop on Language Learning (M. Spranger), Oslo, NW. Aug 2019.
- “Random recurrent networks for language and bird song learning”, B. Golosio, Physics dept., University of Cagliari, IT.
- “Modélisation de l’encodage neuronal pour l’apprentissage de séquences complexes : applications à l’interaction homme-robot et aux chants des oiseaux”. LIRIS, Lyon, June 2019.
- “Modèles Neuronaux Récurrents pour le Traitement de Séquences Complexes”, Journée GT-ACAI-Neurorobotique: Neuroscience et multimodalité dans les interactions humain-humain, humain-agent ou humain-robot, ACAI-GT8 common working group day, Telecom ParisTech, Paris, FR.
- “Modélisation de l’encodage neuronal pour l’apprentissage de séquences complexes”, “Acoustic Perception” seminar from ETIS lab, University of Cergy-Pontoise, FR. March 2019.
- “Little Mechanisms of AI: from Ants to Language”, PhD Retreat of Center for Research and Interdisciplinarity of Paris. Arcachon, June 2019.
- “How to ground sensorimotor sequences of symbols? From robot learning languages to songbirds”, ICDL-epirob workshop on Language learning, Oslo, Aug. 2019.
- Symposium organised by regional chair on technological systems for human augmentation, March 28—29, 2019, Bordeaux, France.
- “Echo State Networks”, invited lecture at the International MSc “Intelligent Adaptive Systems”, KT lab, University of Hamburg, Germany, June 2019.

N.Rougier: Invited talk at the “Robotics, development and neurosciences” conference (Cergy, France)

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

X. Hinaut:

- Co-Head of the "NeuroRobotics" CNRS Working Group Organisation of several workshops throughout the year
- IEEE Task Force (TF) member: "Reservoir Computing", "Cognitive and Developmental Systems Technical Committee": "Language and Cognition" TF and "Action and Perception" TF.
- President of the association MindLaBDX: “open citizen lab” in Cognitive Sciences and Artificial Intelligence in Bordeaux.

Nicolas Rougier: Editor in chief for ReScience

#### **10.1.5. Scientific Expertise**

F. Alexandre is the french expert for Mathematics and Computer Science of the PHC (Hubert Curien Program) Utique for scientific cooperation between France and Tunisia.

Thierry Vieville has been required as expert to review a large neuroscience lab by the HCERES agency. He has also contributed to a large audience report on « AI in the media and creative industries » [25].

### 10.1.6. Research Administration

- F. Alexandre is member of the steering committee of Inria Bordeaux Sud-Ouest Project Committee; Corresponding scientist for Bordeaux Sud-Ouest of the Inria COERLE ethical committee; Member of the national Inria committee for international chairs; Member of the steering committee of the regional Cluster on Information Technology and Health; of the regional Cluster on Robotics; Expert of the ITMO 'Neurosciences, Sciences Cognitive, Neurologie, Psychiatrie'
- X. Hinaut: Member of the "Committee for Technological Development" of Inria, Bordeaux, FR
- N. Rougier is vice-head of the Mnemosyne team-project; elected member of the Inria Evaluation Committee; IES referent for Inria Bordeaux Sud-Ouest; Member of the committee for researcher recruitment; Member of the steering committee for the BioComp CNRS consortium; Editor in chief and co-founder of ReScience.
- Thierry Viéville is involved in the <http://classcode.fr> project and in charge, for Inria of the **MSc SmartEdTech** at Univ. Cote d'Azur (UCA).

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Many courses are given in french universities and schools of engineers at different levels (LMD) by most team members, in computer science, in applied mathematics, in neuroscience and in cognitive science. Thierry Viéville is teaching computational thinking in the **Msc #CreaSmartEdtech** ("Digital Expertise", "Educational Informatics" including Artificial Intelligence and Ontologies, "Digital Intedisciplinary Project ") and is co-organizing this Master of Science. He has been involved in the production of the "Science Numérique et Technologie" (SNT) new high-school course teacher formation, via the creation of a MOOC, with more than 18000 inscriptions, and has collaborated to the qualitative analysis of the course outcomes [18].

In addition, this year, F. Alexandre gave a lecture at the Barcelona Cognition, Brain and Technology Summer School <https://bcbt.specs-lab.com/bcbt19/>.

### 10.2.2. Juries

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

## 10.3. Popularization

### 10.3.1. Articles and contents

- F. Alexandre published an article about AI and neuroscience in The Conversation <https://theconversation.com/de-quelles-facons-lintelligence-artificielle-se-sert-elle-des-neurosciences-124402>
- N. Rougier published article: Pourquoi votre chat est nul aux échecs et pourtant plus intelligent qu'une IA, The Conversation (FR); article: Why your cat is lousy at chess yet way smarter than even the most advanced AI, The Conversation (US); Interview: Et le cerveau dans tout ça ? U magazine (Univ. Bordeaux)

### 10.3.2. Education

F. Alexandre: A lesson about AI (2 hours) and an unplugged activity about learning and memory (1 hour) given to a high-school class of 2nd on november 14th in Dax for the "1 scientist 1 class : Chiche !" MENJ program.

N. Rougier: Science outreach day at the Montendre high-school on unplugged AI (Montendre, France)

Several people in the team (F. Alexandre, T. Firmo-Drumond, N. Rougier, T. Vieville) participated (talks and demonstrations) to the Day “Activities for teaching AI” organized between Inria Bordeaux and LINE laboratory in Sciences of Education in Nice, June 21st;

### 10.3.3. Interventions

F. Alexandre:

- Intervention at the annual conference of the Bishops of France ( Lourdes, April 2nd), with a conference (“What can medicine expect from AI”) and the organization of a workshop on Robotics for AI;
- Participation to a round table discussion at the Robot Makers Day Festival, Talence, April 12th: “AI: threats and opportunities for our companies: what training for tomorrow’s engineers?”
- conference to the ESME-Sudria School of Engineers, Bordeaux, May 21st: “Is the brain a good model of intelligence ?”
- Conference “Should we be afraid of artificial intelligence?”, at the “Université de tous les savoirs” in Saint Jean de Luz on November 13th [http://www.utl-luz.fr/index\\_002.htm](http://www.utl-luz.fr/index_002.htm)
- Conference: “What can we expect from AI ?”, in the special day “AI and me” organized on November 15-16 by the city of Pontonx-sur-Adour <https://www.pontonx.fr/Pontonx-sur-l-Adour/Agenda-et-actualites/Toutes-les-actus-de-Pontonx/L-intelligence-artificielle>

A. Garenne: intervention about “Artificial Neural Networks and Machine Learning” at a club of companies, Pessac, decembre 12

X. Hinaut:

- "Pint of Science" invited talk, Bordeaux, FR, May 2019.
- "Les petits mécanismes de l'IA", invited talk at the Library of "Le Haillan", FR, April 2019.
- Invited jury member of the world scale hackathon "Créathon", Poitiers, FR, May 2019.
- Invited talk at the Science Fest Day, Cap Sciences, Bordeaux, FR, Oct 2019.

N. Rougier:

- Reboot conference “Will robots dominate us ?” (Bordeaux, France)
- Discussion with the general public about science, fiction and AI at Cap-Sciences (Bordeaux, France)

Thierry Viéville is an active member of [Femmes et Sciences](#), has been invited speaker at [Un rêve pour les filles et les garçons : LA SCIENCE](#) and is involved in dedicated science outreach actions [15].

Several people in the team (F. Alexandre, T. Firmo-Drumond, N. Rougier) participated to the “Trial of AI” on november 20, in the project “The controversy of Bordeaux Macropole” during the festival Facts, program Arts and Sciences of University of Bordeaux. <https://www.youtube.com/watch?v=UI4B4TteRmA> and <https://twitter.com/bdxmacropole>

Intervention by A. Garenne and T. Firmo-Drumond at the inter-university seminar "artificial intelligence and clinical sense", Bordeaux, march 11-12

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

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

## MONC Project-Team

## 10. Dissemination

### 10.1. Promoting Scientific Activities

#### 10.1.1. Scientific Events: Organisation

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

- C. Poignard: Organization of the Core-to-Core meeting March 21st-22nd at Bordeaux. This is the annual meeting of the JSPS Consortium « Establishing networks in mathematical medicine », which gathers Osaka University (Suzuki's lab), Vanderbilt University (Quaranta's lab), St Andrews Univ. (Chaplain's lab), and Inria Bordeaux team MONC.

#### 10.1.2. Scientific Events: Selection

##### 10.1.2.1. Reviewer

S. Benzekry served as a reviewer for the IEEE Control Systems Society Conference and for the International Symposium on Mathematical and Computational Oncology (Lake Tahoe, NV, USA).

#### 10.1.3. Journal

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

- S. Benzekry is a member of the Editorial Board of "Mathematical Biosciences and Engineering"
- C. Poignard is a member of the editorial board of DCDS-S.

##### 10.1.3.2. Reviewer - Reviewing Activities

- S. Benzekry served as a reviewer for Nature Communications, Cancer Research, Clinical Pharmacology and Therapeutics, Scientific Reports and ESAIM: Proc.
- A. Collin: Reviewer for Plos One.
- C. Etchegaray: ESAIM: Mathematical Modelling and Numerical Analysis, Royal Society Open Sciences.
- O. Saut: Mathematical Modelling of Natural Phenomena, PLOS One, Journal of Theoretical Biology, EBioMedicine, Nature Communications, Medical Image Analysis.

#### 10.1.4. Invited Talks

- S. Benzekry: May 2019, RITS conference (Recherche en Imagerie et Technologies pour la Sante) of the French Society of Biomedical Engineering (SFGBM), Tours, France.
- S. Benzekry: May 2019, Seminaire phases I en oncologie, Marseille, France. Old concept, new name? l'intelligence artificielle en oncologie.
- S. Benzekry: May 2019, Masterclass Mathematiques appliquees CEPS Mathematiques Des Sciences du Vivant, CIRM, Marseille, France.
- S. Benzekry: May 2019, NCI Mathematical Oncology Meeting, Portland, USA.
- S. Benzekry: May 2019, Biomedicum Helsinki Seminar (Invitation by Sampsa Hautaniemi), Faculty of Medicine, Helsinki, Finland.
- S. Benzekry: June 2019, Seminar in the Novartis pharmacometrics department. Basel, Switzerland. Artificial intelligence and machine learning in oncology: myths and reality.
- S. Benzekry: July 2019, International Society of Pharmacometrics (ISoP) workshop. Paris, France.
- C. Etchegaray: Equadiff conference, Leiden.
- O. Saut: July 2019, Mathematical models in Biology and Medicine, Vienna, Austria.

### 10.1.5. Scientific Expertise

- S. Benzekry is expert within the scientific board of the national multi-thematic institute (ITMO) Cancer of the French alliance for health sciences (AVIESAN).
- A. Collin, Steering Committee Axe 5, Cancéropole Grand Sud Ouest
- C. Poignard: Member of the INCA committee on pediatric cancer data structuration
- C. Poignard: Member of the GAMNI prize committee.
- O. Saut: expert in the "Single Cell" call at ITMO Cancer / Plan Cancer.
- O. Saut: expert for the French Ministry of Research (for various programs including PHC and EGIDE programs).
- O. Saut: reviewer for SIRIC CURAMUS projects.

### 10.1.6. Research Administration

- S. Benzekry is a member of the local Inria commission of informatical tools users (CUMI)
- Annabelle Collin, member of "conseil de Laboratoire", Institut Mathématique de Bordeaux.
- Annabelle Collin, "chargée de mission parité", Institut Mathématique de Bordeaux.
- Annabelle Collin, member of "commission ADT", Inria Bordeaux Sud-Ouest.
- Annabelle Collin, "chargée de mission Développement Durable et Responsabilité Sociétale", ENSEIRB-MATMECA.
- Annabelle Collin, elected member of "comité de centre", Inria Bordeaux Sud-Ouest.
- C. Poignard is a member of the Inria Evaluation Committee
- Clair Poignard, member of "conseil scientifique", Institut Mathématique de Bordeaux.
- Olivier Saut: member of the steering committee of ITMO consortium HTE (on tumor heterogeneity) and coordinator of work package Model and Data.
- Olivier Saut: member of the steering committee of Labex TRAIL (Translational Imaging) <http://trail.labex.u-bordeaux.fr>.
- Olivier Saut: in charge of "Interdisciplinarité" at Institut de Mathématiques du CNRS <http://www.cnrs.fr/insmi>.
- Olivier Saut: member of the steering committee of the MITI at CNRS <http://www.cnrs.fr/mi>.
- Olivier Saut: member of the steering committee of the Oncosphere Project <https://siric-brio.com/oncosphere/>.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Master : S. Benzekry, Cours "Modélisation de la croissance tumorale", 3h, niveau M2, Université de Tours, France.

Master : S. Benzekry, Cours "Mathematical tools for pharmacometrics", 10h, niveau M2, Aix-Marseille Université, France.

Master : S. Benzekry, TP "Introduction to Monolix", 2 x 3h, EUR "Modeling Life Sciences" (Université de Bordeaux) and DESU "Pharmacokinetics modeling" (Aix-Marseille Université), France.

Master: A. Collin, Pratical C++ programming, 96h, niveau M1, INP Bordeaux, France.

Master: A. Collin, Mesh theory, 36h, niveau M2, INP Bordeaux, France.

Master: A. Collin, Machine Learning, niveau M2, INP Bordeaux, France.

PHD: A. Collin, Modeling Life Science Module, Digital Public Health, Graduate Program.

Licence : C. Poignard, Undergraduate teaching in Numerical and Applied Mathematics, 80h, L3-M1, INP Bordeaux, ENSAM, France.

Master: O. Saut, Mathematical modeling in Oncology, 2h, niveau M2, Univ. Bordeaux, France.

### 10.2.2. Supervision

PhD: C. Nicolò, *Mathematical modeling of systemic aspects of cancer and cancer therapy*, 2016 - 2019, supervision S. Benzekry and O. Saut. Defended October 14th, 2019.

PhD in progress: C. Vaghi, Improving intra-tumor drug distribution of anti-cancer nanoparticles by data-informed mathematical modeling, Nov 2017 - Nov 2020, supervision S. Benzekry and C. Poignard.

PhD in progress: Sergio Corridore, 2016-..., supervision A. Collin and C. Poignard

PhD in progress: Pedro Jaramillo-Aguayo, 2019-..., supervision A. Collin and C. Poignard

PhD: C. Perier, *Analyse quantitative des données de routine clinique pour le pronostic précoce en oncologie*, 2016-2019, supervision B. Denis de Senneville and O. Saut. Defended November 14th, 2019.

PhD in progress: A. Crombé, 2017-..., supervision O. Saut

### 10.2.3. Juries

- S. Benzekry: Reviewer of the PhD thesis of E. Kozłowska (University of Helsinki, Finland)
- S. Benzekry: Reviewer of the PhD thesis of A. Alvarez-Arenas Alcamí (Universidad de Castilla La Mancha, Ciudad Real, Spain)
- S. Benzekry: Reviewer of the PhD thesis of A-S Giaccobi (Université Picardie Jules Verne)
- S. Benzekry: Reviewer of the PhD thesis of J Goya-Outi (Paris Saclay University)
- A. Collin, PhD defense committee, Antoine Gérard, Inria Bordeaux Sud-Ouest, Modèles numériques personnalisés de la fibrillation auriculaire, 10 juillet 2019
- A. Collin, PhD defense committee, Thibaut Hirschler, INSA Lyon, IsoGeometric Modeling for the Optimal Design of Aerostructures, 13 nov. 2019
- A. Collin, Jury member, agrégation de Mathématiques
- O. Saut: Reviewer of the HdR thesis of A. Decoene, Univ. Paris Sud, France.
- O. Saut: Reviewer of the PhD thesis of A. Perrillat-Mercerot, Univ. Poitiers, France.
- O. Saut: PhD defense committee, A. Hocquelet, Univ. Bordeaux, France
- O. Saut: PhD defense committee, G. Birindelli, Univ. Bordeaux, France

## 10.3. Popularization

### 10.3.1. Internal or external Inria responsibilities

#### 10.3.2. Interventions

- A. Collin, intervention "midi-rencontre sur les femmes dans les sciences", association TousEn-Sciences
- A. Collin, intervention "place de la femme dans les métiers scientifiques", Robot makers' days
- C. Etchegaray: Fête de la science.
- O. Saut: Journée Scientifique Institut Bergonié.

#### 10.3.3. Internal action

- O. Saut: Café des Sciences.

## PLEIADE Project-Team

## 9. Dissemination

### 9.1. Promoting Scientific Activities

#### 9.1.1. Journal

##### 9.1.1.1. Member of the Editorial Boards

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

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

#### 9.1.2. Scientific Expertise

David Sherman is a member of the Scientific Advisory Board of Enlightware GmbH, Zürich.

#### 9.1.3. Research Administration

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

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

David Sherman represents Inria in the steering committee of the Region Nouvelle Aquitaine’s regional research network “Biodiversity and Ecosystemic Services” (BIOSENA).

## 9.2. Popularization

#### 9.2.1. Education

David Sherman contributed to the *Journée APEIA (Activités Pour l’Enseignement de l’IA)*

David Sherman help train teachers in programming mobile robots, in preparation for R2T2 events (<http://r2t2.org>) coordinated by the Mobsya association and EPFL (Switzerland).

#### 9.2.2. Interventions

In collaboration with a local PME, David Sherman helped design an interactive exhibit on tree classification for a museum in the Region Nouvelle Aquitaine, based on a specialization of **Qui se ressemble s’assemble**.

David Sherman presented the **Qui se ressemble s’assemble** activity to 100 middle school students during the Circuit Scientifique in 2019 (Figure 6), and to 40 undergraduate students from the ENS Lyon.

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

David Sherman refined his design for the electronics of the **Qui se ressemble s’assemble** activity, to explain the methods and uses of pattern classification of protein families. The activity uses 20 3D-printed point clouds and 4 oracles, containing a microcontroller, an RFID reader with a custom-designed inductive coil as input, and an LED ring as output. Participants propose groups of 3D shapes that they believe belong to the same class, and the oracle evaluate the group.



Figure 6. *Qui se ressemble s'assemble* during the Circuit Scientifique in 2019: (left) classification oracle (right) comparing similar shapes (Photo copyright Gautier DUFAU)

## SISTM Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Societies Involvement

- Boris Hejblum is a member of the chairing committee of the *Société Française de Biométrie*, the French Chapter of the International Biometric Society
- Boris Hejblum is a board member of the “MACHINE Learning et Intelligence Artificielle” (MALIA) group of *Société Française de Statistique* (SFdS)
- Mélanie Prague is a board member of the “Jeunes Statisticien.ne.s” group of SFdS
- Marta Avalos is a board member of the “Stat&Sport” group of SFdS

### 10.1.2. Scientific Events: Organisation

#### 10.1.2.1. General Chair, Scientific Chair

Mélanie Prague co-organized with Jérémy Guedj from Inserm the 4th Workshop on Virus Dynamics <https://viraldynamics.sciencesconf.org>, 21-23 October in Paris, France.

### 10.1.3. Scientific Events: Selection

#### 10.1.3.1. Chair of Conference Program Committees

- Robin Genuer Co-organizes a reading group called "Smiling in Bordeaux" (<http://www.math.u-bordeaux.fr/~mchave100p/smiling/>)
- Boris Hejblum organizes the Biostatistics Seminar Series at the Bordeaux Population Health Inserm Research Center
- Boris Hejblum co-organizes the Bordeaux Statistics Seminar Series (<https://indico.math.cnrs.fr/category/367/>)

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

- Mélanie Prague was a member of the 51th Days of Statistics (JdS), the most important annual scientific event in the French-speaking statistical community, organized by the French Statistical Society (SFdS), June 2019, Nancy, France
- Rodolphe Thiébaud was a member of the scientific committee of the national conference on clinical research (EPICLIN)
- Rodolphe Thiébaud is a member of the scientific committee of the IWHOD International Workshop on HIV Observational Databases since 2013 (<http://iwhod.org/Committee>) and chair in 2020.

#### 10.1.3.3. Reviewer

- NeurIPS (Robin Genuer)
- Workshop at NeurIPS 2019 "ML4H: Machine Learning for Health" (Marta Avalos)

### 10.1.4. Journal

#### 10.1.4.1. Member of the Editorial Boards

Lifetime Data Analysis (Daniel Commenges)

Statistics Surveys (Daniel Commenges)

Associate editor of International journal of Biostatistics (Melanie Prague)

IMIA Yearb Med Inform (Rodolphe Thiébaud)

#### 10.1.4.2. Reviewer - Reviewing Activities

- AIDS (Rodolphe Thiébaud)
- Am J Public Health (Mélanie Prague)
- Biometrics (Mélanie Prague, Boris Hejblum)
- Bioinformatics (Boris Hejblum)
- IMIA Yearb Med Inform (Marta Avalos)
- International Journal of Epidemiology (Daniel Commenges)
- Journal of Computation Statistics and Data Analysis (Boris Hejblum)
- Journal of the American Statistical Association (Robin Genuer)
- Journal of the Royal Statistical Society: Interaction (Mélanie Prague)
- JRSS-B (Mélanie Prague)
- Operations research (Robin Genuer)
- PLOS Computational Biology (Boris Hejblum)
- Society of clinical trial (Mélanie Prague)
- Statistical Methods in Medical Research (Mélanie Prague)
- Statistical science (Mélanie Prague)
- Trials (Laura Richert)

#### 10.1.5. Invited Talks

- 3rd EcoSta Conference – 25-27th June 2019, Taichung, Taiwan. A variance component score test applied to RNA-Seq differential analysis. [B Hejblum]
- 12th International Conference of the ERCIM Working Group on Computational and Methodological Statistics – 14-16th December 2019, London, UK. Scaling up nonparametric Bayesian clustering with MCMC for big data applications. [B Hejblum]
- The 9th International Digital Public Health Conference – 20-23 November 2019, Marseille, The Challenges of Implementing Healthcare Technology and Innovation across Europe and Beyond [R Thiebaut]
- Conférence du centre de recherche du CHU de Sainte Justine – 17 October 2019, Montreal, Canada - *Science des données en épidémiologie clinique: exemples en vaccinologie*. [R Thiebaut]
- 4th Workshop on viral dynamics – 21-23rd October 2019, Paris - Modeling to optimize vaccine development against Ebola [R Thiebaut]
- INFECTION, IMMUNITY AND INFLAMMATION PROGRAMME Mini-symposium Mathematical Immunology in memoriam Robin Callard - 3rd October 2019, Institute of Child Health, London - Modelling in Immunology from 2007 to tomorrow, an overview of the work done with and inspired by Robin Callard [R Thiebaut]
- Workshop ITUN CESI, CHU Nantes, 3rd September. Understanding and predicting the effect exogenous IL-7 in HIV infected patients through mathematical modelling: toward personalised medicine. [R Thiebaut]
- 14th Colloquium of ADEA *La transformation du système de santé : l'hôpital de demain*, Cambo les Bains, September. L'intelligence artificielle [R Thiebaut]
- Robin's Callard symposium – Institute of Child Health, London – 4 October [R Thiebaut]

#### 10.1.6. Oral contributions in conferences and colloquium

- Several members contributed to the 51th Days of Statistics (JdS), the most important annual scientific event in the French-speaking statistical community, organized by the French Statistical Society (SFdS), June 2019, Nancy, France [R Genuer, M Prague, M Avalos]

- UseR! 2019, Toulouse, France – July 2019. VICI: a Shiny app for accurate estimation of Vaccine Induced Cellular Immunogenicity with bivariate modeling. [B Hejblum]
- Joint Statistical Meeting 2019, Denver, USA – July 2019. Can you trust differential expression methods for RNA-seq data analysis ? [B Hejblum]
- 6th *Colloque francophone international sur l'enseignement de la statistique* 2019, Nancy, France–June 2019. *Enseigner la science des données en santé publique* [B Hejblum]
- Medinfo 2019, Lyon, 25-30 August 2019 [R Thiebaut]
- Several Talks at Virus Dynamics, October, Paris [R. Thiebaut, M. Alexandre, Q. Clairon].
- 32nd IEEE International Symposium on Computer-Based Medical Systems (CBMS) [H. Lorenzo].
- GDR Statistics and Health, Paris, France, October 2019 [L. Villain].
- StatOmique day - November 2019 [M. Gauthier]

#### **10.1.7. Poster contributions in conferences and colloquium**

- The French Health Data System applied to health research Meeting - June 2019, Rennes, France [M Avalos]
- PAGE June Stocholm [M. Prague, M. Alexandre]
- StatOmique day - November 2019, Paris [L. Villain]

#### **10.1.8. Scientific Expertise**

- Rodolphe Thiébaut is an expert for INCA (Institut National du Cancer) for the PHRC (Programme hospitalier de recherche Clinique en cancérologie) and for the PRME (Programme de recherche médico-économique en cancérologie).
- Rodolphe Thiébaut is a member of the CNU 46.04 (Biostatistiques, informatique médicale et technologies de communication).
- Rodolphe Thiébaut is a member of the Scientific Council of Inserm.
- Rodolphe Thiébaut is a member of the committee “Biologie des Systèmes et Cancer (Plan Cancer)”, a member of the Scientific Advisory Board of the “Institut Pierre Louis d’Epidémiologie et de Santé Publique” (UPMC, Dir : Dominique Costagliola), a member of the independent committee of international trials ODYSSEY and SMILE, a member of the scientific council of Muraz’s Center (Bobo-Dioulasso, Burkina Faso)
- Mélanie Prague is an expert for ANRS (France Recherche Nord&Sud Sida-HIV Hépatites) in the CCS13 (Recherches cliniques et physiopathologiques dans l’infection à VIH) and AC 47.
- Laura Richert is an expert for the PHRC (Programme hospitalier de recherche Clinique).
- Marta Avalos is an expert for the ANSM (Agence nationale de sécurité du médicament et des produits de santé)

#### **10.1.9. Research Administration**

Daniel Commenges is the director of the Biostat-Info axis in the Inserm BPH (Bordeaux Public Health) institute.

Rodolphe Thiébaut is the director of the department of Public Health in University of Bordeaux and a member of the Inserm Scientific Council

Laura Richert is coordinator of the Clinical epidemiology module of the Clinical Investigations Center (CIC1401 Bordeaux)

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

### **10.2.1. Teaching**

**In class teaching**

Master: Rodolphe Thiébaud is head of the Digital Public Health graduate program, University of Bordeaux.

Master : All the permanent members and several PhD students teach in the Master of Public Health (M1 Santé publique, M2 Biostatistique and/or M2 Epidemiology and/or M2 Public Health Data Science) and the Digital Public Health graduate program, University of Bordeaux.

Master : Marta Avalos, Robin Genuer, Louis Capitaine and Marine Gautier teach in the Master of Applied Mathematics and Statistics (1st and/or 2nd year), University of Bordeaux.

Master : Marta Avalos teaches in the 2nd year of the Master of "Management international : Développement pharmaceutique, Production et Qualité opérationnelle", University of Bordeaux.

Bachelor: Laura Richert and Edouard Lhomme teach in PACES and DFASM1-3 for Medical degree at Univ. Bordeaux

Master: Hadrien Lorenzo teach in the third year engineering school ENSAI, Rennes and in the "Ecole Santé Science" Program (dual degree in Health and Science), University of Bordeaux.

Master: Laura Richert teaches in the Master of Vaccinology from basic immunology to social sciences of health (University Paris-Est Créteil, UPEC)

Teaching unit coordination: Laura Richert, Rodolphe Thiébaud, Robin Genuer, Boris Hejblum and Marta Avalos coordinate several teaching units of Master in Public Health (Biostatistics, Epidemiology, Public Health), M2 Public Health Data Science. Laura Richert coordinates the teaching unit "Experimental Designs" (M2 Epidemiology) and teaching unit "Omics Data" (M2 Public Health Data Science), University of Bordeaux

International summer school: Laura Richert coordinates the summer school course "Big data in immunology" University of Bordeaux. All permanent team members teach in this course.

H Lorenzo participated to the University Course *Big data et statistique pour l'ingénieur (BDSI)*, Ecole Nationale Supérieure de Cognitique (ENSC), Bordeaux.

### E-learning

Master: Marta Avalos is head of the first year of the e-learning program of the Master of Public Health, University of Bordeaux.

Master: Marta Avalos teaches in the e-learning program of the Master of Public Health (1st and 2nd year)

ODL University Course: Robin Genuer is head of the Diplôme universitaire "Méthodes statistiques en santé.

ODL University Course: Mélanie Prague teaches in the Diplôme universitaire "Méthodes statistiques de régression en épidémiologie".

ODL University Course: Laura Richert co-coordinates and teaches in the Diplôme universitaire "Recherche Clinique".

ODL University project: Robin Genuer participated to the IdEx Bordeaux University "Défi numérique" project "BeginR" (<http://beginr.u-bordeaux.fr>).

### 10.2.2. Supervision

HdR: Laura Richert, *Statistical approaches and methodological developments to optimize clinical vaccine research*, Université de Bordeaux, defence date 17th Dec 2019

PhD: Edouard Lhomme, *Analyse des déterminants de la réponse immunitaire post-vaccination dans des stratégies vaccinales expérimentales*, defence date 25th Nov, directed by Laura Richert

PhD: Hadrien Lorenzo, *Analyse supervisée multibloc en grande dimension*, defence date 27th Nov, co-directed by Rodolphe Thiébaud and Jérôme Saracco (CQFD team)

PhD: Perrine Soret, "Régression pénalisée de type Lasso pour l'analyse de données biologiques de grande dimension : application à la charge virale du VIH censurée par une limite de quantification et aux données compositionnelles du microbiote", Université de Bordeaux, defence date 28th Nov, supervisor: Marta Avalos

PhD: Soufiane Ajana "Comparison of linear and non-linear machine learning approaches to predict Age-related Macular Disease (AMD) risk in a survival framework", defense's date 4th Nov, co-supervised by Boris Hejblum and Hélène Jacquemin-Gadda (Inserm) and Cécile Delcourt (Inserm), from Sept 2016.

PhD in progress: Marie Alexandre "Mechanistic modeling and optimization of vaccine response in HIV and Ebola", co-directed by Mélanie Prague and Rodolphe Thiébaud, from Oct 2018.

PhD in progress: Marine Gauthier "Methods for bulk and single-cell RNA-seq data analysis in vaccine research", co-directed by Boris Hejblum and Rodolphe Thiébaud, from Sept 2018.

PhD in progress: Louis Capitaine, *Random forests for high-dimensional longitudinal data*, from Oct 2017, co-directed by Robin Genuer and Rodolphe Thiébaud.

PhD in progress: Madelyn Rojas *Self-management of injury risk and decision support systems based on predictive computer modelling. Development, implementation and evaluation in the MAVIE cohort study*, from Oct 2017, (Injury Epidemiology team, Inserm U1219, ED SP2) co-directed by Emmanuel Lagarde (Inserm) and Marta Avalos.

Several team's members supervised Master 2 (T. Alin, A. Devaux, G. Sotton, A. Herteau, T. Ferte) and Master 1 (V. Gasque, M.H. Ibrahim, C. Lemoigne, V. Kochegarov) internship students.

### 10.2.3. Juries

Boris Hejblum was involved in the PhD defence jury of Soufiane Ajana (university of Bordeaux).

Marta Avalos was involved in the PhD defence jury of Perrine Soret (University of Bordeaux).

Laura Richert was involved in the PhD defence jury of Edouard Lhomme (University of Bordeaux).

Robin Genuer was reviewer of the thesis of Antonio Sutura (University of Liège).

Rodolphe Thiébaud was involved in the PhD defence jury of Edouard Lhomme, Hadrien Lorenzo, Perrine Soret, Sophie Lefèvre-Arbogast, Corentin Segalas (University of Bordeaux), Simon Bussy, Hugo Arlegui, Jeanne Tamarelle (Paris), and Alban Caporossi (Lyon). He was also a reviewer of the HDR of Encarnita Mariotti-Ferrandiz (Sorbonne University, Paris) and took part in her defence jury.

Mélanie Prague was involved in the PhD defence jury of Chiara Nicolo (University of Bordeaux) and Steven Sanche (University of Montreal, CA)

Marta Avalos is a member of the follow-up dissertation committee of 2 PhD students: Alexandre Conanec (Statistics, IMB, ED MI) and Madelyn Rojas (Epidemiology, ED SP2).

Mélanie Prague is a member of the follow-up dissertation committee of 2 PhD students: Jonas Beal (Institut Curie) and Marie astrid Metten (University of Rennes).

Laura Richert, Rodolphe Thiébaud, Robin Genuer, Boris Hejblum, Edouard Lhomme and Marta Avalos participated to the juries of Master in Public Health (Biostatistics, Epidemiology, Public Health)

Robin Genuer and Marta Avalos participated to the juries of Master of Applied Mathematics and Statistics (2nd year), University of Bordeaux.

Edouard Lhomme participated to the juries of medical thesis defenses, Medical School of Bordeaux University

## 10.3. Popularization

### 10.3.1. Internal or external Inria responsibilities

Mélanie prague is part of two committees at Inria: "ADT - Aide au développement technologique" and "CER - Commission Emploi recherche".

### **10.3.2. Articles and contents**

Mélanie Prague participated to the video reportage produced by the Inria's communication service

### **10.3.3. Interventions**

Mélanie Prague participated at the "Fête de la Science" for high school students on October.

### **10.3.4. Internal action**

R Thiébaud gave the talk "VIRUS EBOLA: Comment la modélisation permet d'aider au développement des vaccins ?" in November at "Unithé ou café", Inria BSO, Talence.

H Lorenzo presented a poster *Apprentissage supervisé pour données massives multi-blocs incomplètes* in the anual workshop (*JED*) of the Doctoral School of Societies, Politics and Public Health (ED SP2), University of Bordeaux.

## HIEPACS Project-Team

## 9. Dissemination

### 9.1. Promoting Scientific Activities

#### 9.1.1. Scientific Events: Organisation

##### 9.1.1.1. Member of the Organizing Committees

SIAM PP'20, Seattle (O. Beaumont).

##### 9.1.1.2. Chair of Conference Program Committees

COMPAS'19 Algorithm Track (E. Agullo) ICPP'19 Algorithm Track vice-chair (E. Agullo)

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

AlgoCloud'19 (O. Beaumont), COMPAS'19 (O. Beaumont), EuroPar'20 (O. Beaumont), HiPC'19 (L. Giraud), HPML'19 (O. Beaumont), ICPP'19 (A. Guermouche), IPDPS'19 (L. Eyraud-Dubois, O. Beaumont), IPDPS Workshops'19 (O. Beaumont), ISC'20 Workshops (E. Agullo), PDSEC'19 (O. Coulaud, M. Favrege, L. Giraud), IEEE PDP'19 (J. Roman), SC'19 (E. Agullo), SPAA'19 (O. Beaumont).

#### 9.1.2. Journal

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

- O. Beaumont is Associate Editor in Chief for [the Journal of Parallel and Distributed Computing \(Elsevier\)](#).
- L. Giraud is member of the editorial board of the SIAM Journal on Scientific Computing ([SISC](#)) and SIAM Journal on Matrix Analysis and Applications ([SIMAX](#)).

##### 9.1.2.2. Reviewer - Reviewing Activities

The members of the **HIEPACS** project have performed reviewing for the following list of journals: Computing and Fluid, International Journal of Antennas and Propagation, Parallel Computing, SIAM J. Matrix Analysis and Applications, SIAM J. Scientific Computing, Journal of Parallel and Distributed Computing, IEEE Transactions on Parallel and Distributed Systems, IEEE Access, Concurrency and Computation: Practice and Experience, ACM Transactions on Mathematical Software, ACM Computational and Mathematical Methods, International Journal of High Performance Computing Applications, Journal Of Computational Science.

The members of the **HIEPACS** project have performed reviewing for the following list of conferences (additionally to PC): EuroPar'19, IPDPS'19, SC'18, STACS'20, SPAA'19, SC'19.

#### 9.1.3. Invited Talks

- L. Giraud, "[Dealing with unreliable computing platforms at extreme scale](#)" invited MOX Seminars (Laboratory for Modeling and Scientific Computing MOX), Politecnico di Milano, January 23, in conjunction with the ESCAPE2 workshop on fault tolerant algorithms and resilient approaches.

#### 9.1.4. Scientific Expertise

- Olivier Beaumont acted as expert for [2019 FET Open Evaluation Committee](#)
- Luc Giraud is member of the board on Modelization, Simulation and data analysis of the [Competitiveness Cluster for Aeronautics, Space and Embedded Systems](#).
- Pierre Ramet is Scientific Advisor at the CEA-DAM CESTA.
- Jean Roman is member of the Scientific Board of the CEA-DAM. As representative of Inria, he is member of the board of ETP4HPC (European Technology Platform for High Performance Computing), of the French Information Group for PRACE, of the French Working Group for EuroHPC, and of the Technical Group of GENCI.

### 9.1.5. Research Administration

- Emmanuel Agullo and Luc Giraud are the scientific correspondents of the European and International partnership for Inria Bordeaux Sud-Ouest.
- Olivier Coulaud is the scientific manager of the **PLAFRIM** platform for Inria Bordeaux Sud-Ouest.
- Jean Roman is a member of the Direction for Science at Inria : he was until the end of December 2019 the Deputy Scientific Director of the Inria research domain entitled *Applied Mathematics, Computation and Simulation* and was in charge at the national level of the Inria activities concerning High Performance Computing.
- Until July 2019, Olivier Beaumont was the vice-head of Inria Evaluation Commission.

## 9.2. Teaching - Supervision - Juries

### 9.2.1. Teaching

#### Undergraduate level/Licence

- A. Esnard: System programming 36h, Computer architecture 40h, Network 23h, C programming 35h at Bordeaux University. He is also responsible for the second year of the computer science degree (L2 Informatique), which involves managing about 200 students each year.
- M. Faverge: Programming environment 26h, Numerical algorithmic 40h, C projects 25h at Bordeaux INP (ENSEIRB-MatMeca).
- A. Guermouche: System programming 36h at Bordeaux University.
- P. Ramet: System programming 24h, Databases 32h, Object programming 48h, Distributed programming 32h, Cryptography 32h, Introduction to AI Deep Learning and Data Analytics 16h at Bordeaux University.

#### Post graduate level/Master

- E. Agullo: Operating systems 24h at Bordeaux University ; Dense linear algebra kernels 8h, Numerical algorithms 30h at Bordeaux INP (ENSEIRB-MatMeca).
- O. Coulaud: Paradigms for parallel computing 8h, Introduction to Tensor methods 4h at Bordeaux INP (ENSEIRB-MatMeca).
- A. Esnard: Network management 27h, Network security 27h at Bordeaux University; Programming distributed applications 35h at Bordeaux INP (ENSEIRB-MatMeca).
- L. Eyraud-Dubois and Olivier Beaumont: Approximation and BigData 24h at Bordeaux University.
- M. Faverge: System programming 72h, Linear Algebra for high Performance Computing 13h at Bordeaux INP (ENSEIRB-MatMeca).  
He is also in charge of the master 2 internship for the Computer Science department at Bordeaux INP (ENSEIRB-MatMeca). Starting in September, he is in charge with Raymond Namyst of the High Performance Computing - High Performance Data Analytics option at ENSEIRB-MatMeca. This is a common training curriculum between the Computer Science and MatMeca departments at Bordeaux INP and with Bordeaux University in the context of the Computer Science Research Master.
- Alena Shilova and Olivier Beaumont: Deep Learning Frameworks, at Bordeaux INP (ENSEIRB-MatMeca), 20h.
- Olivier Beaumont, Sketching and Streaming Algorithms, ENS Lyon, 8h
- L. Giraud: Introduction to intensive computing and related programming tools 30h, INSA Toulouse; On mathematical tools for numerical simulations 10h, ENSEEIHT Toulouse.

- A. Guermouche: Network management 92h, Network security 64h, Operating system 24h at Bordeaux University.
- P. Ramet: Load balancing and scheduling 13h and Numerical algorithmic 40h at Bordeaux INP (ENSEIRB-Matmeca).

#### High School teachers

- A. Esnard, M. Faverge, and A. Guermouche participated to the training of the High School teachers (DIU Enseigner l'Informatique au Lycée) in computer science for the new computer science program starting in September 2019.

### 9.2.2. Supervision

- PhD Aurélien Falco; Data sparse calculation in Bridging the gap between  $\mathcal{H}$ -matrices and sparse direct methods for the solution of large linear systems; E. Agullo, L. Girau, G. Sylvand; defended on June 24, 2019; jury members: E. Ng (Lawrence Berkeley National Laboratory), S. Le Borne (Technische Universität Hamburg), D. LLvadoux (ONERA) F. Alouges (Ecole Polytechnique), G. Pont (Airbus Group).
- PhD in progress: Tobias Castanet; Replication algorithms for multi-player virtual worlds; started Sep. 2019; O. Beaumont, N. Hanusse (LaBRI), C. Travers (Bordeaux INP - LaBRI).
- PhD in progress: Marek Felsoci; Fast solvers for high-frequency aeroacoustics; G. Sylvand, E. Agullo.
- PhD in progress: Martina Iannacito; Linear solvers in tensorial format for high dimensional problems; started Oct 2019; O. Coulaud, L. Giraud.
- PhD in progress: Esragul Korkmaz; Sparse linear solver and hierarchical matrices; started Nov. 2018; M. Faverge, P. Ramet.
- PhD in progress: Romain Peressoni; Fast multidimensional scaling method for the study of biodiversity; started Oct 2019; E. Agullo, O. Coulaud, A. Franc (**PLEIADE**)
- PhD in progress: Alena Shilova; Scheduling for deep learning applications; started Oct. 2018; L. Eyraud-Dubois, O. Beaumont.
- PhD in progress: Nicolas Venkovic; Domain decomposition techniques for the solution of stochastic elliptic PDEs; started Nov. 2018; L. Giraud, P. Mycek (CERFACS).
- PhD in progress: Mathieu Vérité; Static allocation algorithms for scheduling High-Performance applications; started Sept. 2019; L. Eyraud-Dubois, O. Beaumont.
- PhD in progress: Yanfei Xiang; Solution of large linear systems with massive numbers of right-hand sides. Started Nov. 2019; L. Giraud, P. Mycek (CERFACS).

### 9.2.3. Juries

- Mohammad Issa, "Modélisation asymptotique et discrétisation des composants magnétiques dans les problèmes de courant de Foucault.", referees: R. V. Sabariego, S. Clénet, members: O. Coulaud, Y. Kefevren, R. Perrussel, J-R. Poirier, L. Krähenbühl. Université Toulouse 3 Paul Sabatier, spécialité: électromagnétisme et Systèmes Haute Fréquence, 30 November 2019.
- Raphaël Prat, "Equilibrage dynamique de charge sur supercalculateur exaflopique appliqué à la dynamique moléculaire", referees: C. Calvin, J.F. Mehaut, reviewers: M. Baader, L. Colombet, P. Fortin, R. Namyst, J. Roman, CEA - Maison de la Simulation et Université de Bordeaux, spécialité: informatique, 9 October 2019.
- Mohamad El Sayah, "Random Generation for the Performance Evaluation of Scheduling Algorithms," referees: Olivier Beaumont and Arnaud Legrand, reviewers: Jean-Marc Nicod, Fany Dufosse, Pierre-Cyrille Heam, University of Besancon, 20 November 2019.

## 9.3. Popularization

### 9.3.1. Interventions

- Olivier Beaumont spoke to a class of high school students on algorithms (routing algorithms in particular) as part of the digital week organized by the BIJ (Bureau Information Jeunesse) of the City of La Teste de Buch.

## **STORM 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*

- Emmanuelle Saillard: Correctness workshop, Compas 2019, PPAM 2019, OMASE'19, 4PAD'19
- Olivier Aumage: SC Asia 2019, Euro-Par 2019, ICPADS 2019, PAW-ATM
- Samuel Thibault: HCW 19
- Raymond Namyst: SC 19, HiPC 19, CCGRID 19, ISC 19, ICCS 19, PPAM 19, RADR 19

#### *10.1.1.2. Reviewer*

STORM members have conducted reviewing activities for the following conferences and workshops: Correctness workshop, Compas, PPAM, OMASE, 4PAD, HCW 19

### **10.1.2. Journal**

#### *10.1.2.1. Reviewer - Reviewing Activities*

STORM members have conducted reviewing activities for the following journals: JPDC, IEEE TII

### **10.1.3. Invited Talks**

- Olivier Aumage: Cluster SysNum (Bordeaux, Jan. 24, 2019 and Mar. 8, 2019), 10-Year PlaFRIM (Bordeaux, May. 23, 2019), SPPEXA (Dresden, Germany, Oct. 21, 2019)
- Samuel Thibault: ENS Lyon seminar (Lyon, Jan 2019), ENS Lyon seminar (Lyon, May 2019), Workshop SIAM CSE (Spokane, Feb 2019), Workshop PADAL (Bordeaux, Sep 2019)
- Raymond Namyst: Aristote Seminar about "Toward ExaScale Computing" (Ecole Polytechnique, May 2019)

### **10.1.4. Scientific Expertise**

- Olivier Aumage: Review of one project proposal for the French national research agency (ANR)
- Raymond Namyst: Scientific Advisor for CEA/DAM (French Department of Energy) HPC research groups

### **10.1.5. Research Administration**

- Olivier Aumage: Permanent Contact for Team STORM.
- Emmanuelle Saillard: Member of the Commission de délégation at Inria Bordeaux Sud-Ouest

### **10.1.6. Standardization Activities**

- Olivier Aumage represents Inria at the OpenMP ARB Standardization Committee.

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

### **10.2.1. Teaching**

- Engineering School: Emmanuelle Saillard, Introduction to Algorithms, 16HeCI, L3, ENSEIRB-MATMECA.
- Engineering School: Emmanuelle Saillard, Tree Structure, 16HeCI, L3, ENSEIRB-MATMECA.
- Engineering School: Emmanuelle Saillard, Harmonisation, 10HeTD, L3, ENSEIRB-MATMECA.

- Engineering School: Emmanuelle Saillard, Languages of parallelism, 12HeC, M2, ENSEIRB-MATMECA.
- Engineering School: Adrien Cassagne, Microprocessors architecture, 20HeTD, L3, ENSEIRB-MATMECA.
- Engineering School: Romain Lion, System Programming, 18HeTD, M1, ENSEIRB-MATMECA.
- Licence: Marie-Christine Counilh, Introduction to Computer Science (64HeTD), Introduction to C programming (52HeTD), L1, University of Bordeaux.
- Master MIAGE: Marie-Christine Counilh, Object oriented programming in Java (30HeTD), M1, University of Bordeaux.
- Licence: Samuel Thibault is responsible for the computer science topic of the first university year.
- Licence: Samuel Thibault is responsible for the new Licence Pro ADSILLH (Administration et Développeur de Systèmes Informatiques à base de Logiciels Libres et Hybrides).
- Licence: Samuel Thibault is responsible for the 1st year of the computer science Licence.
- Licence: Samuel Thibault, Introduction to Computer Science, 32HeTD, L1, University of Bordeaux.
- Licence: Samuel Thibault, Networking, 51HeTD, Licence Pro, University of Bordeaux.
- Master: Samuel Thibault, Operating Systems, 24HeTD, L1, University of Bordeaux.
- Engineering School: Denis Barthou is the head of the computer science teaching department of ENSEIRB-MATMECA (300 students, 20 faculties, 120 external teachers)
- Engineering School: Denis Barthou, Architectures (L3), Parallel Architectures (M2), Procedural Generation for 3D Games (M2), C/Algorithm projects (L3)
- Licence, Pierre-André Wacrenier, is responsible for the 3rd year of the computer science Licence.
- Licence, Pierre-André Wacrenier, Introduction to Computer Science (64HeTD, L1), Systems Programming (64HeTD, L3), University of Bordeaux.
- Master, Pierre-André Wacrenier, Parallel Programming (64HeTD), University of Bordeaux.
- Raymond Namyst was involved in the introduction of Computer Science courses in the French High School (Lycée) scholar program. In particular, he was in charge of organizing a one-week condensed training session to 96 High School teachers on the following topics: Computer Architecture, Operating Systems, Networks and Robotics. The goal was to prepare then to teach computer science basics to students starting from September 2019, and to help them to prepare material for practice sessions.
- Denis Barthou was teacher for the previous courses, in Computer Architecture.

### 10.2.2. Supervision

- PhD in progress: Tassadit Célia Ait Kaci, March 2019, Emmanuelle Saillard, Marc Sergent, Denis Barthou
- PhD in progress: Paul Beziau, October 2018, Raymond Namyst
- PhD in progress: Adrien Cassagne, October 2017, Olivier Aumage, Denis Barthou, Christophe Jégo, Camille Leroux.
- PhD in progress: Idriss Daoudi, October 2018, Olivier Aumage, Thierry Gautier.
- PhD in progress: Romain Lion, October 2018, Samuel Thibault
- PhD in progress: Gwenolé Lucas, November 2019, Raymond Namyst, Abdou Guermouche
- PhD in progress: Van Man Nguyen, November 2019, Emmanuelle Saillard, Julien Jaeger, Denis Barthou, Patrick Carribault
- Internship: Firmin Martin, June 2019 - August 2019, Emmanuelle Saillard
- Internship: Radjasouria Vinayagame, November 2019 - January 2020, Emmanuelle Saillard

- Internship: Pierre-Antoine Rouby, May - July 2019 , Samuel Thibault
- Internship: Mehdi Naciri, January - August 2019, Adrien Cassagne, Denis Barthou
- Internship: Mael Keryell, January - April 2019, Denis Barthou
- Master's Thesis: Van Man Nguyen, January - September 2019 , Emmanuelle Saillard, Julien Jaeger, Denis Barthou, Patrick Carribault
- Master's Thesis: Gwenolé Lucas, March - Septembre 2019, Pierre-André Wacrenier, Abdou Guer-mouche, Mathieu Faverge
- PhD completed: Hugo Brunie, March 2019, Denis Barthou
- PhD completed: Pierre Huchant, March 2019, Denis Barthou
- PhD completed: Arthur Loussert, December 2019
- PhD completed: Raphaël Prat, October 2019

### 10.2.3. *Juries*

- Marie-Christine Counilh : Ph.D defense of Pierre Huchant at the University of Bordeaux, Mar. 2019 (member)
- Olivier Aumage : Ph.D defense of Ksander Ejjaouani at the Maison de la simulation in Saclay, Oct. 25, 2019 (invited member)
- Denis Barthou was member of the following PhD/HdR committees:
  - PhD of Fabian Gruber (reviewer): “Debogage de performance pour code binaire: Analyse de sensibilité et profilage de dépendence”, Grenoble Alpes University, December 2019
  - HdR of Guillaume Mercier (president): “Évolutions du passage de messages face aux défis de la gestion des topologies matérielles hiérarchiques”, University of Bordeaux, December 2019
  - PhD of Maxime Schmitt (reviewer): “Génération automatique de codes adaptatifs”, University of Strasbourg, September 2019
  - PhD of Gauthier Sornet (reviewer): “Parallélisme des calculs numériques appliqué aux géosciences”, University of Orléans, September 2019
  - PhD of Youenn Lebras (president): “Code optimization based on source to source transformations using profile guided metrics”, University of Paris Saclay, July 2019
  - PhD of Filip Arvid Jakobson (reviewer): “Static Analysis for BSPlib programs”, University of Orléans, June 2019
  - PhD of Fotis Nicolaidis (president): “TROMOS: a SDK for virtual storage systems”, University of Paris Saclay, May 2019
- Raymond Namyst was member of the following committees:
  - PhD of Benjamin Lorendeau (president): “Improving performance of a CFD code with unstructured meshes through multi level parallelism”, University of Bordeaux, December 2019
  - PhD of Georgios Christodoulis (president): “Adapting a HPC runtime system to FPGAs”, University of Grenoble, December 2019

## 10.3. Popularization

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

- Samuel Thibault : Organization of a meet-a-researcher day for ENS Lyon, December 2019

### 10.3.2. *Interventions*

- Emmanuelle Saillard, Raymond Namyst: Fête de la Science, Inria, October 2019.

- Emmanuelle Saillard: Printemps de la mixité, Inria, April 2019.
- Emmanuelle Saillard, Sabrina Duthil: Forum des métiers, Lycée des graves, April 2019.
- Emmanuelle Saillard: Moi Informaticienne - Moi Mathématicienne, University of Bordeaux, April 2019.
- Olivier Aumage, Nathalie Furmento, Emmanuelle Saillard, Adrien Cassagne: Welcoming ENS-Lyon undergraduate students, Inria, December 2019.
- Olivier Aumage, Marie-Christine Counilh, Emmanuelle Saillard, Kun He: Welcoming Schoolchildren, Inria, December 2019.

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

- Pierre-André Wacrenier and Raymond Namyst have developed a software platform named Easy-PAP to provide students with an easy-to-use programming environment to quickly learn parallel programming (using Pthreads, OpenMP, OpenCL and MPI). The platform has a nice graphical interface which makes it suitable for showing the benefits of High Performance Computing to a broad audience. More information on the web site: <https://gforgeron.gitlab.io/easypap/>

## TADAAM Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. General Chair, Scientific Chair

- Brice GOGLIN and Emmanuel JEANNOT organized (with Didem UNAT from Ko c University, Turkey), PADAL 2019 (Fifth Workshop on Programming Abstractions for Data Locality) in Bordeaux (workshop by invitation): 25 participants from 10 different countries.
- François PELLEGRINI was, along with Nataliia BIELOVA (from Inria team PRIVATICS), the co-chair of this year's jury of the CNIL-Inria European prize awarded to research scientific papers on the subject of data protection and privacy.

#### 10.1.1.2. Member of the steering committee

- Emmanuel JEANNOT is member of the steering committee of Euro-Par and the Cluster international conference.

### 10.1.2. Scientific Events: Selection

#### 10.1.2.1. Chair of Conference Program Committees

- Brice GOGLIN is the *Architecture & Networks* area co-chair of SuperComputing 2020.
- Emmanuel JEANNOT is the track program chair of Cluster 2020 (area: application, algorithms, and libraries)
- Emmanuel JEANNOT was the program chair of the COLOC workshop (collocated with Euro-Par).
- Emmanuel JEANNOT was the program chair of the RADR workshop (collocated with IPDPS).
- François PELLEGRINI was a co-chair (along with Roberto DI COSMO) of the workshop on *Software and Open Science: issues and opportunities*, National days on Open science (JNSO 2019), Paris (<https://jnso2019.sciencesconf.org/resource/page/id/2>).

#### 10.1.2.2. Member of Conference Program Committees

- Alexandre DENIS was a member of the program committee of CCGrid 2019.
- Brice GOGLIN was a member of the program committee of ICPP 2019, EuroMPI 2019, HotInterconnects 26, ROME 2019, ROSS 2019, RADR 2019.
- Emmanuel JEANNOT was member of the program committee of SuperComputing 2019, Euro-MPI 2019, ROSS 2019, Heteropar 2019.
- Guillaume MERCIER was a member of the programm committee of CCGrid 2019 and EuroMPI 2019.
- Guillaume PALLEZ was a member of the program committee of SC 2019 (Tutorials), ICPP 2019, IPDPS 2020, ICA3PP 2019, PMBS 2019.
- François PELLEGRINI was a member of the program committee of ENISA's "EU Privacy Forum".

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

- Emmanuel JEANNOT is associate editor of the International Journal of Parallel, Emergent & Distributed Systems (IJPEDS).

#### 10.1.3.2. Reviewer - Reviewing Activities

- Emmanuel JEANNOT was a reviewer for JPDC, Parallel Computing, Transaction on Computers.
- Guillaume MERCIER was a reviewer for IEEE Transactions on Computers and for Cluster Computing.
- François PELLEGRINI was a reviewer for journal Terminal.

#### 10.1.4. Invited Talks

- Emmanuel JEANNOT was invited to the panel *Heterogeneous Computing for Energy Efficiency* of 10th International Green and Sustainable Computing Conference (Alexandria VA, USA, octobre 2019, <https://www.igscc.org/copy-of-schedule>).
- Emmanuel JEANNOT was invited to the panel *Resilience in High Performance Computing* to the HiPEAC event (at Bilbao Spain, October 2019, <https://www.hipeac.net/csw/2019/bilbao/#/schedule/>).
- Guillaume MERCIER was invited to make a presentation at the PADAL workshop 2019.
- Guillaume PALLEZ was invited to give a talk at the Royal Society of London, UK, as a part of the event *Numerical algorithms for high-performance computational science* [11] (<https://royalsociety.org/science-events-and-lectures/2019/04/high-performance-computing/>).
- François PELLEGRINI was invited to deliver a common talk with Emmanuel NETTER, “*Is code law?*”, at the Symposium of the Agorantic research federation, University of Avignon (<https://agorantic.univ-avignon.fr/symposium/symposium-agorantic-28-janvier-2019/>).

#### 10.1.5. Scientific Expertise

- Emmanuel JEANNOT was a member of the hiring committee of an Inria junior researcher position at Nancy and at the National Level.
- Guillaume PALLEZ is an elected member of the Inria evaluation committee.
- François PELLEGRINI is co-chair (along with Roberto DI COSMO) of the workgroup on Free software of the Permanent Secretariat for Open Science (SPSO) of the French Ministry of Higher Education (MENESR).
- François PELLEGRINI was heard in an expert panel commissioned by the *Information mission on digital identity* of the French *Assemblée nationale*, chaired by Mrs Marietta KARAMANLI, assisted by Mrs Paula FORTEZA and Christine HENNION.

#### 10.1.6. Research Administration

- Alexandre DENIS is head of the Inria Bordeaux CUMI-R (IT users committee).
- Brice GOGLIN and Guillaume MERCIER are elected members of the Inria Bordeaux center committee.
- Emmanuel JEANNOT is deputy head of science of the Inria Bordeaux research center.
- Emmanuel JEANNOT is member of the Inria evaluation committee
- Emmanuel JEANNOT is member of LaBRI scientific council and head of the Satanas team.
- Guillaume PALLEZ is a worker representative at the Prevention, Health, Security committee (CHSCT) for the Inria center of Bordeaux.

#### 10.1.7. Standardization Activities

TADAAM attended the MPI Forum meetings on behalf of Inria (where the MPI standard for communication in parallel applications is developed and maintained). Guillaume MERCIER leads the *Hardware Topologies* working group. Part of the HSPLIT proposal was discussed and read at the last physical meeting in December 2019 in Albuquerque and has been approved to enter the voting process for an eventual inclusion in the next revision (4.0) of the MPI standard. This voting process will take place in the first semester of 2020 and the release of the 4.0 revision is expected for the end of 2020. Guillaume MERCIER is also the chair of the standard chapter committee *Groups, Contexts, Communicators, Caching* and member of several other chapter committees.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Members of the TADAAM project gave hundreds of hours of teaching at Université de Bordeaux and the Bordeaux INP engineering school, covering a wide range of topics from basic use of computers, introduction to algorithmics and C programming to advanced topics such as probabilities and statistics, scheduling, computer architecture, operating systems, parallel programming and high-performance runtime systems, as well as software law and personal data.

- Brice GOGLIN gave courses about Operating Systems to teachers as part of the *Diplôme Inter Universitaire* to prepare them for teaching the new Computer Science track in high-school.
- François PELLEGRINI did a training session on “*Information science, digital technologies and law*” for the continuous education of magistrates, École nationale de la magistrature (National School for Magistrates), Paris.
- François PELLEGRINI did two training sessions on “*Strategic issues of information technologies*” and “*Personal data law*” to a group of administration heads and civil society activists of several French-speaking west-African countries, in the context of FFGI 2019 at Ouagadougou, Burkina Faso.

### 10.2.2. Supervision

PhD: Benjamin LORENDEAU, Amélioration des performances via un parallélisme multi-niveaux sur un code CFD en maillages non structurés. Defense at Université de Bordeaux on December 16th. Advisors : Yvan FOURNIER and Emmanuel JEANNOT.

PhD in progress: Valentin Honoré, Partitioning Strategies for high throughput Applications, started in November 2017. Advisors: Guillaume PALLEZ and Brice GOGLIN.

PhD in progress: Andrès RUBIO, Management on heterogeneous and non-volatile memories, started in October 2018. Advisor: Brice GOGLIN.

PhD in progress: Nicolas VIDAL, IO scheduling strategies, started in October 2018. Advisors: Guillaume PALLEZ and Emmanuel JEANNOT.

PhD started: Philippe SWARTVAGHER, Interactions at large scale between high performance communication libraries and task-based runtime, started in October 2019. Advisors: Alexandre DENIS and Emmanuel JEANNOT.

PhD started: Florian REYNIER, Task-based communication progression, started in January 2019. Advisors: Alexandre DENIS and Emmanuel JEANNOT.

PhD started: Pierre FERENBACH, The legal regime of video games, started in January 2019. Advisors: Xavier DAVERAT and François PELLEGRINI.

Master: Léa CHEVALIER, M2 student at Université Paris Nanterre supervised by François PELLEGRINI, won the Disney–Microsoft–Orange–TF1 prize on Media Law for her master thesis on “*Artistic creations generated by automated processing: are they works like others?*”.

### 10.2.3. Juries

Emmanuel JEANNOT was member of the Ph.D defense jury of:

- Hugo BRUNIE, U. Bordeaux (Member);
- Jean-Baptiste KECK, U. Grenoble Alpes (Reviewer);
- Hamza DEROU, Insa Rennes and U. Rennes (Reviewer);
- Arthur LOUSSET, U. Bordeaux (Member).

François PELLEGRINI was member of the Ph.D defense jury of:

- Maximilien LANNA, U. Paris II Panthéon Assas (Member).

## 10.3. Popularization

### 10.3.1. Internal or external Inria responsibilities

Brice GOGLIN is in charge of the diffusion of the scientific culture for the Inria Research Centre of Bordeaux. He organized several popularization activities involving colleagues.

### 10.3.2. Articles and contents

- Guillaume PALLEZ wrote a blog article for *Binaire* on autonomous vehicles [37].
- François PELLEGRINI was interviewed on the subject of “*Resisting algorithmic governance*” (cover page), Expertises droit/technologies/prospectives, nr 443, Feb. 2019 (<https://www.expertises.info/#anciens-numeros>).

### 10.3.3. Interventions

- Brice GOGLIN is the sponsor (*parrain*) of the *Edouard Vaillant* middle school (Bordeaux) for their scientific projects with the fondation *La main à la pâte*.
- Guillaume PALLEZ, Brice GOGLIN, Valentin HONORÉ, Philippe SWARTVAGHER and Nicolas VIDAL gave seminars and hands-on session about computer science to schools attending *Fete de la Science*, Oct. 2019.
- François PELLEGRINI participated in the round table “*GDPR and cyber-security*” during the OpenS’IAE event, Pau.
- François PELLEGRINI participated in the rountable on “*Legal aspects, GDPR and anonymization technologies*” during the annual congress of *Société informatique de France* (SIF), Bordeaux.
- François PELLEGRINI gave a conference on the security of personal data during the *Mars@Hack* event, in Mont-de-Marsan.
- François PELLEGRINI participated in the round table “*Is our legal framework IA-compatible?*” during the NAIA (*Nouvelle-Aquitaine Intelligence Artificielle*) event, Bordeaux.
- François PELLEGRINI participated in the round table “*What alternatives and what regulations in the GAFAM era?*” during the second edition of the *Rencontres Culture:Tech*, Assemblée nationale, Paris.
- François PELLEGRINI gave a conference on “*Freedom in the digital age*” to students of first and second year of all departments at ENS Cachan (250 people).
- François PELLEGRINI participated in a round table on “*The future of choice*” in the context of the “de-inauguration” of the exhibition *textitUnder influence, the science of choice* at Espace Pierre-Gilles de Gennes (ESPGG), Paris.
- François PELLEGRINI answered the public at the movie theater Utopia Bordeaux after the display of the movie *Meeting Snowden*.
- François PELLEGRINI gave a public conference on “*How does personal data processing interfere with our privacy?*” during the *IA Pau* conference, Pau.

### 10.3.4. Internal action

- François PELLEGRINI participated in a round table on “*Digital security: technical, ethical and legal aspects*”, Inria scientific days 2019, Lyon (<https://project.inria.fr/journeesscientifiques2019/>).

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

- Brice GOGLIN was involved in the building of the MOOC *Sciences Numériques et Technologie* which focus at bringing basics about computer science to high-school teachers and general audience. More than 18 000 people registered to the course.
- François PELLEGRINI is one of the 14 people appearing in the documentary “*LOL: Logiciel libre, une affaire sérieuse*” (“LOL: Free software, a serious matter”).

## Auctus Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

Jessica was member of the organizing committee of the Young Researchers' Day in Robotics 2019 (Journée Jeunes Chercheurs en Robotique) in Vittel, France the 14th October.

### 10.1.2. Member of the Conference Program Committees

- Journées Nationales de la Recherche en Robotique (JNRR) 2019. [David Daney, scientific Program Committee member]
- 44ème Congrès de la Société de Biomécanique [Vincent Padois, scientific committee member]
- IROS 2019 (IEEE/RSJ International Conference on Intelligent Robots and Systems) [Vincent Padois, associate editor]
- ICRA 2020 (IEEE/RAS International Conference on Robotics and Automation) [Vincent Padois, associate editor]

### 10.1.3. Reviewer Activities: conferences

- ICRA 2020 (IEEE International Conference on Robotics and Automation) [Vincent Padois, David Daney, Lucas Joseph]
- IROS 2019 (IEEE/RSJ International Conference on Intelligent Robots and Systems) [David Daney, Vincent Padois, Jessica Colombel]
- ECC 2019 (European Control Conference) [Vincent Padois]
- 44ème Congrès de la Société de Biomécanique [Vincent Padois]
- IEEE International Workshop on Metrology for Aerospace, Torino, June 2019 [Jean-Marc Salotti]
- CableCon 2019 @ 15th IFToMM World Congress, June 30 – July 4, 2019, Krakow, Poland [David Daney]

### 10.1.4. Reviewing Activities: journal

- ASME Journal of Mechanisms and Robotics [David Daney, Joshua Pickard]
- Mechanism and Machine Theory [David Daney]
- IEEE Robotics and Automation Letters [Vincent Padois, Jessica Colombel]
- IEEE Transactions on Human-Machine Systems [Vincent Padois]
- IEEE Transactions on Robotics [Vincent Padois]
- Acta Astronautica [Jean-Marc Salotti]
- Foresight [Jean-Marc Salotti]
- Behavioural Brain Research [Jean-Marc Salotti]
- Computer Aided Geometric Design [Joshua Pickard]

### 10.1.5. Talks / Invited Talks

- David Daney – “Designing the collaborative robotics cells”, Eighth International Congress on Design and Modeling of Mechanical Systems (CMSM'19), March 18-20, 2019 Hammamet, Tunisia.
- David Daney – “Concevoir les cellules de robotique collaborative du futur”, Colloque Augmentation de l'Humain, Talence, 28-29 mars 2019

- Vincent Padois – “Sécurité et Robotique collaborative: n’oublions pas la commande!” – États Généraux de la Robotique – 2019/03/07
- Lucas Joseph – “HARRY2: développement d’un contrôleur de robot industriel répondant à des contraintes de sécurité basées sur un critère énergétique” – Journée GDR Robotique “GT3 - GT6”: “Conception et contrôle pour la manipulation sûre et flexible” – 2019/09/27– CEA LIST Centre Nano-Innov-Palaiseau
- Vincent Padois – “Quelques problématiques sous-jacentes en Robotique collaborative” – Journées Nationales de la Recherche en Robotique – 2019/10/15
- Nassim Benhabib – “Methodology for designing and controlling a collaborative robotic system to assist and secure an operator’s gestures” – Journées Nationales de la robotique Humanoïde) – 2019/11/{25,26} – LAAS, Toulouse
- Lucas Joseph, Vincent Padois – “HARRY2: développement d’un contrôleur de robot industriel répondant à des contraintes de sécurité basées sur un critère énergétique” – Launch of the ANR LabCom MACH4 between Iteca and PPrime – 2019/11/7 – Poitiers, France
- Joshua Pickard – “Appropriate Synthesis of a Crank-Rocker Linkage” World Congress of the International Federation for the Promotion of Mechanism and Machine Science (IFTToMM), June 30 - July 4, 2019, Krakow, Poland
- Joshua Pickard – “Redundancy Tubes: Modelling Individual and Group Range-of-Motions Along a Path” 44<sup>ème</sup> congrès société de biomécanique 28-30 octobre 2019, Poitiers, France

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

- Vincent Padois is, together with Olivier Stasse from LAAS, the co-animator of GT7 “Humanoid Robotics” of the CNRS “Groupement de Recherche en Robotique” (GDR). The role of animator consists in organizing regular workshops in humanoid robotics with the members of the French research community in this domain. It also consists in reporting strategic elements to the GDR in order to better organize the structure of research in Robotics in France.

#### ***10.1.7. Scientific Expertise***

- Vincent Padois is a reviewer for the 2nd European COVR call.
- Vincent Padois and David Daney are reviewers for the best PhD thesis award of GDR Robotique.
- David Daney is an expert of “Robot Boost” Nouvelle-Aquitaine’s program.
- Jean-Marc Salotti and David Daney are official animators of the Humans Systems Interactions AESE DAS (Strategic Activities Domain of the Aerospace Valley Pole), which gathers all regional actors concerned with human factors, human systems interactions, and collaborative robotics mainly in the aerospace sector, but not limited to that domain. At least 2 daily workshops are organized each year for the members of the group in order to focus on a specific issue. Jean-Marc Salotti and David Daney are also solicited to examine regional projects linked to the DAS in order to provide advice and eventually to participate to the labelling process of the pole.
- The Auctus team is involved in the “Aquitaine robotics” cluster, which brings together robotics players in Nouvelle-Aquitaine. David Daney and Jean-Marc Salotti respectively represent Inria and Ensc on the board of directors. David Daney is a member of the executive board. David Daney and Jean-Marc Salotti are respectively president and vice-president of the labelling committee which promotes all robotics projects for the Nouvelle-Aquitaine region.

#### ***10.1.8. Research Administration***

- Sylvain Pion represents the Auctus team in the CUMI-R (Comité des Utilisateurs des Moyens Informatiques) committee of Inria Bordeaux.
- Jean-Marc Salotti participated to the Inria Committee directed by Clair Poignard and dedicated to the selection of research candidates for delegations, PhD and Postdoctoral positions.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

Master: Jean-Marc Salotti, Intelligence Artificielle, 103,5h éqTD, M1, Ecole Nationale Supérieure de Cognitique / Bordeaux INP, France

Master: Jean-Marc Salotti, Facteurs Humains et Ingénierie Cognitique, 15h éqTD, M1, Ecole Nationale Supérieure de Cognitique / Bordeaux INP, France

Master: Jean-Marc Salotti, Interactions Hommes Robots, 15h éqTD, M2, Ecole Nationale Supérieure de Cognitique / Bordeaux INP, France. In this course, all students have practical works involving cobotic systems: programming NAOs and UR3 (Universal Robots) and testing an exoskeleton.

Master: David Daney, Interactions Hommes Robots, 2h éqTD, M2, Ecole Nationale Supérieure de Cognitique / Bordeaux INP, France.

Master: David Daney, Mathématiques pour la robotique, 30h éqTD, M2, Enseirb/Ensc, Bordeaux INP, France.

Master: David Daney, Décision, 7h éqTD, M2, Ecole Nationale Supérieure de Cognitique / Bordeaux INP, France.

Master: Vincent Padois, Literature review - What, Why and How?, 20h éqTD, M2, Enseirb/Ensc, Bordeaux INP, France.

Master: Vincent Padois, Enjeux technologiques de la maintenance aéronautique, 6h éqTD, M1, Enseirb-Matmeca, Bordeaux INP, France.

Master: Vincent Padois, Maintenance du futur - Cours introductif, 2h éqTD, M1, ENSPIMA, Bordeaux INP, France.

Master: Nassim Benhabib, Interactions Hommes Robots, 15h éqTD, M2, ENSC, Bordeaux INP, France.

Master: Jessica Colombel, Robot Operating System, 10h éqTD, M2, Enseirb/Ensc, Bordeaux INP, France.

Master: Charles Fage, Cognitive Disabilities and Assistive Technologies, , M2, Master de Sciences cognitives et Ergonomie, Université de Bordeaux, France.

Master: Charles Fage, Human-Computer Interactions, 15h éqTD, M1, Master de Sciences cognitives et Ergonomie, Université de Bordeaux, France.

Licence: Charles Fage, Disabilities Management and Ethics, 15h éqTD, L2, Licence de MIASHS, Université de Bordeaux, France.

Licence: Charles Fage, Alternative and Augmentative Communication, 15h éqTD, 2ème année, Institut de formation en ergothérapie de Bordeaux, France.

Licence: Charles Fage, Autism and Developmental Disorders, 15h éqTD, 2ème année, Institut de formation en ergothérapie de Bordeaux, France.

Licence: Charles Fage, Aging and Assistive Technologies, 15h éqTD, 2ème année, Institut de formation en ergothérapie de Bordeaux, France.

### 10.2.2. Supervision

PhD: Jonathan Savin, “Modeling motion variability using virtual humans for the ergonomic evaluation of work stations”, Sorbonne Université, 2019/11/22, Philippe Bidaud (Onera / Sorbonne Université) and Jacques Marsot (INRS) and Vincent Padois;

PhD: José Pedro Pontes, “Optimization and adaptation of robot locomotion in varying conditions: an evolutionary approach”, Sorbonne Université, 2019/3/12, Stéphane Doncieux (Sorbonne Université) and Vincent Padois and Cristina Santos (U. Minho, Portugal);

PhD in progress: Quoc Bach Hoa (Thèse ED SMAER, Paris), “Biomechanically plausible simulations of healthy and altered human locomotion”, September 2017–, Vincent Padois and Faiz Ben Amar (Sorbonne Université)

PhD in progress: Nassim Benhabib (Inria / Région NA – Woobot project), “Méthodologie de conception et de commande d’un système robotique collaboratif pour assister et sécuriser les gestes d’un opérateur”, November 2018 –, David Daney and Vincent Padois;

PhD in progress: Jessica Colombel (Inria), “Analyse du mouvement humain pour l’assistance à la personne”, February 2019 –, François Charpillat and David Daney (Inria Nancy Grand-Est);

PhD in progress: Nicolas Simonazzi (CIFRE Orange), “Analyse comportementale et détection des émotions dans le cadre de l’utilisation de chat-bots en ligne”, May 2018 –, Jean-Marc Salotti;

PhD in progress: Baptiste Prébot (DGA), “Partage des représentations et de la conscience de situation”, January 2017 –, Jean-Marc Salotti and Bernard Claverie (ENSC, IMS laboratory);

PhD in progress: Olfa Jema (Cotutelle Université de Sousse, Tunisie), “Analyse du mouvement humain”, December 2017 –, Lotfi Romdhane, Sami Bennour, David Daney;

PhD in progress: Pierre Laguillaumie (Thèse laboratoire PPRIME), “Méthodologie pour la mise en œuvre d’un robot collaboratif de nouvelle génération prenant en compte la sécurité et le confort biomécanique de l’opérateur en situation de travail”, March 2018 – Jean-Pierre Gazeau and Vincent Padois.

### 10.2.3. Juries

Vincent Padois:

- HdR: Adrien Escande, “Numerical Optimization and Motion Generation in Robotics”, Université de Montpellier, 2019/2/25;
- PhD: Nolwenn Briquet-Kerestedjian, Reviewer, “Impact detection and classification for safe physical Human-Robot Interaction under uncertainties”, Université Paris-Saclay, 2019/7/10;
- PhD: Kai Pfeiffer, Examinor, “Efficient Kinematic and Algorithmic Singularity Resolution for Multi-Contact and Multi-Level Constrained Dynamic Robot Control”, Université de Montpellier, 2019/12/4;
- PhD: Sonny Tarbouriech, Reviewer, “An energetic approach to safety in robotic manipulation”, Sorbonne Université, 2019/12/5.

David Daney:

- PhD: Mathias Bordon, Examinor, “Modélisation et calibration pour une numérisation robotisée”, 2019/06/06, École Normale Supérieure Paris-Saclay
- PhD: Thomas Le Mézo, Reviewer, “Bracketing largest invariant sets of dynamical systems; An application to drifting underwater robots in ocean currents”, 2019/12/05, ENSTA Bretagne;
- PhD: Étienne Picard, Reviewer, “Modeling and robust control of cable-driven parallel robots for industrial applications”, 2019/12/17, Université Bretagne Loire .

Jean-Marc Salotti:

- PhD: Damien L’Haridon, Reviewer, “Décision collective optimisée en milieu extrême: application aux situations inconnues en vol spatial habité”, ISAE - Université de Toulouse, 2019/05/02
- PhD: Vanessa Haykal, Reviewer, “Modélisation des séries temporelles par apprentissage profond”, Université de Tours, 2019/12/02;

## 10.3. Popularization

### 10.3.1. Interventions

- “Collaborative Robotics” – Demonstration at the 2019 Fête de la Sciences by Lucas Joseph – Cap Sciences, Bordeaux
- “Tame a robot” with Thymios II – Animation by Jessica Colombel at Fête de la Science, Université de Lorraine, Nancy, October 2019.
- Fage, C. “Communication Alternative et Améliorée – Aider les enfants et adultes avec difficultés de communication”. Invited Oral Presentation at the Interphase Association (Autism care) by Charles Fage, Bordeaux, December 2019.

## FLOWERS Project-Team

# 10. Dissemination

## 10.1. Promoting Scientific Activities

### 10.1.1. Scientific Events: Organisation

#### 10.1.1.1. Member of the Organizing Committees

PY Oudeyer was co-organizer of the Workshop on Exploration in Reinforcement Learning (ICML 19), <https://sites.google.com/view/erl-2019/organizers>.

### 10.1.2. Scientific Events: Selection

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

PY Oudeyer was member of the program committee of IEEE International Conference on Developmental Learning and Epigenetic Robotics (ICDL-Epirob).

Natalia Díaz Rodríguez, steering committee and reviewer of CONTLEARN Workshop at CVPR2020 Workshop on Continual Learning in Computer Vision, Seattle, US.

#### 10.1.2.2. Reviewer

PY Oudeyer was a reviewer for: Workshop on Exploration in Reinforcement Learning (ICML 19).

Hélène Sauzéron reviewed a conference paper for CHI 2020.

### 10.1.3. Journal

#### 10.1.3.1. Member of the Editorial Boards

PY Oudeyer was editor of the IEEE Newsletter on Cognitive and Developmental Systems.

PY Oudeyer was associate editor of: IEEE Transactions on Cognitive and Developmental Systems and Frontiers in Neurorobotics.

#### 10.1.3.2. Reviewer - Reviewing Activities

Clément Moulin-Frier reviewed an article for *Journal of Artificial Intelligence Research (JAIR)*.

PY Oudeyer reviewed for the journals: Journal of Artificial Intelligence Research, Cognitive Science, Nature Science Reports.

Hélène Sauzéron reviewed 6 articles for Memory & Cognition (M&C), Annals of Physical and Rehabilitative Medicine (APRM), Psychonomic Bulletin, Motivation & Cognition (MC); Cognition & Emotion (CE)

Natalia Díaz Rodríguez reviewed at Frontiers in Robotics and AI, Transactions on Emerging Telecommunications Technologies, IEEE Robotics & Automation Magazine, Neurocomputing, Robotics and Autonomous Systems.

Cédric Colas reviewed an article for the Robotics Science and Systems (RSS) conference.

### 10.1.4. Invited Talks

Clément Moulin-Frier gave invited talks at the *Journées Nationales de Recherche en Robotics (JNRR)* in Vittel (France) and in the *Journée GT8 "Robotique et Neurosciences"* du GDR Robotique in Bordeaux (France).

Clément Moulin-Frier and Natalia Díaz-Rodríguez gave a talk and participated, resp. in the workshop *Open Artificial Intelligence: From big data to smart data* at the *Centre de Recherche Interdisciplinaire (CRI)* in Paris (France) 13-15 Nov. 2019.

PY Oudeyer gave a keynote talk at International Conference on Learning Representations (ICLR 2019), New-Orleans, May 2019, <https://iclr.cc/Conferences/2019/Schedule?showEvent=1141>.

PY Oudeyer gave a keynote talk at ACM International Conference on Virtual Agents (ACM IVA 2019), Paris, on developmental machine learning <https://iva2019.sciencesconf.org/>.

PY Oudeyer gave an invited talk at the Deep Learning Summit (ReWork 2019), London, on curiosity-driven artificial intelligence, <https://www.re-work.co/events/deep-learning-summit-london-2019/speakers/>.

PY Oudeyer gave an invited talk at the conference on Reinforcement Learning and Decision Making (RLDM 2019), Montreal, on curiosity-driven developmental learning, <http://rldm.org/invited-speakers/>.

PY Oudeyer gave an invited talk at the Workshop on Curiosity for Decision Making at RLDM 2019, Montreal, <https://sites.google.com/view/rldm-curiosity>.

PY Oudeyer gave an invited talk at the HUMAINT conference in Séville, on "Developmental Autonomous Learning: AI, Cognitive Sciences and EdTech", 2019.

PY Oudeyer gave an invited talk at the workshop "AI and cognitive systems in Aquitaine", ENSC/Chaire STAH, Bordeaux, 2019.

PY Oudeyer gave an invited talk at the workshop "Task-agnostic reinforcement learning" at ICLR 2019, <https://tarl2019.github.io>, on developmental autonomous learning.

PY Oudeyer gave an invited talk at the workshop on Curiosity, Explanation and Exploration at Princeton University, 2019, on models of curiosity-driven learning in humans and machines.

PY Oudeyer gave an invited talk at the workshop on AI and Machine Learning, Telecom ParisTech, 2019, on developmental machine learning, <https://workshopmlai.wp.imt.fr>.

PY Oudeyer gave an invited talk at Académie de Médecine, Paris, 2019, on models of curiosity-driven learning and educational technologies.

PY Oudeyer gave an invited talk at workshop on Self and Sense of Agency, University Paris Descartes, nov. 2019, on models of curiosity-driven learning in humans and machines.

Hélène Sauzéron gave three invited talks at : 1) the conference on « Neuropsychologie clinique et technologies » - SNLF 2019, Paris, dec., 2-5 ; 2) Annual cycle of conference of Hôpital Salpêtrière, dec., 3; 3) Computer science Dpt. Of the University of Beijing, Beijing, July, 22-23.

Chris Reinke gave three invited talks at: 1) Okinawa Institute of Science and Technology, May 2019, on machine learning methods for the automated discovery of behaviors in physical and chemical systems; 2) LOMA Theory Day at Bordeaux, July 2019, on machine learning in physics; 3) Inria Grenoble, December 2019, on using cognitive models for artificial intelligence

N. Díaz Rodríguez gave an invited keynote (Continual Learning and Robotics: An Overview) and was a panelist at the ICLR workshop on multi-task and lifelong reinforcement learning <https://sites.google.com/view/mtlrl>

N. Díaz Rodríguez gave a guest talk at the Network of Young Researchers - Neuro Day NYR, Continual learning and Robotics, Paris 7th June 2019<sup>0</sup>.

N. Díaz Rodríguez moderated a round table tomorrow in Paris: *WHEN AI AND BIG DATA MEET LIFE SCIENCES: ADVANCES IN RESEARCH AND ETHICAL QUESTIONS* <https://yrls.fr/roundtable/> at Institut Imagine, Paris.

### 10.1.5. Leadership within the Scientific Community

Hélène Sauzéron was member of the ANR committe of « Technologie & Health »

<sup>0</sup>[https://ifm-institute.fr/fr/accueil/actualites/470-network-of-young-researchers-neuro-day-7th-june-20?fbclid=IwAR03u8T-opoede5hnCQx\\_QSphsJPC77YCrmmuNZH8c5XiBoRH9kgotLvYyw](https://ifm-institute.fr/fr/accueil/actualites/470-network-of-young-researchers-neuro-day-7th-june-20?fbclid=IwAR03u8T-opoede5hnCQx_QSphsJPC77YCrmmuNZH8c5XiBoRH9kgotLvYyw)

### 10.1.6. Scientific Expertise

PY Oudeyer was a reviewer for the European Commission (FET program).

Hélène Sauzéon was a reviewer for the ANR call on International and european and scientific networks.

### 10.1.7. Research Administration

PY Oudeyer has been head of the Flowers team and member of piloting committees of consortium projects Adaptiv' Maths and Perseverons (eFran) on educational technologies.

Hélène Sauzéon was head of HACS team (BPH Lab, Inserm-UB), and thus member of directory committee of « Handicap » IFR (Inserm).

Helène Sauzéon is member of directory committee of the « centre d'excellence BIND », and she managed the Industrial Innovation and transfer sub-committee.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

PY Oudeyer gave a course on developmental reinforcement learning at ENSEIRB master on AI and machine learning (3h), nov. 2019.

PY Oudeyer gave a course on developmental learning at CogMaster cognitive science master (3h), nov. 2019.

PY Oudeyer gave a course on developmental learning at ENSC/ENSEIRB "option robot" master (3h), dec. 2019.

During the latest academic year, Hélène Sauzéon taught 96h in the BS. and master degrees in cognitive science (Department of Mathematics & interaction, University of Bordeaux). She was (co-)responsible of 9 teaching units (3 in BS et 6 in Master).

N Díaz Rodríguez taught, at ENSTA, a total of 3.25 h in ROB313, 27h at IN104, 10.5 at IN102, 21h at IA301. She also gave 42h at IG.2410 at the engineering school ISEP, and 3h course on Continual Learning and State Representation Learning at the reinforcement learning course at ENSEIRB master on AI and machine learning (3h), nov. 2019.

Didier Roy gave courses on computer science basics, and on computer science, robotics and AI activities for education at Canton de Vaud teachers.

### 10.2.2. Supervision

- PhD defended: Sébastien Forestier, "Intrinsically Motivated Goal Exploration in Child Development and Artificial Intelligence: Learning and Development of Speech and Tool Use", University of Bordeaux (supervised by PY Oudeyer).
- PhD defended: Thibault Desprez, "Conception et évaluation de kits robotiques pédagogiques", University of Bordeaux (supervisors: PY. Oudeyer and D. Roy)
- PhD in progress : Rémy Portelas, "Teacher algorithms for curriculum learning in Deep RL", beg. in sept. 2018 (supervisors: PY Oudeyer and K Hoffmann)
- PhD in progress: Cédric Colas, "Intrinsically Motivated Deep RL", beg. in sept. 2017 (supervisors: PY Oudeyer and O Sigaud)
- PhD in progress: Tristan Karch, "Language acquisition in curiosity-driven Deep RL", beg. in sept. 2019 (supervisors: PY Oudeyer and C Moulin-Frier)
- PhD in progress: Alexandr Ten, "Models of human curiosity-driven learning and exploration", beg. in sept. 2018 (supervisor: PY Oudeyer)
- PhD defended: Cécile Mazon, "Des Technologies Numériques Pour L'inclusion Scolaire Des Collégiens Avec TSA : des approches individuelles aux approches écosystémiques pour soutenir l'individu et ses aidants ", University of Bordeaux (supervised by H. Sauzéon).

- PhD defended: Pierre-Antoine Cinquin, "Conception, intégration et validation de systèmes numériques d'enseignement accessibles aux personnes en situation de handicap cognitif", University of Bordeaux (supervised by H. Sauzéon & P. Guitton).
- PhD in progress: Adrien Bennetot, "Explainable continual learning for autonomous driving", Sorbonne University and ENSTA Paris (supervised by N Díaz Rodríguez & R Chatila).
- Master thesis defended: Anouche Banikyan "Curiosity, intrinsic motivation and spatial learning in children", University of Bordeaux (supervised by H. Sauzéon).
- Master thesis defended: Mehdi Alaimi "New educational application for fostering curiosity-related question-asking in children", University of Bordeaux (supervised by H. Sauzéon & PY Oudeyer).
- Master thesis defended: Juewan Wang "Can an accessible MOOC player improve the retention of disabled students? A MOOC accessibility assessment based on analytic method", University of Bordeaux (supervised by H. Sauzéon & P. Guitton).

### 10.2.3. *Juries*

PY Oudeyer was reviewer of the PhD of Simon Hangl, entitled « Autonomous Robotics: an Integrated Approach from Controllers to Cognitive Capabilities », University of Innsbruck, Austria, 2019.

PY Oudeyer was reviewer of the PhD of Yannick Bourrier, titled "Diagnostic et prise de décision pédagogique pour la construction de compétences non- techniques en situation critique", from university Paris-Sorbonne, 2019.

PY Oudeyer was reviewer of the PhD of Leni Kenneth Le Goff, titled "Bootstrapping robotic ecological perceptin with exploration and interactions", from University Pierre et Marie Curie, 2019.

PY Oudeyer was examiner of the PhD of Jelena Mladenovic, titled "Modélisation computationnelle des compétences et des états de l'utilisateur pour optimiser les taches d'entraînement aux Interfaces Cerveaux-Ordinateur", University of Bordeaux, 2019.

PY Oudeyer was examiner of the PhD of Pierre Fournier, titled "Intrinsically Motivated and Interactive Reinforcement Learning: a Developmental Approach", University Pierre and Marie Curie, 2019.

PY Oudeyer was examiner of the PhD of Lisa Jacquey, titled "La sensibilité aux contingences sensorimotrices chez le bébé et son rôle dans le développement du savoir-faire corporel", from University of Paris, 2019.

PY Oudeyer was examiner in the PhD jury of Svetlana Meyer, on the topic "Entraînement de l'attention visuelle pour l'apprentissage de la lecture : l'apport du jeu vidéo d'action", University of Grenoble (feb. 2019).

Hélène Sauzéon organized a selection committee for recruitment of Assistant professor in Rehabilitative science (University of de Bordeaux).

Hélène Sauzéon was external member of a selection committee for recruitment of Assistant professor in cognitive psychology (University of Toulouse – LeMirail).

Hélène Sauzéon performed several scientific expertises for application requests such as HDR (ED SP2, University of Bordeaux) or local careers advancement (University of Bordeaux).

N. Díaz Rodríguez was invited jury (President) of the PhD thesis "Deep Learning for Abnormal Movement Detection using Wearable Sensors: Case Studies on Stereotypical Motor Movements in Autism and Freezing of Gait in Parkinson's Disease" in the University of Trento, Italy May 2019.

## 10.3. Popularization

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

Pierre-Yves Oudeyer has been member of the scientific committee for the permanent exhibition "Robots" at Cité des Sciences et de l'Industrie, Paris: <http://www.cite-sciences.fr/fr/au-programme/expos-permanentes/expos-permanentes-dexplora/robots/lexposition/>. See also <https://www.inria.fr/fr/la-robotique-a-la-cite-des-sciences>.

Pierre-Yves Oudeyer has been member of the scientific committee for the exhibition "Robots" at Cap Sciences, <http://www.cap-sciences.net/au-programme/exposition/robots>.

Pierre-Yves Oudeyer was member of the jury of the popular science competition Creathon in Poitiers.

Didier Roy is member of the team "Livre blanc Inria EdTech", with Gérard Giraudon, Pascal Guitton, Thierry Viéville and Margarida Romero.

Didier Roy is member of the Class'code and Class'code AI teams.

Didier Roy has been member of the organization committee for the public workshop/exhibition "Robots" at Cité des Sciences et de l'Industrie, Paris.

Didier Roy is vice-president of Poppy Station Structure. Poppy Station, which includes Poppy robot ecosystem (hardware, software, community) from the beginning, is a place of excellence to build future educational robots and to design pedagogical activities to teach computer science, robotics and Artificial Intelligence. <https://www.poppy-station.org>. Partners of Poppy Station : Inria, La Ligue de l'Enseignement, HESAM Université, SNCF Développement, IFÉ-ENS Lyon, MOBOTS – EPFL, Génération Robots, Pollen Robotics, KONEXInc, Mobsya, CERN Microclub, LINE Lab (Université Nice), Stripes, Canopé Martinique, Rights Tech Women, Editions Nathan.

### 10.3.2. Articles and contents

Sébastien Forestier and Pierre-Yves Oudeyer were interviewed for a video documentary on curiosity-driven learning in robots, now permanently displayed in the exhibition "Robots" at Cité des Sciences et de l'Industrie, Paris: <http://www.cite-sciences.fr/fr/au-programme/expos-permanentes/expos-permanentes-dexplora/robots/lexposition/>. The video is available here: <https://www.youtube.com/watch?v=Kw724djJpUs>.

PY Oudeyer was interviewed in RFI radio program "Autour de la question" on artificial intelligence and society (feb. 2019), <http://www.rfi.fr/emission/20190211-comment-vivre-bonne-intelligence-toutes-intelligences>.

Didier Roy and PY Oudeyer wrote an illustrated book on artificial intelligence and robotics for 7-8 years old children, to be published by Nathan.

### 10.3.3. Education

Hélène Sauzéon, as co-designer (with P. Guitton) of "Digital Accessibility" MOOC displayed on FUN platform, has interacted with the learners during the permanent session in 2019.

N Díaz Rodríguez participated on the Future Fest organized by the director and deans of School of AI with the objective of creating and self fund the first free degree on AI (April 2019, Granada, Spain. [theSchool.ai](http://theschool.ai)).

Didier Roy is organizing an International R2T2 Robotics Mission Event for the EduCamp (RoboCup Junior 2020 at Bordeaux).

### 10.3.4. Interventions

Pierre-Yves Oudeyer gave a popular science conference at Lycée Montaigne, Bordeaux, on machine learning and AI (17th jan. 2019).

PY Oudeyer participated to a popular science debate on science-fiction movies and artificial intelligence at cinema Utopia, Bordeaux (jan. 2019).

PY Oudeyer gave an invited popular science talk at Collège des Bernardins, Paris, 2019, on affective machine learning and educational technologies, <https://www.collegedesbernardins.fr/content/affects-numeriques-et-education> and video at <https://www.youtube.com/watch?v=WYd6RzaCQDc>.

PY Oudeyer gave a popular science conference to 2nde students from Lycée La Sauque, Bordeaux.

PY Oudeyer gave a popular science presentation on artificial intelligence in the event "AI and education" organized at Inria Bordeaux by Didier Roy and Nicolas Rougier.

Hélène Sauzéron participated to several talks targetted disability-related professionals, students or industries : 1) Technologies éducatives & Handicap Conference, organised by ESPE of Academy of Nantes, Mar., 20 ; 2) Journée d'étude de l'Observatoire des ressources numériques adaptées (Orna) « Autisme et outils numériques : de la recherche aux applications », May, 3at INSHE , Paris. ; 3) Colloque « Augmentation de l'humain » STAH Industrial Chair of Nouvelle Aquitaine, Mar., 28

Didier Roy gave an invited talk at CERN, Geneve, Switzerland, november 2019, on Educational Power of International R2T2 Robotics Missions

Didier Roy gave an invited talk at LEARN DAY, Bern, Switzerland, november 2019, on Strategies for introducing Robotics and Computer science activities at school.

Didier Roy organized the APEIA DAY (Artificial Intelligence & Education), at Inria BSO, Inria Sophia and open video-conference. Talks and workshop about unplugged and plugged activities for teaching AI from primary school to high education. With teachers, animators, education experts and AI researchers.

### **10.3.5. Internal action**

Hélène Sauzéron has presented the « Collège + » and Kidlearn projects to Sophie Cluzel, Secretary of State for Disability, during the launch day of the Disability Plan of Inria (November, 16).

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

#### *10.3.6.1. AIANA: an accessible multimedia player*

Hélène Sauzéron is co-designer with P. Guitton of the accessible AIANA multimedia player for MOOCs. The V1 was developed by Learning Lab Inria in 2016 and the V2 by Damien Caseli (ADT engineer) as part of the POTIOC-Inria team in 2019. This player offers a flexible interface, configurable in terms of sensory and motor alternatives for the communication of people with physical disabilities, and of cognitive alternatives (attention load, reading aid, note-taking, etc.) for people with cognitive disabilities. The most convincing result is that it has increased the number of disabled learners completing a MOOC course (16%) on FUN platform compared to the available benchmark (10)

#### *10.3.6.2. Poppy Station: Robotics and AI for Education, Arts and Research with the Poppy platform*

Didier Roy continued to promote and co-manage the Poppy Station Association.

Among the recent actions of poppy station, there were the training provided at the 2nd chance school created in Saintes by SNCF Development, the training given at the Institut Pasteur in Paris, on IT, robotics and artificial intelligence. Lasting collaborations have taken hold.

There is also a new artistic collaboration with the artist Clara Maïda and her project "(a)utom@ton" of contemporary musical and robotic creation (work for electroacoustic device and two humanoid robots).

Poppy Station has also participated in various events concerning educational robotics and artificial intelligence : APEIA Day at Inria Bordeaux, National Educational Robotics Colloquium at French Institute of education (ENS Lyon), Educatec Educatic exhibition in Paris, Ludovia Summer university in Ax-les-thermes.

A new open source wheeled robot printed in 3d was created for poppy Station by Pollen robotics, partner of poppy Station.

Poppy Station is also involved in European calls for projects with the Institut Pasteur around the continuous training of scientific staff on IT, robotics and AI.

Poppy Station Association brings together players from the world of business, research, training, culture and education and aims to develop and preserve robotic ecosystems and associated open source or free technologies, in all areas where their use can allow this development and preservation. The association pays particular attention to the fields of education, training, arts and research. Poppy Station is the result of a transfer of Inria research from its open-source robotics ecosystem Poppy to an external multi-partners structure. The Poppy ecosystem includes software and hardware tools to create and program robots, as well as educational content for education and training, and a large interdisciplinary community of users. This ecosystem was created and developed by the Inria Flowers team, with the aim of facilitating the experimentation and creation of innovative robotic tools in the fields of education, research and the arts. <http://www.poppy-station.org>.

### 10.3.6.3. IniRobot: Educational Robotics in Primary Schools

Didier Roy and PY Oudeyer continued to promote and disseminate the IniRobot pedagogical toolkit. Inirobot, a project done in collaboration with EPFL/Mobsya, aims to create, evaluate and disseminate a pedagogical kit which uses Thymio robot, an open-source and low cost robot, for teaching computer science and robotics.

IniRobot Project aims to produce and diffuse a pedagogical kit for teachers and animators, to help them and to train them directly or by the way of external structures. The aim of the kit is to initiate children to computer science and robotics. The kit provides a micro-world for learning, and takes an inquiry-based educational approach, where kids are led to construct their understanding through practicing an active investigation methodology within teams. See <https://dm1r.inria.fr/c/kits-pedagogiques/inirobot> or <http://www.inirobot.fr>.

Deployment: After 4 years of activity, IniRobot is used by more than 3000 adults, 30 000 children in France. Inirobot is also used in higher education, for example in Master 2 "Neurosciences, human and animal cognition" at the Paul Sabatier University in Toulouse. Inirobot is additionally used to train the management and elected officials of the Bordeaux metropolitan area (20 people). The digital mediators of the 8 Inria centers are trained to Inirobot and use it in their activities.

#### 10.3.6.3.1. Partnership

The project continues to be carried out in main collaboration with the LSRO Laboratory from EPFL (Lausanne) and others collaborations such as the French National Education/Rectorat d'Aquitaine, the Canopé Educational Network, the ESPE (teacher's school) Aquitaine, the ESPE Martinique, the ESPE Poitiers and the National Directorate of Digital Education.

#### 10.3.6.3.2. Created pedagogical documents and resources

- The inirobot pedagogical kit [87]: This pedagogical booklet provides activities scenarized as missions to do. An updated version of the Inirobot pedagogical kit is available at: <https://dm1r.inria.fr/uploads/default/original/1X/70037bdd5c290e48c7ec4cb4f26f0e426a4b4cf6.pdf>. Another pedagogical booklet has been also created by three pedagogical advisers for primary school, with pedagogical instructions and aims, under our supervision. The new pedagogical kit, "Inirobot Scolaire, Langages et robotique", which extends Inirobot to a full primary school approach is available at <https://blogacabdx.ac-bordeaux.fr/numerique33/2018/10/04/robotique-sequence-inirobot-scolaire/>
- Inirobot website and forum: <https://dm1r.inria.fr/c/kits-pedagogiques/inirobot> or <http://www.inirobot.fr> On this website, teachers, animators and general public can download documents, exchange about their use of inirobot's kit.

#### 10.3.6.3.3. Scientific mediation

Inirobot is very popular and often presented in events (conferences, workshops, ...) by us and others.

#### 10.3.6.3.4. Spread of Inirobot activities

Inirobot activities are used by several projects: Dossier 123 codez from Main à la Pâte Fundation, Classcode project, ...

#### 10.3.6.3.5. MOOC Thymio

The MOOC Thymio, released in october 2018, in collaboration with Inria Learning Lab and EPFL (Lausanne, Switzerland), on FUN platform and edX EPFL Platform), use Inirobot activities to teach how to use Thymio robot in education.

## MANAO 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

Eurographics Workshop on Graphics and Cultural Heritage (GCH), Eurographics 2019, Eurographics Symposium on Rendering 2019 (EGSR), ACM Siggraph Asia 2019 talks and posters.

##### 10.1.1.2. Reviewer

ACM Siggraph 2019, ACM Siggraph Asia 2019, ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games 2019 (I3D), Eurographics Workshop on Graphics and Cultural Heritage (GCH), Pacific Graphics 2019, SIBGRAPI 2019.

#### 10.1.2. Journal

##### 10.1.2.1. Reviewer - Reviewing Activities

ACM Transactions on Graphics (TOG), Computer Graphics Forum (CGF), Computer and Graphics, ACM Journal on Computing and Cultural Heritage (JOCCH).

#### 10.1.3. Invited Talks

Talk at the DYVITO workshop 2019, in Giessen, Germany.

Talk at the Shitsukan workshop 2019, in Kyoto, Japan.

#### 10.1.4. Leadership within the Scientific Community

One member of the team is member of the Steering Board of the Eurographics Workshop on Graphics and Cultural Heritage.

#### 10.1.5. Scientific Expertise

We review project submissions of the Horizon 2020 - Research and Innovation Action of the European Commission.

## 10.2. Teaching - Supervision - Juries

### 10.2.1. Teaching

The members of our team are involved in teaching computer science at University of Bordeaux and Institut d'Optique Graduate School (IOGS). General computer science is concerned, as well as the following graphics related topics:

Master : Pierre Bénard, Gaël Guennebaud, Advanced Image Synthesis, 50 HETD, M2, Univ. Bdx, France.

Master : Antoine Lucat, Simulations Radiométriques avancées, 20 HETD, M2, IOGS, France

Master : Gaël Guennebaud, Geometric Modeling, 31 HETD, M2, IOGS, France

Master : Gaël Guennebaud and Pierre Bénard, 3D Worlds, 60 HETD, M1, Univ. Bdx and IOGS, France.

Master : Pierre Bénard, Patrick Reuter, Virtual Reality, 20 HETD, M2, Univ. Bdx, France.

Master : Patrick Reuter, Graphical user interfaces and Spatial augmented reality seminars, M2, ESTIA, France.

Licence : Patrick Reuter, Digital Imaging, 30 HETD, L3, Univ. Bdx, France.

One member is also in charge of a field of study:

Master : Pierre Bénard, M2 “Informatique pour l’Image et le Son”, Univ de Bordeaux, France.

Pierre Bénard was also part of the education team of the DIU (Diplôme Inter-Universitaire) titled “Numérique et Sciences Informatiques” which is opened to secondary professors that are teaching Computer Science in high school. The first session took place during the last three weeks of June.

### 10.2.2. Supervision

PhD: Thomas Crespel, Optical and software tools for the design of a new transparent 3D display, Inria & Univ. Bordeaux, P. Reuter & X. Granier, 9 December 2019

PhD in progress: Antoine Lucat, Appearance Acquisition and Rendering, IOGS & Univ. Bordeaux, R. Pacanowski & X. Granier

PhD in progress: Charlotte Herzog, 3 dimensions X-rays imaging for medical applications, Imaging Optics, IOGS & Univ. Bordeaux, X. Granier

PhD in progress: Camille Brunel, Real-Time Animation and Deformation of 3D Characters, Inria & Univ. Bordeaux, P. Barla, G. Guennebaud & P. Bénard

PhD in progress: Megane Bati, Inverse Design for Complex Material Appearance, IOGS & Univ. Bordeaux, R. Pacanowski & P. Barla

PhD in progress: Charlie Schlick, Augmented reality with transparent multi-view screens, Inria & Univ. Bordeaux, P. Reuter

PhD in progress: Corentin Cou, Characterization of visual appearance for 3D restitution and exploration of monumental heritage, Inria & IOGS & CNRS/INHA, G. Guennebaud, X. Granier, M. Volait, R. Pacanowski.

### 10.2.3. Juries

PhD (jury member) : Johanna Delanoy, Université Côte d’Azur (June 4th).

PhD (jury member) : Fan Zhang, TU Delft, Netherlands (October 29th).

PhD (reviewer) : Xavier Chermain, Université de Limoges (November 27th).

Pierre Bénard was the president of a jury for the Professional Baccalauréat (June 4th and 9th).

## 10.3. Popularization

### 10.3.1. Interventions

- “Textile 3D” exhibition at the MEB (Musée Ethnographique de Bordeaux, from October 1st 2019 to May 29th 2020).
- During the national “Fête de la Science” event at Inria Bordeaux Sud-Ouest, Pierre Bénard gave a 30 minutes talk titled *L’art et la science des films d’animation 3D*, and Camille Brunel presented her background and Phd topic to schoolchildren (October 8th to 10th).
- During the national “Fête de la Science” event at Musée Ethnographique de Bordeaux, Pascal Barla helped organise a workshop for high school students on the topic of the appearance of textiles, in conjunction of the “Textile 3D” exhibition. With Mégane Bati, they have participated during the workshop as scientific animators (October 7th to 8th).
- We organized a Mini-forum 3D to gather Master students together with researches and companies from the Bordeaux area (November 19th).
- Pierre Bénard presented the team research activities to 3rd year Bachelor students from ENS Lyon (December 5th).

## **POTIOC Project-Team**

# **10. Dissemination**

## **10.1. Promoting Scientific Activities**

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

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

- EduIHM workshop at IHM 2019 - Martin Hachet
- EduIHM workshop at EIAH 2019 - Martin Hachet
- "4ème conference nationale sur le Neurofeedback: le neurofeedback, un outil pour la recherche en neurosciences cognitives ?", co-chair - Fabien Lotte
- "How do we learn to use a BCI? Current state of knowledge, prospects of improvement using an interdisciplinary approach", Workshop at the International Graz BCI conference 2019, Graz, Austria – co-chair, Fabien Lotte

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

- Workshops organizer and sponsors finder for the event for the French BCI/NF Society, called CORTICO days - Jelena Mladenovic

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

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

- International Graz BCI conference 2019, Fabien Lotte
- NeuroAdaptive Technology conference (NAT) 2019, Fabien Lotte
- Journées d’informatique théâtrale 2020, Martin Hachet, Pascal Guitton

#### *10.1.2.2. Reviewer*

- ACM UIST 2019
- ACM CHI 2019
- ACM CHI Play 2019
- HICS 2019
- TACCESS 2019
- ASSETS 2019
- IEEE SMC 2019
- ICASSP 2019
- CogSci 2019
- JJC-ICON 2019
- Int Graz BCI Conf 2019

### ***10.1.3. Journal***

#### *10.1.3.1. Guest editor*

- ERCIM News 120 - Educational Technology, Martin Hachet
- Frontiers in Human Neuroscience, Fabien Lotte
- Frontiers in Brain-Computer Interfaces, Fabien Lotte

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

- IEEE Computer Graphics and Applications, Martin Hachet
- Journal of Neural Engineering, Fabien Lotte
- Brain-Computer Interfaces, Fabien Lotte

#### 10.1.3.3. Reviewer - Reviewing Activities

- Frontiers in Human Neuroscience
- Journal of Neural Engineering
- Brain-Computer Interfaces
- IEEE TBME
- Nature Communications
- ACM TOCHI
- IEEE TCYB
- IJHCS
- Scientific Report
- IEEE Trans. Games
- NeuroImage
- JMUI

#### 10.1.4. Invited Talks

- "Hybrid environments (real/virtual) in Education", LIRIS, Lyon, Jan. 2019 - Martin Hachet
- "Vers une carte multisensorielle en réalité augmentée pour les personnes aveugles et malvoyantes : une approche participative", ARIBA Nov. 2019, Bordeaux - Lauren Thevin
- "VISTE project", FISAF, Nov. 2019, Paris - Lauren Thevin
- "Example of HCI for Humas: Previous works and perspectives", LMU Muchen, April 2019 - Lauren Thevin
- "Adaptive Riemannian Classifiers for Long-term Brain-Computer Interface training of a Tetraplegic User", Seminar at ISAE-Supaero, December 2019 - Fabien Lotte
- "From machine learning to user learning in Brain-Computer Interaction", Tokyo University of Agriculture and Technology (TUAT), GIR Seminar, Tokyo, Japan, November 2019 - Fabien Lotte
- "Understanding, modeling and optimizing Mental Imagery-based Brain-Computer Interface user training", BCI: Science and Practice international conference, Keynote, Samara, Russia, October 2019 - Fabien Lotte
- "Machine learning and experimental tools towards EEG-based NeuroAdaptive Technologies", international conference on NeuroAdaptive Technologies (NAT'19), Keynote, Liverpool, UK, July 2019 - Fabien Lotte
- "Brain-Computer Interfaces: Myths, open challenges and realistic expectations", NICE Meeting, Ludwig Maximilian University of Munich, Germany, June 2019 - Fabien Lotte
- "Understanding and modeling user training in Mental-Imagery-based Brain-Computer Interfaces", University of Freiburg, Germany, June 2019 - Fabien Lotte
- "ElectroEncephaloGraphic signal processing & classification for Brain-Computer Interfaces", Time Series Day, Rennes, France, March 2019 - Fabien Lotte
- "Vers une accessibilité numérique des systèmes d'éducation numérique", ESPE Angers, Rencontres académiques du numérique, Rectorat de Nantes, En visioconférence, March 2019 - Pascal Guitton & Hélène Sauzéon
- "Ethique du numérique pour la santé", Séminaire IA et sens clinique, Bordeaux, March 2019 - Pascal Guitton

- "Réalité virtuelle et handicap : étude, évaluation, réhabilitation", 20 ans d'Immersia, Rennes, November 2019 - Pascal Guitton
- "Les Sciences du Numérique au service de la pratique sportive", Colloque Sport et numérique, Bordeaux, July 2019 - Pascal Guitton
- "Interfaces Cerveau-Ordinateur (ICO) & Neurofeedback (NF): Influence des capacités somatosensorielles sur la réhabilitation motrice post-AVC", SOFMER, Bordeaux, Oct. 2019 - Léa Pillette
- "Predicting BCI performances from users' profile using Computational Modelling", Workshop "How do we learn to use a BCI? Current state of knowledge, prospects of improvement using an interdisciplinary approach", International Graz BCI conference, Graz, Austria, September 2019 - Camille Benaroch

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

- Co-leader of the EduIHM group dedicated to research in HCI for Education - Martin Hachet
- Member of the administrative council of CORTICO, the French national association of BCI - Fabien Lotte
- Secretary of the Bordeaux association of Doctoral Students in Computer Science (AFoDIB) - Aline Roc

#### ***10.1.6. Scientific Expertise***

- Expert for "Credit Impot Recherche" - Martin Hachet
- Committee for the creation of 2 Inria teams - Martin Hachet
- Committee for recruitment of an assistant professor at Telecom ParisTech - Martin Hachet
- Expert for Appel à projets exploratoires Institut de la cognition - Pascal Guitton

#### ***10.1.7. Research Administration***

- Member of "Bureau du comite des projets", Martin Hachet
- Member of "Conseil administration de l'AFIHM", Martin Hachet
- Representative of Inria at NEM (New European Media), Fabien Lotte
- Member of "Commission des emplois recherche Inria Bordeaux", Fabien Lotte
- Member of Commission de recrutement des Inspecteurs Généraux de l'Education Nationale (IGEN), Pascal Guitton
- Responsable of Inria Cellule de veille et de prospective, Pascal Guitton
- Member of Inria Ethical Committee (COERLE), Pascal Guitton
- Member of Inria Comité Parité et Egalité, Pascal Guitton
- Responsable of Inria Radar Committee (new annual Activity Report), Pascal Guitton
- Member of Inria International Chairs Committee, Pascal Guitton

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

### ***10.2.1. Teaching***

- Master: Réalité Virtuelle, 12h eqTD, M2 Cognitive science, Université de Bordeaux - Martin Hachet
- Master: Réalité Virtuelle, 6h eqTD, M2 Cognitive science, Université de Bordeaux - Fabien Lotte
- Master: Handicap et Nouvelles technologies, CM 7,5h eqtd, M2 Cognitive Science, Université de Bordeaux - Aurélien Appriou
- Master : Handicap et Nouvelles technologies, 9h eqTD, M2 Cognitive science, Université de Bordeaux - Philippe Giraudeau

- Master: Réalités Virtuelles et augmentées, 18h eqTD, M2 Computer science, Université de Bordeaux - Martin Hachet,
- Master: Réalités Virtuelles et augmentées, 6h eqTD, M2 Computer science, Université de Bordeaux - Fabien Lotte,
- Master: Réalités Virtuelles et augmentées, 18h eqTD, M2 Computer science, Université de Bordeaux - Rajkumar Darbar
- Master: Neuroergonomics & Brain-Computer Interfaces, 2h eqtd, Master Human-Computer Interaction, Ludwig-Maximilians-Universität München, Germany - Fabien Lotte
- Bachelor: Initiation to computer sciences, 31.66h eqTD, L1 Université de Bordeaux - Adélaïde Genay
- Bachelor: C programming, 14,67h eqTD, L2 Université de Bordeaux - Adélaïde Genay
- Engineering school: Ergonomie et Interaction, 15h eqTD, 3rd year, ENSEIRB, INP - Martin Hachet
- Engineering school: Réalités Virtuelles et augmentées, 1,5h eqTD, ENSC - Martin Hachet
- Engineering school: Web programming, ENSC - Lauren Thevin
- Engineering School: Aeronautical engineering and Neuroergonomics, 3h eqTD, M2 ISAE-Supaero, Toulouse - Fabien Lotte
- Engineering school: Immersion and interaction with visual worlds, 4h eqtd, Graduate Degree Artificial Intelligence, Ecole Polytechnique Palaiseau - Fabien Lotte
- Engineering school: Advanced mathematics and computer science, 2018-2019: 61.5h eqTD, Ecole Nationale Supérieure des Arts et Metiers, ENSAM, Bordeaux, France - Camille Benaroch
- Engineering school: Lecture "Interface Cerveau-Ordinateur (BCIs) Le quotidien de la recherche", UE Systèmes Cognitifs (CNU 27), 2h eqTD, ENSC, Bordeaux INP - Aline Roc and Léa Pillette

### 10.2.2. Supervision

- PhD in progress: Adélaïde Genay, Hybrid Avatars, 1/10/2019, Martin Hachet
- PhD in progress: Rajkumar Darbar, Actuated Tangible User Interfaces, Since 1/12/2017, Martin Hachet
- PhD in progress: Philippe Giraudeau, Collaborative learning with tangible and augmented interfaces, Since 1/10/2017, Martin Hachet
- PhD in progress: Marc Baloup, Interaction with Avatars, Since 1/10/2018, Martin Hachet (33%)
- PhD in progress: Aurélien Appriou, Estimating learning-related mental states in EEG, since 1/10/2017, Fabien Lotte
- PhD in progress: Camille Benaroch, Computational Modeling of BCI user training, since 1/10/2018, Fabien Lotte (50%)
- PhD in progress: Aline Roc, Designing, studying and optimizing training tasks and training program for BCI control, Fabien Lotte
- PhD defended: Pierre-Antoine Cinquin, Design and Experimental Validation of Accessible E-learning systems for people with cognitive disabilities, November 23th 2019, Pascal Guitton (50%)
- PhD defended: Jelena Mladenovic, User modeling for Adaptive BCI design, since 01/01/2016, Defended 10/09/2019, Fabien Lotte (50%)
- PhD defended: Léa Pillette, Formative feedback for BCI, since 01/10/2016, Defended 16/12/2019, Fabien Lotte (50%)

### 10.2.3. Juries

- HDR: Isabelle Pecci [president], Université de Lorraine, Martin Hachet
- HDR: Pierrick Legrand [examiner], Univ. Bordeaux, France, Fabien Lotte

- HDR: Selina Wriessnegger [with report], TU Graz, Austria, Fabien Lotte
- PhD: Grégoire Cattani [with report], Univ. Grenoble Alpes, Martin Hachet
- PhD: Sylvain Pauchet [with report], ISAE Supaero, Martin Hachet
- PhD: Flavio Camarrone [with report], KU Leuven, Belgium, Fabien Lotte
- PhD: Andreas Meinel [with report], Univ. Freiburg, Germany, Fabien Lotte
- PhD: Fanny Grosselin [with report], Sorbonne Université, France, Fabien Lotte
- PhD: Kevin Verdière [president], ISAE-Supaero, France, Fabien Lotte
- PhD: Pedro Luiz Coelho Rodrigues [examiner], Grenoble INP, France, Fabien Lotte
- PhD: Hakim Si Mohammed [guest], INSA Rennes, France, Fabien Lotte
- PhD: Leticia Seixas-Pereira [guest], Univ. Paris 8, France, Pascal Guitton
- PhD: Thomas Crespel [president], Univ. Bordeaux, France, Pascal Guitton
- MD: Andrea Ferrier [examiner], Univ. Bordeaux/CHU Bordeaux, France, Fabien Lotte
- MS: Jaime A. Riascos [examiner], Federal University of Rio Grande do Sul, Brazil, Fabien Lotte

## 10.3. Popularization

### 10.3.1. Articles and contents

- Interview - video portrait for “Dealers de Science” made by 2nd year Master’s student in Mediation of the Sciences (to be published online in 1-2 months), December 2019 - Aline Roc
- Petit binaire : les dessous du JPEG, Blog binaire – Le Monde, May 2019, Pascal Guitton, [37]
- Ethique du numérique pour la santé, Blog binaire – Le Monde, November 2019, Pascal Guitton, [38]

### 10.3.2. Interventions

- Computer Sciences and Art - Rencontre Mexique-France - La culture à l’ère numérique, Nov 2019 - Martin Hachet
- FACTS Festival, Art and Sciences, Bordeaux Nov. 2019 - Martin Hachet
- “Des étoiles pleins les yeux”. Rancards du Savoir. Bordeaux Nov. 2019 - Martin Hachet
- PubHD Bordeaux, November 2019 - Philippe Giraudeau
- “Erlen, an Ambient Interface dedicated to the awareness of energy consumption” BootCamp #7 for Digital Vice-Presidents of french Universities, November 2019, Bordeaux - Philippe Giraudeau
- “Why and How to train to control a Brain-Computer Interfaces?”, BCI: Science and Practice international conference, outreach lecture, Samara, Russia, October 2019 - Fabien Lotte
- “One year of scientific visit on neurotechnologies at the RIKEN Brain Science Institute, Japan”, Japanese Society for the promotion of Science (JSPS) Business meeting, Bordeaux, September 2019 - Fabien Lotte
- “Progrès et applications des interfaces cerveau-ordinateur”, Séminaire IRGO, Bordeaux, France, April 2019 - Fabien Lotte
- “Pourquoi et comment apprendre à contrôler une interface cerveau-ordinateur ?”, conférence ‘les interfaces cerveau-machine : piloter un objet par l’activité cérébrale’, cité des sciences et de l’industrie, Paris, France, February 2019 - Fabien Lotte
- “Ethique et numérique”, Festival Transfo, Plongez dans l’univers du numérique, Grenoble, January 2019 - Pascal Guitton

### 10.3.3. Internal action

- InfoBreak Inria Bordeaux, “Une équipe de choc pour interfacer cerveaux et machines” - Fabien Lotte