

Inria

RESEARCH CENTER

FIELD

Activity Report 2019

Section Popularization

Edition: 2020-03-21

ALGORITHMICS, PROGRAMMING, SOFTWARE AND ARCHITECTURE

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ANTIQUE Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Cezara Drăgoi and Xavier Rival are elected members of the Inria Commission of Evaluation
- Jérôme Feret is a member of the jury of the SIF - Gilles Kahn PhD Award.
- Xavier Rival is member of the “Bureau du comité des projets” since October 2018.
- Xavier Rival is Chair of the Hiring Committee for Inria researchers at the center of Paris (CRCN) for 2019.
- Cezara Drăgoi served in the jury for part-time positions at LiX, January 2019.
- Cezara Drăgoi served in the Inria jury for CES - delegations and Phd scholarships in 2019.

10.3.2. Articles and contents

- Xavier Rival has been working with Kwangkeun Yi on the writing of a book that should serve as an introduction to the field of static analysis, for students and engineers, and this book is expected to be released by MIT Press in January 2020 [16].

10.3.3. Creation of media or tools for science outreach

Xavier Rival has given a talk as part of the “Mon équipe en 180 secondes” series at Inria Paris.

ARIC Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Nathalie Revol was in the scientific committee for the Journées Scientifiques Inria (Lyon, 5-7 June 2019).
- Nathalie Revol was a member of the editorial committee of *interstices*; she is the scientific editor of this Web magazine since September 2019.
- Nathalie Revol belonged to the steering committee of MMI (Maison des Mathématiques et de l'Informatique) until July 2019; she is now a member of its prospective committee.
- Bruno Salvy is "réfèrent chercheur" for the Inria Grenoble Center.

10.3.2. Articles and contents

Nathalie Revol belonged to the working group that elaborated the "7 families of computer science" playcards, launched in February 2019.

10.3.3. Education

- Nathalie Revol taught "Dissemination of Scientific Knowledge", 10h, to the 4th year students (between Master and PhD) of ENS de Lyon, France.
- Nathalie Revol works with DANE (Délégation Académique au Numérique dans l'Éducation) of Rectorat de Lyon towards educating primary school teachers, by educating educators (e-RUN); she is a member of the Conseil Scientifique du Numérique.
- Nathalie Revol presented activities for teaching computer science at every school level, and in particular activities led by Inria, for a Taiwanese delegation (Grenoble, October 2019).

10.3.4. Interventions

- Nathalie Revol spent 2 days at école Guilloux, with 50 pupils aged 10 (level: CM2), to teach computer science without any computer (so-called "unplugged computer science"): data, algorithms, networks.
- For high-school pupils (\simeq 150 pupils): as an incentive, especially for girls, to choose scientific careers, Nathalie Revol gave talks at Mondial des Métiers (in February 2019), collège Jean Zay (Brignais, March 2019) and Girls Can Code (Lyon, August 2019). With Jérôme Germoni and Natacha Portier, she organized a day *Filles & Info* in November 2019, gathering about 70 high-school girls of 1e and Terminale.
- For a larger audience: she took part to Pop Science, doing magic tricks in the street at La Duchère, Lyon, May 2019; with Florent Masségli, she introduced 5 important figures of computer science, chosen among the personalities of the "7 families of computer science" playcard, for L'Esprit Sorcier, for la Fête de la Science, Paris, October 2019, cf <https://www.youtube.com/watch?v=yypnQe91Pztc>
- Nathalie Revol took part to a day of teaching unplugged computer science for whoever was interested, at La Gaîté Lyrique, Paris, June 2019.

10.3.5. Creation of media or tools for science outreach

Nathalie Revol belongs to the working group "Informatique Sans Ordinateur", which creates unplugged activities to teach computer science; this group meets twice a year, usually in Lyon.

AROMATH Project-Team

8.3. Popularization

8.3.1. Interventions

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

CAIRN Project-Team

8.3. Popularization

8.3.1. Articles and contents

O. Sentieys contributed to the Inria white book on scientific reviews and challenges in cybersecurity https://files.inria.fr/dircom/extranet/LB_cybersecurity_WEB.pdf.

8.3.2. Interventions

Members of the team participated in the national science festival (*Fête de la Science*) in Lannion, October, with demonstrations on wireless sensor networks, body sensor network, cryptology and digital circuit design.

CAMBIUM Project-Team

9.3. Popularization

9.3.1. Interventions

Xavier Leroy was on the committee of the 2019 Sephora Berrebi scholarship for women in mathematics and computer science. At the award ceremony (Paris, France, February 2019), he gave a popular science talk on Grace Hopper and the birth of the compiler.

Xavier Leroy gave popularization talks on deductive software verification at the Aerospace Lab Conferences of ONERA (Palaiseau, France, June 2019) and at the Summer 2019 BOB conference (Berlin, Germany, August 2019).

CAMUS Project-Team

10.3. Popularization

- A. Charguéraud is a co-organizer of the *Concours Castor informatique*. The purpose of the Concours Castor is to introduce pupils (from *CM1* to *Terminale*) to computer sciences. More than 700,000 teenagers played with the interactive exercises in November 2019. More information on: <http://castor-informatique.fr/>.

10.3.1. Articles and contents

- Jens Gustedt authored the book *Modern C* [24], which since the first publication of an online draft in 2016 has become one of the major references for the C programming language.
- Jens Gustedt is blogging about efficient programming, in particular about the [C programming language](#). He also is an active member of the [stackoverflow community](#), a technical Q&A site for programming and related subjects.

10.3.2. Education

- Cédric Bastoul participated in the training of high school teachers involved in the forthcoming optional Computer Science course for high school students. Specifically, he produced lectures and materials to teach Computer Architecture to high school students.

10.3.3. Interventions

- Vincent Loechner has been organizing a hub for the Google Hashcode programming contest (online qualification round) at Université de Strasbourg in Feb. 2019. More than 30 students and colleagues were hosted in the university classrooms to participate to this event.
- Cédric Bastoul delivered a presentation on program optimization at "Journée des licences" ("Bachelor Day") in June 2019.

10.3.4. Internal action

- Bérenger Bramas, Jens Gustedt and other members of the scientific computing group (*axe transverse calcul scientifique*) organized two software corners at the ICube laboratory. A software corner is a meeting where researchers exchange about programming best practices, existing and upcoming tools, and their own experiences.

CARAMBA Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Pierrick Gaudry was member of a jury for the Innoviris LAUNCH program, whose goal is to fund start-ups created on the basis of academic work.

10.3.2. Articles and contents

- Cécile Pierrot wrote a blog post for [Le Monde Binaire](#).

10.3.3. Interventions

- Cécile Pierrot gave a talk about women in science at a meeting *Les Filles, osez les sciences !* in Reims, March 2019.
- Cécile Pierrot and Paul Zimmermann took part in La Fête de la Science, Nancy and Bouxurulles, October 2019.
- Cécile Pierrot gave a talk at La Cité des Sciences, Paris, to open the exhibition called *Espions*, November 2019.
- Pierre-Jean Spaenlehauer gave an introductory talk on polynomial systems to visiting students of the ÉNS Paris-Saclay.

CASCADE Project-Team (section vide)

CASH Project-Team

9.3. Popularization

9.3.1. Articles and contents

- “Pourquoi créer des nouveaux langages de programmation?” Ludovic Henrio. Interstices. Janvier 2019.

9.3.2. Education

- Laure Gonnord has participated to the construction of the diploma “teaching computer science in high schools” in Lyon, and also the new preparatory cursus for the “CAPES-NSI” at Lyon1 university.

9.3.3. Interventions

- Laure Gonnord was invited by the “Association des profs de Prepa” to give her expertise about teaching computer science in the first university cycle. The context is the creation of a new preparatory class with a computer science minor “MPI” (Maths, Physics, Computer Science).
- Matthieu Moy presented a talk “Se lancer dans le logiciel libre quand on est étudiant (ou pas)” at “Campus du libre”, Lyon.

CELTIQUE Project-Team

6.3. Popularization

6.3.1. Interventions

- Thomas Genet gave a talk “Bug, Virus, Intrusion, Pirates... So many threats and no defense? Yes... maths.” in high schools close to Rennes. 2019.

CIDRE Project-Team

9.3. Popularization

9.3.1. Articles and contents

- In books/journals for the general public
Dis, c'est quoi là haut dans le ciel ? C'est un Linux, mon petit ![39], Viet Triem Tong Valérie, Fournier Benoît, Fournier Guillaume, Ouairy Leopold, Cotret Pascal, Guette Gilles, MISC numéro 104, juillet 2019.
- Online publications
La cybersécurité aux multiples facettes. Steve Kremer, Ludovic Mé, Didier Rémy et Vincent Roca. Blog binaire (<https://www.lemonde.fr/blog/binaire/>), 4 juillet 2019.
- White Papers - white Papers for Popularization
Ludovic Mé co-authored (with S. Kremer, D. Rémy and V. Roca) Inria's White Book on Cybersecurity [37].

9.3.2. Interventions

- Valérie Viet Triem Tong has participated to the *Vive la Recherche* event to promote research activities to engineering students at CentraleSupélec
- Valérie Viet Triem Tong has been involved in an artistic performances involving actors and researcher at the **Digital Tech Conference**, December Rennes, France.

COMETE Project-Team

9.3. Popularization

9.3.1. Education

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

Catuscia Palamidessi has been:

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

Frank Valencia has:

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

9.3.2. Interventions

Catuscia Palamidessi has given an invited talk at:

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

CONVECS Project-Team

10.3. Popularization

10.3.1. Interventions

- R. Mateescu has participated to the “*Journée Transfo : Plongez dans le monde du numérique*” organized at Inria Montbonnot on January 24, 2019.
- R. Mateescu has participated to the “*Fête de la Science*” organized at Inria Montbonnot on October 12, 2019.

CORSE Project-Team

9.3. Popularization

9.3.1. Education

DIU EIL, Florent Bouchez Tichadou, Formation des enseignants des lycées suite à la réforme du Bac et l'introduction de l'option informatique en 1ère et Terminale (NSI). Bloc algorithmique par Apprentissage Par Problèmes (APP). Académie de Grenoble ainsi que les enseignants dans les lycées français à l'étranger.

DATASHAPE Project-Team

8.3. Popularization

8.3.1. Interventions

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

DATASPHERE Team

9.3. Popularization

Various publications have appeared in journals accessible to a larger audience. In particular, our research work has been featured in a full page of Le Monde newspaper in July 2019 (https://www.lemonde.fr/international/visuel/2018/07/23/cyberespace-la-guerre-mondiale-des-donnees_5334901_3210.html).

Kavé Salamatian did several radio intervention, in particular, he was invited in the "Methode Scientifique" broadcasting program in November 2019.

DEDUCTEAM Project-Team

9.3. Popularization

9.3.1. Articles and contents

Articles

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

Books

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

Manuscripts

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

9.3.2. Interventions

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

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

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

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

GALLINETTE Project-Team

8.3. Popularization

8.3.1. Education

- Hervé Grall has contributed to the project **Merite**, which aims to promote science learning in middle and high schools. He is the main contributor to the theme "Communication between machines". The project is coordinated by IMT-Atlantique in partnership with 7 other french higher education institutions, the rectorates of the Nantes and Rennes academies, and financed by the "Investments in the Future" and the fund FEDER Pays-de-la-Loire.
- A. Mahboubi has worked with composer Alessandro Bossetti and students of the professional high-school Lycée Michelet, on a project "Art and Mathematics", supported by the **Athenor** theater.

8.3.2. Interventions

- P.-M. Pédrot was invited to give a talk about his scientific activities in Le Pleyne, during the "Semaine Sport-Études" of the first year students in computer science from the ENS Lyon.
- P.-M. Pédrot gave a similar talk about his scientific activities at the LS2N, during the visit of first year students in computer science from the ENS Cachan.

8.3.3. Internal action

- A. Mahboubi participates to the Irisa/Inria mentoring program.

GAMBLE Project-Team

10.3. Popularization

10.3.1. Education

G. Moroz is member of the Mathematics Olympiades committee of the Nancy-Metz academy.

10.3.2. Interventions

L. Dupont participated in several events of popularization of computer science:

Day #4 FAN Project, April 23th, Inria project, adult audience.

ISN day, March 7th, adult continuing education of computer science for high-school teachers.

Atelier Google, April 13th, popularization of computer science, general audience.

Atelier Google, December 7th, popularization of computer science, general audience.

GRACE Project-Team

9.3. Popularization

9.3.1. Interventions...

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

HYCOMES Project-Team

9.3. Popularization

9.3.1. Internal action

The Hycomes team has hosted short internships for secondary school students. This has been an opportunity to promote women in computing, since three female students visited the team for four days, to discover what scientific research is, and what research in computer science could mean. All team members contributed to the initiative.

Kairos Project-Team

10.3. Popularization

10.3.1. Interventions

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

KOPERNIC Team

9.3. Popularization

9.3.1. Articles and contents

- Interview with the Statinf co-founders, published on Inria web site (<https://www.inria.fr/centre/paris/actualites/statinf-sonde-les-caeurs-des-systemes-embarques>)

9.3.2. Education

- Presentation of Adriana Gogonel at a day organized by a Creteil and Versailles Academy for outreaching Computer Science (April 2019, Paris)

9.3.3. Interventions

- Participation of Adriana Gogonel at a round table entitled "May we innovate within a research institute?" (March 2019, Rocquencourt).

LFANT Project-Team

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.

MEXICO Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

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

MOCQUA Team

9.3. Popularization

9.3.1. Articles and contents

- The scientific magazine *La Recherche* re-published an article by Nazim Fatès and Irène Marcovici, with the title “Les automates cellulaires jouent le jeu”, in a Special issue devoted to the theme "Les maths et le réel" (September 2019) [34]. The original article "Automates cellulaires : la complexité dans les règles de l'art" (2018), was modified with minor changes for this special issue.
- Interviews of Simon Perdrix about the Google's result on quantum advantage. La tribune (online article) ; Sciences et Avenir (November 2019 - paper journal and online articles), We demain (online article).

9.3.2. Education

Nazim Fatès participated to a workshop destined to the high-school teachers which were training on the « Information et sciences du numérique » module.

In the lycée Saint-Exupéry de Saint-Dizier: he gave three one-hour conferences destined to students, related to the film *Imitation game* on Alan Turing (March 18).

9.3.3. Interventions

Nazim Fatès was invited to give various talks on the question of artificial intelligence:

- With the European parliamentary association (APE), he was invited to talk to European MP's on the theme « Is Europe ready for artificial intelligence? » (Strasbourg, February 13).
- In the « Sciences et société » cycle of IUT Charlemagne (September 26).
- With the association « Jardin des sciences », cycle « intelligences » destined to a wide public, University of Strasbourg (October 10).
- With the association **Femmes responsables** (November 20).

OURAGAN Project-Team

10.3. Popularization

- Alban Quadrat co-edited the book *Le Jeu de rôle sur table : un laboratoire de l'imaginaire*, Carrefour des lettres modernes, n. 7, Classiques Garnier, 2019.
- Fabrice Rouillier is a member of the editorial board of *Interstices*
- Fabrice Rouillier is *chargé de mission médiation* at Inria Paris
- Fabrice Rouillier is a member of the *comité de pilotage de l'année des mathématiques*
- Fabrice Rouillier is a member of the *comité de pilotage de la semaine des mathématiques*
- Fabrice Rouillier is the president of the association *Animath*⁰
- Fabrice Rouillier is member of the scientific board of the SMF ⁰conference *Mathématiques étonnantes*⁰

10.3.1. Internal or external Inria responsibilities

- Alban Quadrat is a member of the technical committee *Linear Systems* of the *International Federation of Automatic Control* (IFAC)
- Elias Tsigaridas is a member of the Evaluation committee (Commission d'Évaluation) of Inria.

10.3.2. Interventions

- Fabrice Rouillier participated to the *semaine des mathématiques* for the Paris Inria Paris research center
- Fabrice Rouillier participated to the welcoming of schoolchildren for their *semaine d'observation* at Inria Paris research center.

⁰<http://www.animath.fr>

⁰Société Mathématique de France

⁰<https://smf.emath.fr/actualites-smf/mathematiques-etonnantes-programme>

PACAP Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Caroline Collange is a member of the committee of the Gilles Kahn PhD prize of Société Informatique de France.

10.3.2. Articles and contents

- Erven Rohou gave an interview in the *Émergences* magazine on (volume 56, Mar 22nd 2019) on automatically masking sensitive information to protect against side-channel attacks.

10.3.3. Education

Nicolas Bellec and Isabelle Puaut taught *Basics of computer architecture*, a training of high school teachers as part of the opening of the new computer science option in the two final years before Baccalauréat, 10 hours.

Erven Rohou was invited to present the life of a researcher in computer science to middle school students (*Collège de Cesson-Sévigné*)

10.3.4. Interventions

Erven Rohou was present at the International Cybersecurity Forum in Lille (FIC <https://www.forum-fic.com/en/home.htm>). He presented a demo on compiler-generated countermeasures against side-channel attacks, developed within the context of the CHIST-ERA SECODE project.

10.3.5. Internal action

Erven Rohou presented the activities of PACAP at the SecDays event organized at Inria Rennes and IRISA.

PARKAS Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- T. Bourke participated in the *commission d'emplois scientifiques* (postdocs, delegations, and PhDs) for the Inria Paris research centre.
- T. Bourke participated in the PhD progress committees (*suivi doctorale*) for B. Medeiros de Barros and N. Kulatova.
- T. Bourke and M. Pouzet participated in meetings with the *Ministère de la Transition écologique et solidaire* on the validation of autonomous driving systems.

PARSIFAL Project-Team

10.3. Popularization

10.3.1. Interventions

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

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

PESTO Project-Team

10.3. Popularization

10.3.1. Articles and contents

Véronique Cortier. Some interactions (in collaboration with P. Gaudry and S. Glondu) with France Culture to improve an online article on e-voting.

Steve Kremer co-authored (with L. Mé, D. Rémy and V. Roca) Inria's White Book on Cybersecurity [27].

Steve Kremer In Horizon - The EU Research and Innovation Magazine: Online voting isn't ready for high-stakes elections, Avril 2019.

Steve Kremer, Ludovic Mé, Didier Rémy, and Vincent Roca. In Blog Binaire - Le Monde. La cybersécurité aux multiples facettes.

Steve Kremer. Le vote électronique. Chapter of the book "Treize défis pour la Cybersécurité" édité by CNRS. To appear in January 2020.

Interview with Science & Vie Junior about 5G security (J. Dreier, in "Pourquoi la 5G va tout changer", Science & Vie Junior, Juillet 2019)

Lucca Hirschi, Ralf Sasse, Jannik Dreier in ERCIM News 2019. "Security Issues in the 5G Standard and How Formal Methods Come to the Rescue".

10.3.2. Interventions

Invited conference at the Espace des sciences, Rennes (audience of about 300 people, 5K+ views on Youtube), October, 22nd, 2019 (V. Cortier)

"breakfast" in the Senat, on Cybersecurity, organized by OPECST / Académie des sciences / Académie de médecine, June 19th, 2019. (V. Cortier)

How to explain security protocols with Playmobil, group of high school students interns for a week, February 3rd, 2019, (V. Cortier)

PL.R2 Project-Team (section vide)

POLSYS Project-Team (section vide)

PRIVATICS Project-Team

8.3. Popularization

8.3.1. Hearings

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

8.3.2. Internal or external Inria responsibilities

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

8.3.3. Articles and contents

- Antoine Boutet et Mathieu Cunche: *Souriez, vous êtes géolocalisés !*, "Tout compte fait", 06/05/2019
- Antoine Boutet: *L'algorithme : cette formule arbitraire, miroir de l'intention humaine*, En Vue (INSA Lyon newsletter), 18/12/2019 .

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

8.3.4. Education

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

8.3.5. Interventions

- Mathieu Cunche: *Cybersécurité: Protéger ses objets physiques*, Pint of science, 22/05/2019, Lyon, France.
- Cédric Lauradoux: *Procès du robot 42*, Festival TRANSFO, 24/01/2019, Grenoble, France.
- Cédric Lauradoux: *Challenges de cryptologie*, Printemps du numérique, 08/04/19, Die, France.
- Cédric Lauradoux: *Challenges de cryptologie*, MathC2+ internship, 25/06/19, Grenoble, France.
- Cédric Lauradoux: *Atelier cryptographie*, Fête de la Science, 10/10/2019, Grenoble, France.
- Cédric Lauradoux: *Procès du robot 42*, Fête de la Science, 12/10/2019, Grenoble, France.
- Cédric Lauradoux: *Les données en question*, Festival Imaginascience, 16/10/2019, Annecy, France.

- Cédric Lauradoux: *Le Numérique nous menace-t-il ?*, Telecom Saint Etienne, 03/12/2019, Saint Etienne, France.
- Cédric Lauradoux: *Vie privée et Liberté dans le monde numérique*, Collège Les Dauphins, 03/12/2019, Saint Jean de Soudain, France.
- Cédric Lauradoux: *Challenges de cryptologie*, Cité scolaire Jean PREVOST, 12/12/2019, Villard de Lans, France.
- Cédric Lauradoux: *Avoir un usage Internet éclairé*, UIAD, 18/12/2019, Grenoble, France.
- Vincent Roca: *Maison intelligente : le point de vue du respect de la vie privée*, Café des Sciences, 14/05/2019, Grenoble, France.
- Vincent Roca: *Habitat intelligent, service de vélo partagé et vie privée*, Fête de la Science, 12/10/2019, Grenoble, France.

8.3.6. Internal action

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

PROSECCO Project-Team

10.3. Popularization

10.3.1. Articles and contents

- Catalin Hritcu contributed an article on Secure Compilation to the SIGPLAN PL Perspectives blog
- Karthikeyan Bhargavan published a paper in Communications of the ACM

SECRET Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- **Association Animath:** M. Lequesne serves on the board of Animath.
- M. Lequesne is also member of the scientific committee of the French Tournament of Young Mathematicians: redaction of the problems for the competition, jury member (chair of a jury) ; member of the scientific committee of the International Tournament of Young Mathematicians: redaction of the problems for the competition, jury member (chair of a jury) ; Member of the scientific committee of the Correspondances des Jeunes Mathématicien.ne.s: redaction of the problems for the competition.

9.3.2. Articles and contents

- *La fragilité inattendue du chiffrement symétrique dans le monde post-quantique*, Gaëtan Leurent and Maria Naya-Plasencia, María, Interstices [63]

9.3.3. Education

- **Alkindi cipher challenge:** Several members of the project-team are involved in the cipher challenge for high-school students "concours Alkindi" <http://www.concours-alkindi.fr/>. Mathieu Lequesne serves as a co-organizer of the challenge, preparing the three rounds and the final. Together with C. Boura, he was also involved in the redaction of the exercises.
- Organization of the event "Rendez-vous des Jeunes Mathématiciennes et Informaticiennes" at Inria Paris (October 28-29) by M. Lequesne, a 2-day camp for 20 high-school girls interested in mathematics and computer science. C. Boura, A. Canteaut and L. Perrin gave talks at this event.
- **Project Algo'scape with a high school (Lycée Anna Judic, Semur en Auxois):** design of an escape game on cryptography (L. Perrin), visit of 15 students at Inria, May 2019 (A. Canteaut and L. Perrin).

SPADES Project-Team

9.4. Popularization

9.4.1. Articles and contents

Software is a fundamental pillar of modern scientific research, across all fields and disciplines. However, there is a lack of adequate means to cite and reference software due to the complexity of the problem in terms of authorship, roles and credits. This complexity is further increased when it is considered over the lifetime of a software that can span up to several decades. Building upon the internal experience of Inria, we have provided a contribution to the ongoing efforts in order to develop proper guidelines and recommendations for software citation and reference. Namely, we recommend: (1) a richer taxonomy for software contributions with a qualitative scale; (2) to put humans at the heart of the evaluation; and (3) to distinguish citation from reference [10]. This has been a joint work between Alain Girault and colleagues from Software Heritage (Roberto Di Cosmo), from Inria's Evaluation Committee (Pierre Alliez, Benjamin Guedj, Mohand-Saïd Hacid, Nicolas Rougier), and a specialist in reproducible research (Arnaud Legrand).

9.4.2. Interventions

Sophie Quinton played the role of one of the experts in the fictional trial of a robot during the Transfo Festival in Grenoble. She also gave a lecture on the design and verification of real-time systems as part of the ISN curriculum for high school teachers.

Alain Girault played the role of one of the experts in the fictional trial of a robot during the Fête de la Science in Grenoble.

9.4.3. Creation of media or tools for science outreach

All SPADES members have contributed to the scenario of an animated movie, commissioned by the communication service of Inria, in order to popularise the research activities of SPADES.

SPECFUN Project-Team

8.3. Popularization

8.3.1. Articles and contents

- Georges Gonthier published an interview article *Blockchain: ce que c'est, comment ça marche* in *La Recherche*, **545**, March 2019.
- Georges Gonthier co-wrote with Ivan Odonnat (Banque de France) *L'avenir du bitcoin et de la blockchain*, in *Les Carnets de l'Institut Diderot* (2019).

STAMP Project-Team

8.3. Popularization

8.3.1. Internal action

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

SUMO Project-Team

10.3. Popularization

10.3.1. Education

Nicolas Markey is involved in the organization of action "J'Peux Pas, J' Ai Informatique", whose aim is to break down stereotypes about computer science for 12-year-old pupils.

TAMIS Project-Team (section vide)

TEA Project-Team (section vide)

TOCCATA Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

S. Boldo has been the scientific head for Saclay for the MECSI group for networking about computer science popularization inside Inria until October 2019.

She was also responsible (with A. Couvreur of the Grace team and M. Quet of the SCM) for the 2019 “Fête de la science” on October 10th and 11th 2019. Teenagers were welcomed on 8 activities ranging from unplugged activities with Duplo construction toys to programming, and from applied mathematics to theoretical computer science.

10.3.2. Education

S. Conchon and J.-C. Filiâtre, together with K. Nguyen and T. Balabonski (members of the LRI team but not members of Toccata), wrote a book “Numérique et Sciences Informatiques, 30 leçons avec exercices corrigés” (Ellipses, August 2019) [36] targeting the new Computer Science programme in the French high school system, which started in September 2019.

S. Boldo gave a talk and was involved in the organization of the “Rencontres des Jeunes mathématiciennes et Informaticiennes” organized in Saclay on Oct 21st and 22nd 2019. About 20 female teenagers were welcomed for two days with talks and exercises to discover research.

10.3.3. Interventions

C. Marché presented an overview of the Why3 tool and its ecosystem at the Paris Open Source Summit in Saint-Denis, Dec. 11, 2019, as part of a workshop “ATELIER Inria : OCaml, Coq, Why 3: pour concevoir codes et infrastructures plus sûrs en C, Java, Javascript, Ada” <https://www.opensourcesummit.paris/conferences.html?date=1576022400>).

S. Boldo gave a talk at a high school in Sceaux on Feb 8th.

S. Boldo presented the floating-point arithmetic at IRIF to the members of the CODYS ANR on April 1st.

VERIDIS Project-Team

10.3. Popularization

10.3.1. Responsibilities at Inria or Beyond

- Marie Duflot-Kremer is the deputy vice-president for outreach activities in the supervisory council of SIF (*Société Informatique de France*) and a member of the scientific committee of *Fondation Blaise Pascal*.
- Christoph Weidenbach is a member of the advisory committee for the German computer science competitions for pupils. Together with his colleagues at Saarland university he organizes the “Computer Science Research Days” for the most talented high-school students out of the competition every year. In addition, he organizes the final training for the German Informatics Olympiad team and coaches the Saarland University student teams for the ICPC.

10.3.2. Articles and Contents

Marie Duflot-Kremer is a member of the ERASMUS+ project PIAF (cf. section 9.3) with colleagues from Liège, Luxembourg and Saarbrücken. This projects aims at studying how computational thinking can be introduced in primary education (with kids ranging from 5 to 12 years old). The goal is first to agree on a shared reference document on computational thinking competences, and then to produce and test educational scenarios and didactical resources. So far this year the reference document has been designed (and a paper has been submitted recently to a conference). The work on the scenarios and the resources is ongoing.

10.3.3. Education

Marie Duflot-Kremer intervenes in the training of teachers:

- for primary school, half a day for training teachers on how to add a bit of computer science in their teaching;
- for secondary school, she took part (43 hours in 2019) in the advanced training of high school teachers who deliver a newly introduced computer science course (*Numérique et Sciences Informatiques*), and one day training for math teachers about unplugged activities;
- half a day of training for members of INSPE (*Institut National Supérieur du Professorat et de l'Éducation*), the people in charge of training teachers.

10.3.4. Interventions

Marie Duflot-Kremer takes part every year in several events, including local ones such as *Fête de la Science* (for which she trains 3rd year students to handle the workshops and gave this year a talk/show on “informagics”), Pint of Science, a talk for the local phase of the *Tournoi Français des Jeunes Mathématiciennes et Mathématiciens* and the local NSI (*Numérique et Sciences Informatiques*) day for secondary school teachers.

She is also invited for workshops and talks in events outside of the Nancy region, like national or regional days of APMEP (*Association des Professeurs de Mathématiques de l'Enseignement Public*) in Dijon and Grenoble, the SETT conference in Namur or the video game creation competition for kids in Manosque.

10.3.5. Creation of Media or Tools for Science Outreach

As a member of the national group *Informatique Sans Ordinateur* (ISO), Marie Duflot-Kremer takes part in creating new popularization activities and publishing online documentation to help people reproduce unplugged computer science activities. She also proposed and supervised a project of master students in cognitive sciences who created an escape game presenting various computer science concepts to kids from 13 years old. The documentation is available on her webpage.⁰

⁰<https://members.loria.fr/MDuflot/>.

ACUMES Project-Team

9.3. Popularization

9.3.1. Articles and contents

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

9.3.2. Interventions

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

BONUS Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- N. Melab: Chargé de Mission of High Performance Computing and Simulation at Université de Lille, since 2010.

10.3.2. Internal action

- A. Liefoghe: 30 minutes de sciences, Inria Lille-Nord Europe, Lille, France, June 2019.
- O. Abdelkafi: Intervention auprès des inspecteurs d'académie, Inria Lille-Nord Europe, Lille, France, Mars 2019.

CAGE Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

Emmanuel Trélat is member of the Comité d'Honneur du Comité International des Jeux Mathématiques

9.3.2. Articles and contents

- The work [7] by Pierre Martinon has been popularized in the article “Athlétisme, affaire Dreyfus, itinéraire des éboueurs... Comment les maths irriguent notre monde” by Soline Roy, appeared in *Le Figaro*, 1/1/2019.
- Emmanuel Trélat has been interviewed, as director of the Fondation Sciences Mathématiques de Paris, in *Le Figaro*, 2/1/2019.

9.3.3. Interventions

- Emmanuel Trélat gave a cycle of lectures at “Sciences et Société”, Nancy
- Emmanuel Trélat gave a lecture at Bibliothèque Nationale de France (BNF) (<https://vimeo.com/313123529>)
- Emmanuel Trélat gave a general public lecture at “Mois de l’optimisation”, Limoges
- Emmanuel Trélat gave a general public lecture in Padua, Italy

CAGIRE Project-Team (section vide)

CARDAMOM Project-Team (section vide)

CELESTE Project-Team

8.3. Popularization

8.3.1. Interventions

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

COMMANDS Project-Team

9.3. Popularization

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

CQFD Project-Team

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.

DEFI Project-Team

8.3. Popularization

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

8.3.1. Internal or external Inria responsibilities

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

8.3.2. Internal action

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

DISCO Project-Team

7.3. Popularization

7.3.1. Interventions

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

ECUADOR Project-Team (section vide)

ELAN Project-Team

9.3. Popularization

9.3.1. Articles and contents

- Focus on our cloth simulator **Argus**, on a **video** prepared by A. Aftalion and published in February 2019 in <http://video.math.cnrs.fr>.

FACTAS Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

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

9.3.2. Articles and contents

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

9.3.3. Education

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

9.3.4. Interventions

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

9.3.5. Internal action

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

9.3.6. Creation of media or tools for science outreach

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

GAMMA Project-Team (section vide)

GEOSTAT Project-Team (section vide)

I4S Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- L. Mevel is member of CLHSCT committee in Rennes.
- L. Mevel is member of Comité de centre committee in Rennes.
- L. Mevel is Head of Science in 2nd of Inria Rennes Center.
- V. Le Cam is Head of SII LAB at IFSTTAR Nantes.
- J. Dumoulin is scientific Head SII LAB at IFSTTAR Nantes.

9.3.2. Articles and contents

9.3.2.1. Encyclopedia article on nonlinear system identification

In the second edition of Encyclopedia of Systems and Control, published by Springer in September 2019, the article on nonlinear system identification authored by Q. Zhang has been updated with the latest progresses on this topic.

Nonlinear mathematical models are essential tools in various engineering and scientific domains, where more and more data are recorded by electronic devices. How to build nonlinear mathematical models essentially based on experimental data is the topic of this entry. Due to the large extent of the topic, this entry provides only a rough overview of some well-known results, from gray-box to black-box system identification. DOI: https://doi.org/10.1007/978-1-4471-5102-9_104-2

9.3.3. Interventions

M. Doehler and Q. Zhang participated the outreach activity "J'peux pas, j'ai informatique" for school classes on April 2, 2019.

9.3.4. Creation of media or tools for science outreach

9.3.4.1. Showroom demonstrations

A damage localization mockup has been developed and installed in the showroom of Inria Rennes. It has been the support for a demonstration for the outreach activity "J'peux pas, j'ai informatique" for school classes on April 2, 2019, showing that computer science also can be related to physics and statistics. An ADT Carnot has been funded on that topic and will help the maturation of such project.

INOCS Project-Team

10.3. Popularization

- Luce Brotcorne, Journées scientifiques de l’Inria, Lyon, June 2019
- Frédéric Semet, Cité de l’IA - Intelligence Artificielle, MEDEF Lille Métropole, April 2019
- Maxime Ogier, Frédéric Semet, 4ème séminaire humAIn : IA, optimisation et retail - logistique, Polytech Lille, October 2019

10.3.1. Internal or external Inria responsibilities

- Frédéric Semet, 30 minutes de sciences, Inria Lille Nord Europe, April 2019

MATHERIALS Project-Team

9.4. Popularization

9.4.1. Internal or external Inria responsibilities

- A. Levitt is a member of the editorial board of Interstices, Inria's popularization website,
- C. Le Bris has presented the project-team at "Mon équipe en 180 secondes", on November 7, 2019.

9.4.2. Articles and contents

- V. Ehrlacher has been interviewed for the online magazine "DigiSchool"
- G. Robin has been interviewed for the online magazine "Usbek et Rica" following her "L'Oréal-UNESCO For Women in Science" prize

9.4.3. Internal actions

- C. Le Bris has organized a research day for the students at École des Ponts on November 6, 2019.
- V. Ehrlacher has participated to a meeting "Mathématiques, nom féminin?" organized at Ecole des Ponts with pupils from middle school.

MATHRISK Project-Team (section vide)

MCTAO Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

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

10.3.2. Interventions

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

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

MEMPHIS Project-Team (section vide)

MEPHYSTO Team

7.3. Popularization

7.3.1. Interventions

M. Simon participated in the programs “Chercheurs itinérants” and “Fête de la Science”, and gave several lectures aimed at high-school students.

MINGUS Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- F. Castella was member of the HCERES committee for the evaluation of the laboratory "Mathématiques et Informatique pour la Complexité et les Systèmes (MICS)", CentraleSupélec, Gif-sur-Yvette.
- P. Chartier was member of the hiring committee CR2-Inria (Bordeaux)
- P. Chartier was member of the hiring committee for the Inria promotion DR1-DR0.
- N. Crouseilles is member of the Inria Evaluation Committee (2019-2023).
- N. Crouseilles was member of the Inria hiring committee for the following Inria promotions: CRHC, DR2-DR1, DR1-DR0, DR0-DR02.
- N. Crouseilles is member of the hiring committee of the professor position, ENS Rennes.
- E. Faou was member of the CNU 26 until the summer 2019.
- E. Faou was member of the HCERES committee for the evaluation of the Mathematics Institute of Toulouse, University Paul Sabatier.
- E. Faou is AMIES correspondent (Agency for Interaction in Mathematics with Business and Society) for Inria Rennes Bretagne atlantique and IRMAR.

9.3.2. Interventions

- N. Crouseilles: participation to high school students internship at IRMAR laboratory (one week), June 2019.
- N. Crouseilles: interview by a first year student of University Rennes I (in order to inform the different ways to become Inria researcher).
- J. Massot: talk at the N. Mandela high school (terminal S classes) about the links between astronomy and mathematics, April 2019.
- J. Massot: participation to high school students internship at IRMAR laboratory (one week), June 2019.
- P. Navaro: participation to the Julia day, Lyon, France, January 2019.
- P. Navaro: participation to the Julia day, Nantes, France, June 2019.
- A. Rosello: participation to "MATHC2+", June 2019, ENS Rennes.
- L. Trémant: participation to "Maths en Jean", June 2019, University of Rennes.

9.3.3. Internal action

- J. Massot: writing of a Python library *ponio* (Python Objects for Numerical IntegratOr) <https://pypi.org/project/ponio/0.1/>
- P. Navaro: Python training at the IRMAR laboratory.
- P. Navaro: Julia training at the IRMAR laboratory.
- P. Navaro: R training at the Finist'R internal workshop, Roscoff, France, August 2019.
- P. Navaro, Python courses, within the exchange program between ENSAI and Hong Kong university.

MISTIS Project-Team

10.3. Popularization

10.3.1. Interventions

- Sophie Achard has been invited to Festival des Nouvelles Explorations <https://nouvelleexplorations.com/>.
- Julyan Arbel gave a presentation for ISN conference, March 2019.

MODAL Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Christophe Biernacki acts as a member of the working group calculation for Inria.

10.3.2. Interventions

- Pascal Germain participated in the school activity “Jouer à débattre” of the organization “L’arbre des connaissances”, as an expert in artificial intelligence (Lycée EIC de Tourcoing, February 7, 2019).
- Pascal Germain gave a vulgarization talk about neural networks and deep learning at the “Journée de l’Enseignement de l’Informatique et de l’Algorithmique” (Université de Lille, March 6, 2019).
- Christophe Biernacki participated in a round table “Deep Learning for PHM: Opportunities and Challenges”, The 10th Prognostics and System Health Management Conference Paris, France, May 2 - May 5, 2019.
- Christophe Biernacki gave a talk at the Forum Teratec in June 12nd 2019, Ecole Polytechnique, Palaiseau with Margot Correard (DiagRAMS) on Predictive maintenance solution without additional sensors [40].
- Cristian Preda was invited as a speaker at IoT Week on predictive maintenance, Méaulte, December 4, 2019.
- Cristian Preda was invited as a speaker at IT Tour by Le Monde Informatique on artificial intelligence, November 14, 2019.

MOKAPLAN Project-Team

7.3. Popularization

- I. Waldspurger, *Quand les films prennent des couleurs*, exposé au cycle SMAI & Musée des arts des métiers

NACHOS Project-Team (section vide)

NANO-D Team (section vide)

NECS Team

10.3. Popularization

10.3.1. Education

Maria Laura Delle Monache gave a talk to students of 8th grade (4ème) and 11th Grade (1ère) in the Cérémonie de remise de prix des Olympiades de Mathématiques, La mobilité et les véhicules autonomes, , Université Grenoble Alpes, France, May 2019.

POEMS Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

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

9.3.2. Education

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

9.3.3. Interventions

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

QUANTIC Project-Team

8.3. Popularization

8.3.1. Articles and contents

- Zaki Leghtas article in Usbek and Rica (<https://usbeketrica.com/article/aucun-etat-veut-rater-coche-ordinateur-quantique>)

8.3.2. Interventions

- Zaki Leghtas: Pint of Science on quantum computing

RANDOPT Project-Team

10.3. Popularization

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

10.3.1. Internal or external Inria responsibilities

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

RAPSODI Project-Team

10.3. Popularization

C. Calgario is in charge of the communication of the Laboratoire Paul Painlevé. She organized in 2019 various events to promote mathematics among young people:

- “Les mathématiciens de Lille fêtent les 80 ans du CNRS” (about 600 participants from high-school or Classes Préparatoires);
- a conference of E. Ghys for the presence of the Jury de l’Agrégation de Mathématiques in Lille (about 200 participants);
- les “Mathématiques itinérantes”, a series of conferences in high-schools.

E. Creusé gave two popularization talks at Université Polytechnique Hauts-de-France:

- “Le calcul scientifique pour la simulation et le contrôle des écoulements” for the first Rencontres Mathématiques Valenciennes in March;
- “Comment prévoir la population de poissons dans l’océan ou le déplacement d’oiseaux migrateurs dans le ciel ? Les maths nous répondent !” for the Semaine des Mathématiques 2019 in March.

M. Herda gave a talk at Inria Lille - Nord Europe for the internal scientific popularization event “30 minutes of Science” in January.

T. Rey was one of the four speakers of the event “Les mathématiciens de Lille fêtent les 80 ans du CNRS”.

REALOPT Project-Team

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

SEQUEL Project-Team

10.3. Popularization

10.3.1. Articles and contents

- Philippe Preux:
 - interviewed by *Le Monde* published in Sep 2019
 - interview on I-SITE project B4H, Inria

10.3.2. Education

- Odalric-Ambrym Maillard:
 - “Reinforcement Learning: successes and promises”, Executive Master, Ecole Polytechnique, Palaiseau, Nov 2019

10.3.3. Interventions

- Philippe Preux:
 - panel on “Promises and perils of AI”, CGIAR, Hyderabad, India, Oct 2019
 - panel on “AI and man”, Euratechnologies, Lille, Sep 2019
- Yannis Flet-Berliac and Philippe Preux: panel on “Who’s the pilot: man of software?”, FOOR, Le Fresnoy, Tourcoing, Nov 2019
- Yannis Flet-Berliac: “Princess of parallelograms” installation (with Thomas Depas), Le Fresnoy, Tourcoing, “Damien & The Love Guru” gallery in Brussels, Belgium, Sep–Dec 2019



Figure 1.

Princess of parallelograms is a collaborative project between Yannis Flet-Berliac and a student from Le Fresnoy National Studio of Contemporary Arts. They created an interactive sculpture made of a variety of computer vision attributes: a support for anthropomorphic projections, a set of generated virtual masks, or a new form of photographic trap. When visitors stand in front of the device’s webcam, a Deep Convolutional Conditional-GAN Auto-Encoder model applies a filter on their face with virtual flesh, hair, and facial expressions in real-time. In the meantime, an emotion detection model trained on the FER-2013 dataset is running in the background. The system allows the users to actively interact with the installation. So far, the project has been exposed at Le Fresnoy and in Brussels.

SIERRA Project-Team

10.3. Popularization

- Participation to "Fête de la Science" (with the Apprenti Illustrateur).

SIMSMART Project-Team

8.3. Popularization

8.3.1. Interventions

Patrick Héas has made a CS workshop for middle school students based on the ideas of 'Computer Science Unplugged'.

SPHINX Project-Team (section vide)

TAU Project-Team

10.3. Popularization

10.3.1. Articles and contents

- Michèle Sebag - *Il faut dissiper le malentendu sur “les prétentions infondées” de l’intelligence artificielle*, tribune du journal *Le Monde* du 12 août 2019.
- Paola Tubaro - BBC World service, *The ‘microworkers’ making your digital life possible*, 02/08/2019; Radio France Inter, *Travailleurs du clic, les soutiers du clavier*, 23/03/2019; Science & Vie, *La force de l’IA repose sur des travailleurs bien r’eels*, 24/10/2019; AFP/L’Express, *Les travailleurs du clic, petites mains invisibles de l’économie numérique*, 21/06/2019; CNRS Le Journal, *Ces microtravailleurs de l’ombre*, 24/05/2019; Le Monde, *Jobs du clic : la France compte plus de 250 000 micro-travailleurs*, 15/02/2019; L’Humanité Dimanche, *Travailleuse du clic, la double invisibilité*, 02/05/2019.

10.3.2. Interventions

- Guillaume Charpiat - *Génomes présents, histoires d’antan: Apprentissage profond pour la génétique des populations*, Inria Seminar Unithé ou Café with Flora Jay, Feb 2019.
- Marc Schoenauer - *Intelligence Artificielle Mythes et réalités*, Classe virtuelle de la Délégation Académique du Numérique Educatif, Feb. 2, 2019; *Intelligence Artificielle Mythes et réalités*, Médiathèque George Sand, Palaiseau, Feb. 9, 2019.
- Michèle Sebag - Journées Scientifiques Inria, Lyon 2019; Centre de Recherches Interdisciplinaires, Workshop on Artificial Intelligence and Women Empowerment (Oct. 2019); CRI, *Open AI: From big data to smart data* (Nov. 2019).
- Paola Tubaro - *Le Micro-Travail en France : derrière l’automatisation, de nouvelles précarités au travail ?* CFE-CGC Orange, Paris, 01/07/2019; *Le Micro-Travail en France*, Fondation Gabriel Péri, Paris, 26/06/2019; *Big data et société : vie privée, travail, inégalités*, Banque de France, 06/06/2019.

TOSCA Team

9.4. Popularization

9.4.1. Interventions

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

9.4.2. Creation of media or tools for science outreach

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

TRIPOP Project-Team (section vide)

TROPICAL Project-Team

10.4. Popularization

10.4.1. Articles and contents

- The collaboration developed by our team since 2014, with Préfecture de Police, on the performance evaluation of the new organization (PFAU, Plate forme d'appels d'urgences) to handle the calls to the emergency numbers 17-18-112 in the Paris area is described in the following article, published on the Inria web site, <https://www.inria.fr/centre/saclay/actualites/gestion-des-appels-d-urgence-une-geometrie-tropicale-pour-les-secours-parisiens>

VALSE Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

At Inria (Lille), R. Ushirobira is responsible for a monthly organized talks “30 minutes de sciences”.

9.3.2. Education

- R. Ushirobira, referent researcher for projects with middle-school students at Collège A. Daudet (Leers) within the framework of **Math en Jeans**

ABS Project-Team

7.3. Popularization

This part mainly concerns Dorian Mazauric.

7.3.1. Internal or external Inria responsibilities

- 2019-.... Head of *Commission Mastic* (Médiation et Animation des MATHématiques, des Sciences et Techniques Informatiques et des Communications), Inria Sophia Antipolis - Méditerranée.
- 2019-.... Coordinator of *Terra Numerica – vers une Cité du Numérique*.
- 2018-2019. Member of the *Conseil d'Administration de l'association les Petits Débrouillards*.
- 2018-2019. Coordinator of *projet de médiation Galéjade : Graphes et ALgorithmes : Ensemble de Jeux À Destination des Ecoliers...* (mais pas que).

7.3.2. Articles and contents

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

7.3.3. Education

- 26/10/2019. Animation d'ateliers de GALEJADE au weekend d'initiation à la culture numérique organisé par Class'Code MED. Graphes, algorithmes et magie des mathématiques et de l'informatique.
- 03/06/2019. Formation d'enseignants à Draguignan (ÉSPÉ de l'Académie de Nice). Graphes et algorithmes.
- 05/04/2019. Coordination d'ateliers Galejade animés par des enseignants et des parents d'élèves de l'école Pasteur du Cannet (suite à une formation Galejade quelques mois plus tôt). Ateliers Galejade.
- 22/03/2019. Formation d'enseignants de REP+ à l'ÉSPÉ de l'Académie de Nice (site de Stéphane Liégeard).
- 26/02/2019. Formation des étudiants de l'ÉSPÉ de l'Académie de Nice (site de Stéphane Liégeard) à l'animation d'activités informatiques et mathématiques. En collaboration avec l'Inspection Académique. Dans le cadre de la semaine des mathématiques. Graphes, algorithmes, jeux et magie des mathématiques.

7.3.4. Interventions

- National events:
 - 19-20/10/2019. Ateliers au village des sciences et de l'innovation au Palais des Congrès d'Antibes Juan-les-Pins. Voyage en train au pays des graphes, des algorithmes et de l'intelligence artificielle.
 - 06/10/2019. Atelier au village des sciences de Nice. Fête de la Science 2019. Le plus grand réseau de tri humain du monde.
 - 05/10/2019. Ateliers et conférence au village des sciences de Villeneuve-Loubet. Fête de la Science 2019. Algorithmes grandeur nature ? La magie des graphes et du binaire.
 - 4/10/2019. Conférence à la maison des associations de Nice (114 élèves de première et terminal). Fête de la Science 2019. Pas besoin de réfléchir, les ordinateurs calculent tellement vite ?
 - 03/10/2019. Deux conférences et ateliers au collège de la Vesubie-Jean Salines à Roquebilleire. Fête de la Science 2019. La magie des graphes et du binaire ? Algorithmes grandeur nature ? Pas besoin de réfléchir, les ordinateurs calculent tellement vite ? Théorie des graphes et algorithmique pour les réseaux.

- 26/03/2019. Fête des maths à l'ÉSPÉ de l'Académie de Nice (site de Stéphen Liégeard). Graphes et Algorithmes.
- 26/02/2019. Formation des étudiants de l'ÉSPÉ de l'Académie de Nice (site de Stéphen Liégeard) à l'animation d'activités informatiques et mathématiques. En collaboration avec l'Inspection Académique. Dans le cadre de la semaine des mathématiques. Graphes, algorithmes, jeux et magie des mathématiques.
- Public exhibitions (Futurs en Seine,...)
 - 24/05/2019. Présentation du projet Galéjade à l'AFINEF'Tour Sophia Antipolis (avec EducAzur).
 - 18/05/2019. Semaine du Numérique à Valbonne. Algorithmes pour toute la famille.
 - 27-28/04/2019. Atelier et conférences au festival Les Souffleurs d'Avenir. La magie des graphes, des algorithmes et du binaire.
- In educational institutions
 - 11/01/2019. Conférence au lycée Léonard de Vinci d'Antibes (deux classes de terminale). Pas besoin de réfléchir, les ordinateurs calculent tellement vite ? Théorie des graphes et algorithmique pour les réseaux ? Présentation du métier de chercheur.
 - 11/10/2019. Deux conférences au collège la Chênaie à Mouans Sartoux. La magie des graphes et du binaire ? Jeux combinatoires.
 - Année scolaire 2019/2020. Projets dans le cadre de MATH.en.JEANS au collège Jean Rostand de Nice. Avec Olivier Ginola.
 - 03/10/2019. Deux conférences et ateliers au collège de la Vesubie-Jean Salines à Roquebillière. Fête de la Science 2019. La magie des graphes et du binaire ? Algorithmes grandeur nature ? Pas besoin de réfléchir, les ordinateurs calculent tellement vite ? Théorie des graphes et algorithmique pour les réseaux.
 - 26/03/2019. Conférence au collège Jules Romains de Nice (classes de sixième). La magie des graphes, des algorithmes et du binaire.
 - 13/03/2019. Conférences et ateliers au collège Alphonse Daudet de Nice (deux classes de sixième et deux classes de cinquième). Magie mathématique et jeux combinatoires.
 - 05/04/2019. Coordination d'ateliers Galejade animés par des enseignants et des parents d'élèves de l'école Pasteur du Cannet (suite à une formation Galéjade quelques mois plus tôt). Ateliers Galejade.
- Welcoming of schoolchildren or the general public in an Inria center: MathC2+ internship, open days,...
 - Semaine du 16 décembre 2019. Accueil de 12 stagiaires de troisième à Inria Sophia Antipolis - Méditerranée.
 - 28/06/2019. Activité pour une quarantaine d'étudiants de classes préparatoires scientifiques de Sophia Antipolis. Algorithmes de tri.
 - 14/06/2019. Activité pour une quarantaine de lycéens des Alpes-Maritimes (accueillis à Inria Sophia Antipolis - Méditerranée durant 4 jours dans le cadre du stage MathC2+). Algorithmes grandeur nature.
 - 26/04/2019. Visite d'une dizaine de jeunes de la mission locale de Grasse à Inria Sophia Antipolis - Méditerranée. La magie des graphes, des algorithmes et du binaire.

7.3.5. Internal action

- Internal meetings such as Café des sciences
 - 29/04/2019. Café-in à Inria Sophia Antipolis - Méditerranée (séminaire interne pour tous les membres du centre de recherche : chercheurs, ingénieurs, administratifs...). Ateliers Galejade.

- Training of colleagues on new contents or media (activités débranchées, Poppy Ergo, Tensor-Flow,...)
- Training follow-up (Media Training, new media such as Poppy ergo, with SIF, etc.)
- Science outreach towards services (DPEI, STIP...)

7.3.6. Creation of media or tools for science outreach

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

AIRSEA Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

E.Kazantsev is a member of the Local Commission for Permanent Formation of Inria Grenoble - Rhône-Alpes.

9.3.2. Education

Ch. Kazantsev and E. Blayo are strongly involved in the creation and dissemination of pedagogic suitcases with mathematical activities designed for primary and secondary school (used by 10,000 – 12,000 pupils in 2018-2019). This is done in collaboration with the Rectorat de Grenoble.

E. Arnaud has animation of a "laboratoire des mathématiques", Pablo Neruda School, Saint Martin d'Hères

C. Kazantsev is a member of an IREM group for creation of scientific activities for professional development of secondary schools teachers.

C. Kazantsev is a member of an International Inter-IREM commission, which work on the multi-languages problem for children in the mathematical learning. Three meetings take place in Paris during the year, the first was on September 28.

C. Kazantsev participated to the collaboration program with the Ecole Normale Supérieure de Bamako, Mali. She spent ten days in Bamako to present the modelisation teaching and the purpose and activities of "La Grange des Maths" group. Bamako, ENSup, January, 13-25

C. Kazantsev participated to the "Colloque du cinquantenaire des IREM" with a presentation of the activities of "La Grange des Maths", Besançon, May, 9-11

9.3.3. Interventions

National events:

Ch. Kazantsev and E. Blayo are strongly involved in the creation of "La Grange des maths", a science popularization center that will be located in Varcès (south of Grenoble), which will offer a huge variety of mathematical hands-on exhibits. See <http://www.la-grange-des-maths.fr/>

Ch. Kazantsev participated at the "Culture and mathematical games Salon", Place St Sulpice, Paris, 23-26 May.

Ch. Kazantsev and E. Blayo participated in the "Fête de la Science", October, 12.

E. Arnaud. gave a presentation "(Se) tromper avec les chiffres" at the conference "Sciences et esprit critique, interroger les certitudes", Maison pour la sciences, Académie de Grenoble, 8 nov. 2018, Grenoble.

Public exhibitions

C.Kazantsev participated in the "Oriel des Maths" and in the "Forum des associations" with the presentation of the "La Grange des Maths" center and its activities. Varcès, March, 10.

C.Kazantsev participated at the "Remue-méninges festival" with the presentation of the "Maths à modeler" activities. Echirolles, April, 11.

C.Kazantsev participated to the "Sou des écoles", with the presentation of the "La Grange des Maths" activities. Varcès, June, 15.

C.Kazantsev participated at the "Raout de Domène" with the presentation of mathematical animations. Domene, September, 1.

In educational institutions

E. Blayo gave several outreach talks, in particular for middle school and high school students, and for more general audiences.

C.Kazantsev presented mathematical animations to pupils of the Jean Mermoz school in Poizat for about 80 children during 3 hours. Poizat, May, 29.

E. Arnaud gave a talk "(Se) tromper avec les chiffres" for pupils of secondary schools on the 8th of March 2019 and the 2nd of May 2019.

9.3.4. Creation of media or tools for science outreach

C.Kazantsev participated in the edition of the Teachers notebooks which explain and advise how to use the "La Grange Suitcases" (sets of mathematical games, problems and animations) destined for primary and secondary schools teachers as well as for the general public.

C.Kazantsev participated in the creation of mathematical activities that can be autonomously used by schoolchildren of primary and secondary schools and by the general public.

E. Arnaud, in charge of the UGA Idex project math@uga : implementation of a collaborative moodle platform <http://math.u-ga.fr> to share pedagogical resources within teachers and towards students.

E. Arnaud, participation to UGA Idex projects Caseine and data@ugat

ANGE Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- J. Salomon is a member of the "Commission Mentorat" in view of introducing a mentoring procedure in Inria-Paris,
- Y. Penel and C. Guichard belong to the "Groupe de travail Developpement Durable d'Inria Paris",
- J. Sainte-Marie took part of the committe MakeSenSe, that produced the report [14].

10.3.2. Education

- Congrès MATH.en.JEANS (CentraleSupélec, Modélisation de certains écoulements),
- E. Godlewski and J. Salomon dealt with secondary-school pupils in the framework of observation training course at LJLL and Inria, respectively,
- N. Aguillon was in the organizing committe of "Mathematic Park",
- N. Aguillon was in the organizing committe of "Cycle SMAI-Musée des arts et métiers",
- J. Salomon co-organized the stand "Logiciel Libre" at the "Salon Culture et Jeux mathématiques, 2019".

10.3.3. Interventions

- J. Sainte-Marie organized a round-table discussion about "Mathématiques et environnement" at the "Forum Emploi-Math 2019" (14/11).
- J. Sainte-Marie organized a debate "la sobriété numérique" at "cité des Sciences et de l'industrie" (15/11).

ARAMIS Project-Team

10.3. Popularization

10.3.1. Articles and contents

- Olivier Colliot gave an interview for the popular science magazine "La Recherche".
- Stéphane Epelbaum participated to multiple events dedicated to general audience outreach including: articles in journals (L'Express, AFP, Pourquoi docteur) Radio shows and podcasts (France inter) and TV shows (BFMTV).
- S. Durrleman participated to several events dedicated to general audience outreach including 2 articles in Le Figaro Santé, 2 keynote lectures at AI for Health conference, and Sommet des start-up Challenges, and an article in Médecine, Cerveau et Cognition.

10.3.2. Interventions

- N. Burgos gave a presentation for the Rendez-vous des Jeunes Mathématiciennes (Inria Paris).

ATHENA Project-Team

9.3. Popularization

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

9.3.1. Articles and contents

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

9.3.2. Interventions

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

BEAGLE Project-Team

9.3. Popularization

9.3.1. Articles and contents

- Hugues Berry participated in popularization activities with the edition of a book, written in French, on the relationships between sex (i.e. a biology concept) and Gender (a sociology approach) (Abou, B. and Berry, H., eds., (2019). *Sexe et Genre: de la Biologie a la Sociologie*. Editions Materiologiques, Paris, <https://materiologiques.com/sciences-philosophie-2275-9948/282-sexe-et-genre-de-la-biologie-a-la-sociologie.html>) In recent years, debates about sex and gender concepts between biology and the humanities and social sciences have become more intense, both for scientific reasons and for their societal impacts. Many biologists reject the questioning made by researchers in humanities and social sciences, of what biology considers fundamental, such as sex binarity or sex differences. Humanities and social scientists, on the other hand, often see biology as an academic and institutional source of naturalistic arguments used to oppose gender studies. They denounce biases in the interpretation of biologists as resulting, precisely, from gender-related biases. However, scientific exchanges at the interface between biology and the humanities and social sciences are undoubtedly necessary to overcome these antagonisms. The objective of this book is to implement a dialogue between the two fields, trying to overcome misunderstandings and misconceptions that have gone on for long. The book consists in 12 chapters stemming from biologists and sociologists, organized so as to try and foster dialogue between both communities. The target readership of the book is composed of non specialist readers (in particular non biologists nor sociologists) with a pre-existing interest on gender issues and their relations to biology. That is why the book was written in French and includes chapters intended to newcomers in the field (e.g. "The determination of sex in the human species and the rest of life" or "Why Gender?") to more advanced viewpoints ("What we learn from transidentities"). The objective of the publisher was to publish a reference book in French on the relations between sex and gender.
- "Le mouvement est devenu massif", an interview of Hugues Berry to the French journal L'Usine Nouvelle, Special Edition "A year of simulation", number 3608, April 25, 2019. <https://www.usinenouvelle.com/editorial/le-mouvement-est-devenu-massif.N834680>
- Eric Tannier is a co-author of "Quand les branches de l'arbre du vivant s'entremêlent", in *Pour la science*, 2019.

9.3.2. Education

- We have an ongoing collaboration with the Grenoble Rectorat. The aim is to use our computational models to train school professor to evolutionary concepts.

9.3.3. Interventions

- Audrey Denizot participated to activities in the mediation association DéMesures:
 - "Cosmograff" project. This project aims to present the solar system and its scales to the general public, in collaboration with the Musée des Confluences and the collective of street artists Superposition <https://bit.ly/35gtYpI>. Creation of audio guides in French and English for reuse at the 2019 EWASS international astronomy conference. <https://bit.ly/2rQIB5y>
 - "ArtScience" project, which aims to present the work of scientists to artists. This project culminated in an artistic exhibition at the ENS Lyon, from April to July 2019, in collaboration with the Taverne Gutenberg <https://bit.ly/2OldNR3>. Creation of a series of photographs presenting the links between science and art that emerged from this project <https://bit.ly/2XqjaCz>.
- Eric Tannier co-organized a citizen science event at the Théâtre Nouvelle Génération, Vaise, december 2019

- Eric Tannier organizes a workshop on environmental responsibility of researchers in January 2020
- Eric Tannier participated to a "pint of science" evening on the social and environmental responsibility of researchers, May 20, 2019

9.3.4. Internal action

- Eric Tannier and Carole Knibbe gave a lecture on environmental responsibility at the Inria Bio days, 2019
- Eric Tannier gave a training to PhD students on research ethics, 6h, Inria Grenoble Rhône-Alpes, January 2019

9.3.5. Creation of media or tools for science outreach

- We developed the GreenMice game, a small video-game designed to teach the basis of evolutionary biology to young children

BIGS Project-Team

10.3. Popularization

10.3.1. Interventions

- Anne Gégout-Petit participated in a round table on Artificial Intelligence and Health as part of "La fête de la science" 2019
- Anne Gégout-Petit participated at the "Brunch Données de santé et thermalisme" Janvier 2019
- Sandie Ferrigno: Advisor of a group of students (EEIGM), "La main à la Pâte" project, elementary schools, Nancy, January-June 2019
- Sandie Ferrigno: Advisor of a group of students (EEIGM), "Energies renouvelables", "La main à la Pâte" project, Institut médico-éducatif (IME), Commercy, October 2019-January 2020
- Sandie Ferrigno: Advisor of a group of students (EEIGM), "L'Astronomie" Cgénial project, Collège Paul Verlaine, Malzéville, November 2019-February 2020.
- Sandie Ferrigno: Advisor of a group of students (EEIGM), "Le Chocolat" Cgénial project, Collège de la Craffe, Nancy, November 2019-January 2020.
- Sophie Wantz-Mézières was part of the organization of a thematic and multidisciplinary week "Neurosciences, neuro-oncologie et numérique", for students from Telecom-Nancy and Faculté de Médecine de Nancy, May 2019.

BIOCORE Project-Team

10.3. Popularization

10.3.1. Articles and contents

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

10.3.2. Interventions

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

10.3.3. Internal action

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

BIOVISION Project-Team (section vide)

CAMIN Project-Team

9.3. Popularization

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

9.3.1. Education

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

9.3.2. Interventions

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

CAPSID Project-Team

9.3. Popularization

9.3.1. Interventions

- Dominique Mias-Lucquin was co-organizer of the "Pint of Science" event, 21-22 may, 2019 (24 countries involved ; <http://pintofscience.com>).

CARMEN Project-Team

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).

CASTOR Project-Team (section vide)

COFFEE Project-Team (section vide)

COMMEDIA Project-Team

10.3. Popularization

10.3.1. Interventions

- Céline Grandmont
 - Meeting with junior high school students, Collège Iqbal Masih, Saint-Denis. Interview: <https://www.youtube.com/watch?v=eJVz8tU&t=12s>

DRACULA Project-Team

7.3. Popularization

7.3.1. Articles and contents

- Laurent Pujo-Menjouet : Radio (France Inter), la tête au carré, <https://www.franceinter.fr/emissions/la-tete-au-carre/la-tete-au-carre-10-mai-2019>
- Laurent Pujo-Menjouet : Radio (Europe 1), Wendy Bouchard, <https://www.europe1.fr/emissions/on-fait-le-tour-de-la-question-avec-wendy-bouchard/wendy-bouchard-aujourd'hui-alchimie-equation-formule-magique-lamour-est-il-le-fruit-du-hasard-3905606>
- Laurent Pujo-Menjouet : Radio (Québec), <https://www.qub.radio/balado?id=6bb8beb9-9bb3-493f-abe3-aa7100f60a73&episode=3f6e7a5c-b11a-45ff-aa28-aa96015f517b&fbclid=IwAR2DUNgo-QvKh3z9oGesITJOnCa3f5GzTYWIIGrYSe5hrm7ydSgc1gW6Z5g>
- Laurent Pujo-Menjouet : Radio Canada, <https://ici.radio-canada.ca/premiere/emissions/region-zero-8/episodes/439145/audio-fil-du-vendredi-26-juillet-2019/10>
- Laurent Pujo-Menjouet : Presse écrite (L'Express), https://www.lexpress.fr/actualite/sciences/le-livre-qui-veut-modeliser-l-amour-par-les-mathematiques_2075520.html
- Laurent Pujo-Menjouet : Presse écrite (Le Figaro), <http://www.lefigaro.fr/sciences/le-bonheur-conjugal-c-est-simple-comme-une-equation-differentielle-20190506>
- Laurent Pujo-Menjouet : Presse écrite (Slate), <http://www.slate.fr/story/178140/maths-livre-jeu-amour-hasard-laurent-pujo-menjouet>
- Laurent Pujo-Menjouet : Presse écrite (Le Parisien), <http://www.leparisien.fr/societe/et-si-l-amour-n-etait-pas-le-fruit-du-hasard-10-06-2019-8090055.php>
- Laurent Pujo-Menjouet : Presse écrite (Montreal Gazette), <https://montrealgazette.com/news/local-news/equations-can-predict-the-success-of-relationships-mathematician-says>
- Laurent Pujo-Menjouet : Presse écrite (Society), <http://math.univ-lyon1.fr/~pujo/Society.pdf>
- Laurent Pujo-Menjouet : Presse écrite (Le matin dimanche, Suisse), <https://twitter.com/lpmenjouet/status/1130474006312890373/photo/1>
- Laurent Pujo-Menjouet : Presse écrite (Le journal de Montréal), <https://www.journaldemontreal.com/2019/07/30/et-si-lamour-se-maintenait-avec-des-equations-mathematiques>

7.3.2. Interventions

- Thomas Lepoutre: Visite de l'inria pour les stagiaires de 3e de l'ICJ (plusieurs fois dans l'année, une matinée en général).
- Thomas Lepoutre participation to MathaLyon intervention
- Laurent Pujo-Menjouet participation to “Math en Jeans”, Collège-Lycée Lacassagne, Lyon and Collège Gratte-Ciel, Villeurbanne
- Laurent Pujo-Menjouet participation to “Mathématiques étonnantes, SMF conférence”, Lyon
- Laurent Pujo-Menjouet participation to TEDx, Montrouge https://www.youtube.com/watch?v=xJ8wE_wmtUY

DYLISS Project-Team

10.3. Popularization

10.3.1. Interventions

- "J'peux pas j'ai informatique", Welcoming of high-school students to leverage stereotypes about computer sciences (110 participants), Apr. 2019 [O. Dameron, A. Siegel]
- "Elles codent Elles créent" Our Ph-D students have been involved in creative Python learning sessions for female students in two high-schools. [M. Louarn, M. Wéry, A. Siegel]
- Operation DECLIC (Dialogues Entre Chercheurs et Lycéens pour les Intéresser à la Construction des Savoirs). Lycée Descartes, Rennes. Nov 2019 [\[More details\]](#) [N. Théret, M. Conan, P. Vignet, O. Dennler]

10.3.2. Internal action

- Organization of the weekly seminar "Symbiose", involving teams DYLISS, GENSCALE and GENOUEST: [S. Blanquart]

10.3.3. Creation of media or tools for science outreach

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

EMPENN Project-Team

10.3. Popularization

10.3.1. Brain awareness week: “Semaine du Cerveau”

Empenn team took part in Brain awareness week 2019. Giulia Lioi, Claire Cury and Élise Bannier coordinated this event for Empenn/Neurinfo.

- Camille Maumet and Christian Barillot: Talk "" Le cerveau numérique: explorons-le!"". March 2019, Rennes, France.
- Quiz on brain imaging, March 2019, Rennes, France.
- Lab visits for students (3e and 1ere S) about MRI, functional MRI, EEG and neurofeedback, and image processing.
- Pierre-Yves Jonin: Talk "Entre connaissances et souvenirs : voyage en terre mnésique", March 2019, Rennes, France

10.3.2. Journée Science et Musique (JSM)

This event was initiated in 2010 by IRISA. The idea is to offer a scientific and festive immersion in the research and new technologies of the music of neurosciences and sounds to the general public. Free workshops, conferences, demonstrations and concerts are available to all throughout the day (for more detail see <https://jsm.irisa.fr/>). Claire Cury organized the event this year with Nancy Bertin, PANAMA team.

10.3.3. Sciences en Cour[t]s

This event is a festival of short movies, which offers doctoral students the opportunity to make short films about their thesis work. Raphael Truffet, Antoine Legouhy and Xavier Rolland won the high school award <https://www.youtube.com/watch?v=IKgqv-iCwak>.

10.3.4. "J'peux pas j'ai informatique"

"J'peux pas j'ai informatique" is an outreach program to welcome secondary school students for a day at Inria Rennes / IRISA and introduce them to the various facets of computer science. Camille Maumet and Pierre Maurel helped out to run the hands-on tutorials in which students could learn how a computer works without computers.

10.3.5. Other interventions

- Pierre-Yves Jonin: Series of 2 talks on neuropsychology, Universités du Temps Libre de Bretagne, Jan-Dec, Rennes, France.

10.3.6. Education

- L codent L créent - An outreach program to send PhD students to teach Python to middle school students in 8 sessions of 45 minutes. Camille Maumet is a co-organizer of the local version of this program, initiated in Lille. The program is currently supported by: Fondation Blaise Pascal, ED MathSTIC, Inria and Fondation Rennes 1.

EPIONE Project-Team

9.3. Popularization

9.3.1. Interventions

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

ERABLE Project-Team

9.3. Popularization

9.3.1. Interventions

Carol Moraga Quinteros participated in the contest “DESCRYPThèse” of the doctoral school E2M2 of the University of Lyon 1, winning a prize for one of the best presentations in April 2019. The title of the talk was “BrumiR: un algorithme *de novo* pour prédire les petits ARNs sans génome de référence”.

FLUMINANCE Project-Team

9.3. Popularization

9.3.1. Education

Jocelyne Erhel

- présidente du jury du rallye de mathématiques du CNED, since 2017.

9.3.2. Interventions

Jocelyne Erhel

- conference about spreading epidemics, "les amphis lycéens 2018-2019", March 2019.
- conference about spreading epidemics, "les amphis lycéens 2019-2020", December 2019. [46].

9.3.3. Creation of media or tools for science outreach

Jocelyne Erhel

- was scientific coordinator of the website Interstices (June 2012 - September 2019). She is now member of the editorial board, from October 2019.

GENSCALE Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

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

10.3.2. Interventions

- In educational institutions : Participation to operation "A la découverte de la recherche" in high schools [P. Peterlongo]
- Short Movie "Moi, mon chien et les autres: à la recherche des transcrits perdus", presented at Sciences en Courts, a local contest of popularization short movies made by PhD students (<http://sciences-en-courts.fr/>) [G. Siekaniec].

10.3.3. Internal action

- co-organizer of Sciences en cour[t]s event, Nicomaque association (<http://sciences-en-courts.fr/>) [W. Delage]

10.3.4. Creation of media or tools for science outreach

- Popularization article in Interstices. "Analyser le génome des océans" <https://interstices.info/analyser-les-genomes-des-oceans/> [P. Peterlongo]

IBIS Project-Team

8.3. Popularization

8.3.1. Interventions

Delphine Ropers participated in the colloquium FIGAS 2019 - Un rêve pour les filles et les garçons : la Science (Nov 2019). She was moderator of the session "Stéréotypes dans le numérique", and co-presented with Thierry Vieville "Mais comment éduquer les garçons à l'équité des genres au niveau informatique et numérique ?".

LEMON Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

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

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

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

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

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

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

9.3.2. Articles and contents

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

9.3.3. Education

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

9.3.4. Interventions

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

LIFEWARE Project-Team

10.3. Popularization

10.3.1. Articles and contents

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

10.3.2. Interventions

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

10.3.3. Creation of media or tools for science outreach

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

M3DISIM Project-Team

9.3. Popularization

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

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

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

MAGIQUE-3D Project-Team

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 Kovalevskaïa 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.

MAMBA Project-Team

9.3. Popularization

Diane Peurichard presented a talk in the framework of the "Remise des prix des Olympiades de mathématiques de Paris" (prize for national mathematics competition for young french students), Wednesday 29th, June 2019.

Diane Peurichard presented her work at the Inria scientific days in Lyon from June 5th- 7th, 2019.

At the occasion of scientific seminars, Pierre-Alexandre Bliman gave interviews to TV channels in Paraguay: Paraguai TV (March 28, 2019); and in Brazil: Globo Amapá (April 16, 2019), Balanço Geral AP (April 17th, 2019).

Marie Doumic gave a presentation of her research for middle-school pupils in internship (December 2019) and for highschool mathematics teachers (March 2019, in Lille), and did "speed-dating interviews" with high school students (February 12th, NGO "Sephora Berrebi").

Benoit Perthame gave public talks at Tamkang university (Taipei) and Nancy.

MATHNEURO Project-Team (section vide)

MIMESIS Team

10.3. Popularization

10.3.1. Articles and contents

Stephane Cotin wrote a chapter for the book entitled "Virtual Reality and Augmented Reality - Myths and Realities", which is an easy access book on the usages and developments of Virtual Reality and Augmented Reality for various domains. ISBN 978-1-78630-105-5.

10.3.2. Education

We are developing a training system dedicated to flexible endoscopy, used in university diplomas and masters programs for clinicians.

MNEMOSYNE Project-Team

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
- 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 Foundation 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

10.3. 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.

MORPHEME Project-Team

9.3. Popularization

9.3.1. Education

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

9.3.2. Interventions

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

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

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

MOSAIC Project-Team

8.3. Popularization

- Olivier Ali:
 - Participated to the Declic initiative: Discussions about of scientific research to high school students (3h, Lycée Jean Perrin, Lyon).
 - Invited conference about mechanical modeling of plant morphogenesis for the Université Ouverte in Lyon.
- Christophe Godin participated to the Declic initiative: Introductory talk and discussions about scientific research to high school students (3h, Lycée Frédéric Fays, Villeurbanne).

8.3.1. Interventions

- Christophe Godin gave:
 - a lecture at Inria Grenoble in the context of a training program for Informatique et Sciences du Numérique dedicated to Math and Physics highschool teachers. see [video](#) (1h30)
 - a visio-seminar to highschool students of the French Lycée in Laos (1h30)

NEUROSYS Project-Team (section vide)

NUMED Project-Team

6.3. Popularization

Emmanuel Grenier: "Mathematics and vaccines" (Université de Chambéry, for first year students).

6.3.1. Interventions

- H. Leman: Mentoring of two high school students
- D. Coulette: Scientific speed dating at "Musée des Confluences" (Lyon) for the "Fête de la Science" and 80th birthday of CNRS.

OPIS Project-Team (section vide)

PARIETAL Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Philippe Ciuciu has been member of the Inria Saclay scientific commission since 2016
- Denis Engemann has been managing the Twitter accounts of Parietal and the MNE software since 2017
- Alexandre Gramfort is in charge of the Paris-Saclay Center for Data Science
- Alexandre is a Member of the technical development committee of Inria Saclay since Dec 2018
- Bertrand Thirion, head of the Dataia Convergence Institute since January 1st, 2019
- Gaël Varoquaux was Member of the technical development committee of Inria Saclay until Dec 2018
- Gaël Varoquaux is member of the doctoral monitoring committee of Inria Saclay
- Gaël Varoquaux is member of the steering committee of the Paris-Saclay Center for Data Science
- Thomas Moreau: Co-organisation of the weekly Parietal team seminar bringing together the 45 members of the team for short presentations and a longer scientific presentation.
- Gaël Varoquaux is in charge of the scikit-learn consortium

10.3.2. Internal action

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

10.3.3. Creation of media or tools for science outreach

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

PLEIADE Project-Team

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



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

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.

REO Team

9.3. Popularization

9.3.1. Interventions

- N Golse (MD)
 - conference at Ecole des Mines, 14th October 2019, “Healthcare simulation”
- Irene Vignon-Clementel
 - High school forum on scientific career, 7th December, Lycee Corneille, La Celle St Cloud
 - Junior high school intervention ‘women in engineering’, 22nd February, Ville d’Avray
 - High school forum on scientific career, 19th January, Lycee Corneille, La Celle St Cloud
 - High school intervention, 15th January, Blanche de Castille, Le Chesnay

9.3.2. Internal action

Interviews of Irene Vignon-Clementel by journalist for Inria, 13th March and 25th Nov (see Inria website articles)

SERENA Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- + Géraldine Pichot is a member of the editorial committee of Interstices since November 2019.

SERPICO Project-Team (section vide)

SISTM Project-Team

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.

STEEP Project-Team

9.3. Popularization

9.3.1. Education

- Guillaume Mandil gave a half-day training course to a group of high school teachers (Lycée Mounier - CLEPT), July 2019.
- Peter Sturm gave a lecture on the environmental impact of ICT, during a training week of high school teachers of the Hauts-de-France Region, Lille, France, June 2019.

9.3.2. Conference-debate series and YouTube-channel “Understanding and Acting”

Following a dynamics of exponential growth in a finite world, humanity today faces a number of unprecedented and tightly interlinked challenges. With a growing number of environmental limits being largely and irreversibly exceeded (GHG concentrations in the atmosphere, biodiversity loss, soil erosion, freshwater shortages...), social, economic, geopolitical, humanitarian (etc.) consequences are becoming more urgent than ever to address, while the threat of an uncontrolled global collapse is now more than a prospect. It is urgent to initiate deep, structural, socioeconomic changes on virtually all aspects of our increasingly global societies (economics, industrial and agricultural production, consumption, education, all requiring major new local and global policies).

In view of these facts, the STEEP research team has initiated in 2016 a series of conferences-debates entitled “Understanding & Acting” (*Comprendre et Agir*) that examines these issues in order to help researchers and citizens to increase their awareness of the various issues at stake in order to initiate relevant individual and collective actions. From now on, the scientific community at large must realize that its duty also lies in helping citizens to better understand these issues. If the fraction of people in society whose privilege is to be paid to think about society’s problems do not seize this opportunity in the critical times we face, who will? Researchers must become more involved in the search of socioeconomic alternatives and help citizens to implement them. The interactions between researchers and citizens must also to be reinvented.

The presentations of this series of conferences typically last between 30 to 45 minutes; they are followed by a 45 minute public debate with the audience. The presentations are captured on video and then made directly accessible on the YouTube Channel “Comprendre et Agir”. At the end of 2019 the YouTube channel has about 5,400 subscribers and reached a total of about 425,000 viewings.

The conference-debates of 2019:

- Olivier Vidal, Université Grenoble Alpes: Resources and energy at the global scale in the context of the energy transition (*Matières premières et énergie à l'échelle mondiale dans le contexte de la transition énergétique*)
- Grégoire Chambaz, Lausanne: How real is the risk of a blackout? (*Le risque de blackout est-il réel ?*)
- Christophe Bonneuil, CNRS and École des hautes études en sciences sociales: When the whites intended to preserve the planet – A history of geo-power, 1865-1914 (*Quand les blancs voulurent conserver la planète. Une histoire du géopouvoir, 1865-1914*)
- Peter Sturm, STEEP: Environmental challenges and what is blocking acting on them (*Enjeux environnementaux et blocages à l'action*)
- Sophie Wahnich, CNRS and Institut interdisciplinaire d’anthropologie du contemporain: Why was King Louis XVI destituted in 1792? Social imaginaries from 1770 to 1792 (*Pourquoi le roi Louis XVI a-t-il été destitué en 1792 ? Imaginaires sociaux de 1770 à 1792*)
- Denis Dupré, STEEP: Collapses and finance (part I) – Is Finance a collapse pyromaniac? (*Effondrements et finance (partie I) – La Finance : pyromane des effondrements ?*)

Link to the web page of the series (program, abstracts, dates, complements etc.): <https://team.inria.fr/steep/les-conferences-debats-comprendre-et-agir/>

Link to the YouTube channel: https://www.youtube.com/channel/UCJbcXCcOA63M8VMysAbmt_A

9.3.3. Interventions

Guillaume Mandil participated in the preparation of an exposition at Cité des Sciences (Paris).

Team members gave the following general audience talks:

- Serge Fenet: Talk *Design et anthropocène : business as unusual – Une cartographie des risques par le prisme de la systémique* at the *Biennale Internationale du Design*, St-Étienne, France, May 2019.
- Serge Fenet: *Effondrements et anthropocène à la lumière de la dynamique des systèmes* at ESC Clermont-Ferrand, France, May 2019.
- Serge Fenet: *Technologies numériques et catastrophe environnementale : des liens complexes* at École Centrale de Lyon, for a general audience of master students.
- Pierre-Yves Longaretti: Seminar *Voluntary minimal consumption: stakes, obstacles, levers*. EcoInfo thematic school, November 2019.
- Pierre-Yves Longaretti: Seminar *Climate Change and strategic surprise*, Swiss military history and prospective center, December 2019.
- Pierre-Yves Longaretti: Round table discussion, *Will we all be farmers tomorrow? (Demain, tous paysans ?)*, Transition Towns biennial meeting, Grenoble, March 2019.
- Pierre-Yves Longaretti: Round table discussion, *Agriculture: global and local stakes (Agriculture : enjeux locaux et globaux)*, Forum citoyen alimentation & santé : La transition agro-alimentaire dans nos assiettes, Grenoble, November 2019.
- Emmanuel Prados: Institutional Conference *Veille techno à Polytech*, Grenoble, France, December 9-16, 2019. Organized by the MSTII Graduate School of Université Grenoble Alpes (Bernard Tourancheau).
- Emmanuel Prados: Institutional Conference organized by UniLaSalle (Hervé Leyrit), Beauvais, France, October 17, 2019.
- Emmanuel Prados: Conference at the back-to-school day of EPITA LYON (computer intelligence engineering school), Lyon, France, September 10, 2019. Organizer: Epita (Lamia Derrode).
- Emmanuel Prados: Conference on environmental transition for elected politicians of the Grésivaudan community of communes, open to the general public, Le Versoud, France, June 3rd, 2019. Organizer: Le Versoud City Hall (Claire Desmaris).
- Emmanuel Prados: General public conference, Crolles, France, June 22, 2019. Organizer: Association *Ecocitoyens*.
- Emmanuel Prados: Conference at the *CitizenCampus* entitled *Transition, démocratie, effondrement : la quadrature du cercle ?*, Grenoble, France, March 29, 2019. Organizer: Université Grenoble Alpes. <https://twitter.com/YannToma/status/1112094922499330049>
- Emmanuel Prados: Conference/debate *Quelles transitions dans un contexte d'effondrement ?*, Palais des Sports de Grenoble, France, March 13, 2019. Organizer: Ville de Grenoble. <http://villesentransition.grenoble.fr/events/quelles-transitions-dans-un-contexte-deffondrement/>
- Emmanuel Prados: Conference within the ISN cycle, *Le numérique face aux enjeux environnementaux et sociétaux*, Grenoble, France, April 10, 2019. Organizer: Inria. https://www.canal-u.tv/video/inria/le_numerique_face_aux_enjeux_environnementaux_et_societaux.50079
- Emmanuel Prados: Invited conference at the Loria colloquium, *Le numérique face à la catastrophe environnementale et sociétale*, Nancy, France, February 8, 2019. Organizer: Loria (<http://www.loria.fr/>). <https://www.loria.fr/fr/communication/colloquium-loria-exposes-et-videos/>

- Peter Sturm made a “Tour de France” by bicycle, to raise awareness on environmental issues. During this trip (May 15 to July 4), he visited all Inria centers and gave a talk on *Environmental challenges and what is blocking acting on them* in ten locations (Sophia Antipolis, Montpellier, Bordeaux, Rennes, Saclay, Rocquencourt, Paris, Nancy, Lyon, Grenoble). His visits were accompanied by various events, including seminars by local researchers, meetings with sustainable development commissions, social gatherings, etc. This initiative is described at <https://project.inria.fr/inriavelo/fr/>, see also the daily blog <https://www.polarsteps.com/PeterSturm3/1692663-inri-a-velo>.

TONUS Project-Team

10.3. Popularization

L. Navoret were allowed to participate in the "fete de la science"

XPOP Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Eric Moulines was member of the Evaluation Committee of Inria.

10.3.2. Creation of media or tools for science outreach

Marc Lavielle developed and maintains the learning platform [Statistics in Action](#). The purpose of this online learning platform is to show how statistics (and biostatistics) may be efficiently used in practice using R. It is specifically geared towards teaching statistical modelling concepts and applications for self-study. Indeed, most of the available teaching material tends to be quite "static" while statistical modelling is very much subject to "learning by doing".

Julie Josse (with Nicholas Tierney and Nathalie Vialaneix) developed and maintains the website [R-miss-tastic](#), A resource website on missing data.

AGORA Project-Team

10.3. Popularization

- Hervé Rivano, Atelier de recherche participative sur la mesure de la qualité de l'air, Ecole Urbaine de Lyon, France.
- Hervé Rivano, Développement et expérimentation du kit pédagogique *Ca va chauffer*, Ecole Jules Guesde, Villeurbanne, France.
- Hervé Rivano, Atelier autour du kit pédagogique *Ca va chauffer*, Super Demain, Métropole de Lyon.

10.3.1. Articles and contents

- Hervé Rivano is co-author of the blog post *Représenter l'intangible : les défis de la visualisation des données numériques environnementales. Montrer la pollution de l'air, le cas d'Air To Go*<https://medium.com/anthropocene2050/>
- Hervé Rivano is organizer and moderator of the podcast *Quelle ville intelligente est possible ?*, <https://www.sondekla.com/user/event/10011>
- Hervé Rivano is moderator of the podcast *Anthropocène et outils numériques*, <https://www.sondekla.com/user/event/9805>

10.3.2. Interventions

- Walid Bechkit was invited speaker about *3M'Air Mesures citoyennes Mobiles et Modélisation: qualité de l'air et îlots de chaleur à Lyon*, Colloque National Capteurs et Sciences Participatives, Paris, 2019.
- Oana Iova, Hervé Rivano and Fabrice Valois was involved in *Les rêveries lumineuses de Léonard*, <https://popsciences.universite-lyon.fr/agenda/les-reveries-lumineuses-de-leonard-fete-des-lumieres-2019/>, contribution de l'Ecole Urbaine de Lyon pour l'Université de Lyon, Fête des Lumières, 2019.

ALPINES Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Laura Grigori was vice-president of the Evaluation Commission of Inria, March 2018 - August 2019.

AVALON Project-Team

9.3. Popularization

Yves Caniou est co-fondateur et co-organisateur du Campus du Libre, un événement autour du Libre dont l'objectif est de partager différents aspects du libre et des communs, allant par exemple du logiciel libre (Linux, Firefox, *etc.*) aux espaces communs gérés collaborativement (Wikipedia, OpenStreetMap).

La 2e édition s'est déroulée la journée du samedi 23 novembre 2019.

9.3.1. Articles and contents

- Interviews in order to popularize
 - Laurent Lefèvre was interviewed for the following dissemination media:
 - * "En 2025, le numérique pourrait polluer autant que l'automobile", Le guide MAG2lyon du Développement Durable, December 2019
 - * Radio show "Le numérique et ses impacts", Radio Fréquence Paris Plurielle, December 20, 2019
 - * "L'insoutenable croissance du numérique", Alternatives Economiques, December 19, 2019
 - * "Le streaming en expansion, son empreinte écologique aussi", Agence France Presse Dossier, October 28, 2019 - Reprint in Le Soleil, La Presse and le Quotidien (Canada, 28/10/2019), L'écho (France, 28/10/2019), Sciences et Avenir (France, 28/10/2019), L'OBS (France, 28/10/2019), Ouest France (France, 28/10/2019), Le Progrès (France 18/11/2019), DerStandard (Germany, 1/11/2019, "Gratis und ohne Anmeldung: Videostreaming-Dienst Apple TV+ gestartet"), Tierwelt (Germany, 3/11/2019, "STREAMING UND CO2 - Serienjunkies als Klimasunder")
 - * "Mail, streaming, cloud... 20 gestes pour réduire sa pollution numérique", Business Insider France, October 29, 2019
 - * Radio show "Le téléphone sonne", France Inter, August 16, 2019
 - * "Guide Consommation Responsable - 3 gestes pour adopter une consommation numérique responsable", Institut National de la Consommation (INC), May 29, 2019
 - * "Stocker trop de photos et de mails crée aussi de la pollution", Journal de Saone et Loire, after the Festival sans Decoder of Dompierre les Ormes, May 21, 2019
 - * "Pollution numérique : comment réduire ses effets au quotidien ?", TV5 Monde, January 18, 2019

9.3.2. Education

- Yves Caniou is responsible of the LPI Certification at Université Claude Bernard Lyon 1. Further discussions are in progress concerning the proposed tools and redaction of courses/questions.
- Olivier Glück was in charge of one course in DIU Enseigner l'Informatique au Lycée, 50h, Formation continue, Université Lyon 1, France.

9.3.3. Panels

- Laurent Lefèvre was invited in the following panels in 2019 :
 - The "Empreinte écologique du numérique - Ecological footprint of digital world", Festival sans Decoder, Dompierre les Ormes, May 19, 2019
 - The "Energie numérique: ennemie ou alliée de l'écologie", Ateliers Sciences et Citoyens, Les rencontres du CNRS, Poitiers, April 2, 2019

COAST Project-Team (section vide)

COATI Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Jean-Claude Bermond, Frédéric Havet, Joanna Moulierac, and Nicolas Nisse are involved in Terra Numerica which brings together several popularization groups in order to create a museum of digital sciences.
- Frédéric Havet: Vice-president and member of the scientific committee of the association Institut Esope 21 (<https://lewebpedagogique.com/institutesope21/>).

10.3.2. Education

- Frédéric Havet, Joanna Moulierac and Nicolas Nisse (responsable) : Participation to Galejade project “Graphes et ALgorithmes : Ensemble de Jeux À Destination des Ecoliers... (mais pas que)” <https://galejade.inria.fr/>.
Design of pedagogical resources introducing graphs and algorithms to primary school students.
Training of primary school teachers, ESPE, Nice (March 22, 2019), Lyon (April 10th, 2019).
Intervention Lycée Carnot (Cannes, March 14, 2019), Lycée Sydney Bechet (Antibes, March 13, 2019), Lycée au Cannet (April 5, 2019)
- Frédéric Havet :
Training of secondary school teachers on graphs and algorithms. April 23, 2019.

10.3.3. Interventions

- Fête de la Science (Frédéric Havet, Nicolas Nisse, Ali Al Zoobi) :
Villeneuve-Loubet, October 5, 2019;
Colline du Château de Nice (stands Inria and I3S laboratory), October 4-6, 2019;
Collège Lycée Vinon-sur-Verdon, October 8-11, 2019;
Palais des Congrès de Juan-Les-Pins, October 19-20, 2019.
- Ali Al Zoobi :
Presentation of posters and combinatorial games during the "Fête des Sciences", Collège Emile Roux, June 5, 2019.
- David Coudert :
Presentation of the *Flinders Hamiltonian Cycle Problem Challenge* to a group of students from classe préparatoire MPSI, Lycée International de Valbonne, June 24, 2019.
- Frédéric Giroire :
Accueil de la mission locale de Grasse pour une session de médiation scientifique, 26 avril 2019.
- Frédéric Havet :
Animation of the exhibition “Animals of the Mediterranean sea” 6 classes, Ecole la Tauriac, Toulon, January 24, 2019.
Conferences “Birds of Var”, 6 classes, Ecole élémentaire de Rians, February 1, 2019.
Conference “Be a mathematician”, Ecole des Pallières, February 2, 2019.
Animation “Birds of Var”, 6 classes Ecole de la Tauriac and 2 classes Ecole de la Beaucaire, Toulon, Mars 07 2019.

3 conferences “Les pavages”, “La science du ballon de football”, “Mathémagie” for 10 classes in total. Collège Daudet Nice, April 15, 2019.

“La magie du binaire”. Conference for six classes in Manosque for the “Jeux fabriqués” day organised by DANE 04. April 2, 2019.

Training of primary school teachers.

- Frédéric Havet, Joanna Moulierac, and Nicolas Nisse participated to the supervision of twelve schoolchildren (3ème) in internship.
- Nicolas Nisse :
MathC2+, Sophia Antipolis, June 14, 2019
- Michel Syska :
Member of the organization of the code competition "*Retro Gaming pico-8*" (55 teams of 3 students), April, 2019.
Organization and supervision of the local site IUT for the national code competition "*La nuit de l'info*" (156 students = 3.7% of participants), December 5-6, 2019.

10.3.4. Internal action

- Frédéric Havet and Nicolas Nisse participated to the Cafe'In presenting Galejade. April 29, 2019.

CTRL-A Project-Team

10.3. Popularization

10.3.1. Interventions

- National events:

During the 2019 edition of Fête de la Science, Raphaël Bleuse co-hosted with Clément Mommessin (DataMove team) six one-hour popularization sessions. These sessions introduce the concept of infinity, and detail key milestones towards its construction in the modern mathematics for high-school students.

DANTE Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Isabelle Guérin Lassous has been the managing director of the Foundation Blaise Pascal until the end of June 2019. The objectives of the foundation are to promote mathematics and computer science and to attract young people to scientific fields like computer science and mathematics. The actions of the FBP focus on:

- a support to actors that promote mathematics and computer science via allocated funding based on call of proposals;
- a structuring of actors to increase the impacts of their actions, to coordinate the efforts and to share experiences;
- a development of innovative experiences via summer camps and clubs of mathematics and computer science.

10.3.2. Interventions

Isabelle Guérin Lassous participated to the project Science XX Elles organized by the association Femmes & Sciences, CNRS and Ecole Normale Supérieure de Lyon. A portrait has been realized and has been exhibited in front of the Musée des Confluences during La Fête de la Science in October 2019 (<http://www.femmesetsciences.fr/lascience-taillexelles/lyon/isabelle-guerin-lassous/>). She also participated to a speed meeting with families visiting the Musée des Confluences during which she has promoting her research activity.

Isabelle Guérin Lassous spent one day in high school (lycée St Just in Lyon) to promote computer science and to present female computer scientists in front of terminal classes.

Isabelle Guérin Lassous participated to the Challenge Innovatech organized by the association Elles Bougent. She was a member of the selection committee who selected a scientific project designed by a group of young girls (in high school).

DATAMOVE Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Commission des emplois scientifiques du centre GRA

10.3.2. Interventions

- Fête de la Science, Grenoble
- CS unplugged for schoolchildren, Inria RA

DELYS Project-Team

8.3. Popularization

8.3.1. Articles and contents

- Swan Dubois and Franck Petit coauthored the book entitled “*Introduction to Distributed Self-Stabilizing Algorithms*” [35], that aims at being a comprehensive and pedagogical introduction to the concept of *self-stabilization*.
- Marc Shapiro co-authored two entries for the Encyclopedia of Big Data Technologies (published by Springer, 2019):
 - “Database Consistency Models” [38].
 - “Conflict-Free Replicated Data Types CRDTs” [37].
- Marc Shapiro contributed the post “Living at the edge, safely” to the LightKone blog [6].

DIANA Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

Damien Saucez is part of the MASTIC (<https://project.inria.fr/mastic>) group at Inria. MASTIC groups all the activities for scientific dissemination for Inria Sophia Antipolis.

9.3.2. Articles and contents

Walid Dabbous wrote an Interstices article [37] on the occasion of the 50th anniversary of the Internet. The article recalls the story of the first France-ARPAnet connection that was established by Christian Huitema's team in July 1988.

DIONYSOS Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Yann Busnel is member of Development Council of Computer Sciences Master at Université de Nantes (2017–*).

10.3.2. Interventions

G. Rubino makes regular presentations to high school students about the research work in general, and specific technical topics in particular. Current talks:

- Randomness as a tool
- Internet as a research problem
- Great challenges in maths: the Riemann Hypothesis
- Great challenges in math/computer science: the “P versus NP” problem

DIVERSE Project-Team

9.3. Popularization

9.3.1. Interventions

- STAMP - Orange Test and Dev Day, Grenoble, France - Nov 2019
- STAMP - Eastern Paris Dev Meetup, Lunatech, Chessy, France - Jul 2019
- STAMP Breakout Session & Talks - OW2con'19, Orange Gardens, Paris Châtillon - Jun 2019
- STAMP Workshop for EC-DGIT (European Commission DGIT) - Brussels - May 2019
- STAMP - Devox Paris - Apr 2019
- STAMP & CI testing automation - BreizhCamp 2019 - Mar 2019
- STAMP Talk and Workshop - Station-F, Paris - Feb 2019
- Tech talk at Alten - Rennes - Dec 2019
- Tech talk at Harmonic - Cesson-Sévigné - Oct 2019
- Tech talk at Veonum - Rennes - Sep 2019
- Tech talk at Nokia - Rennes - Jun 2019
- Tech talk at OrangeLabs : Hands-on Workshop - Cesson-Sévigné - May 2019
- Tech talk at Solocal and Kereval - Rennes - Mar 2019
- Tech talk at FaberNovel - Test amplification - Mar 2019
- Sciences de l'Ingénieur au féminin - Lycée Sévigné, Cesson-Sévigné - Nov 2019
- *J'peux pas j'ai informatique* - Inria, Rennes - Apr 2019
- *Petit-déjeunr des métiers* - Lycée Sévigné, Cesson-Sévigné - Mar 2019 (je ne suis pas sure de la date)
- Devox 2019 - Les APIs hypermedia expliquées simplement (17-19 avril 2019) ("While web pages are full of hyperlinks and hypermedia, web APIs are not. However, augmenting web APIs with links is at the core of the REST architectural style, but only 5% of APIs actually do it. That's right, only 5%, despite most people saying that they provide RESTful APIs. In this talk, we discuss what an hypermedia-powered API looks like, what problems of distributed systems integration and composition it can solve and what it would change in frontend code to have such APIs.
- Embedded Linux conference Europe [54] – Given a configuration, can humans know in advance the size, the compilation time, or the boot time of a Linux kernel? Owing to the huge complexity of Linux (there are more than 15000 options with hard constraints and subtle interactions), machines should rather assist contributors and integrators in mastering the configuration space of the kernel. In this talk, we introduce TuxML an OSS tool based on Docker/Python to massively gather data about thousands of kernel configurations. Mathieu will describe how 200K+ configurations have been automatically built and how machine learning can exploit this information to predict properties of unseen Linux configurations, with different use cases (identification of influential/buggy options, finding of small kernels, etc.) The vision is that a continuous understanding of the configuration space is undoubtedly beneficial for the Linux community, yet several technical challenges remain in terms of infrastructure and automation.
- API Days - Backend is the new frontend (9-11 décembre 2019)

DYOGENE Project-Team (section vide)

EASE Project-Team (section vide)

EVA Project-Team

10.3. Popularization

10.3.1. Dans les Medias

- **Thomas Watteyne**
 - Falco : Des capteurs pour connecter ports et plaisanciers. BoatIndustry, 15 November 2019
 - Agde : le port connecté, une réalité. Midi Libre, 31 October 2019.
 - Gestion portuaire : les ports de Lorient et Cap d'Agde entrent dans l'ère du port connecté, Actu Maritime, 1 August 2019.
 - Port connecté : un nouveau cap franchi grâce à Falco (an interview of our startup's CEO Elsa Nicol), inria.fr, 18 February 2019.

10.3.2. Creation of media or tools for science outreach

A video concerning the research on protocols for VANETs by Mohamed Hadded has been made by Inria.

FOCUS Project-Team

10.3. Popularization

Michael Lodi and Simone Martini have carried out extended work of scientific popularization, including the following.

- They are members of the technical committee of Olimpiadi del Problem Solving (at Italian Ministry of Education), <http://www.olimpiadiproblemsolving.com>; this involves preparation of material and supervision and jury during the finals.
- Simone Martini has given the following talks, among others:
 - De la création d’une “théorie mathématique du calcul” à la “pensée informatique”. Quatrième journée académique sur l’enseignement de l’informatique, Marseille (avril 2019)
 - To code or not to code: the school curriculum facing the digital revolution. Collegium—Lyon Institute for Advanced Studies (Juin 2019)
 - Logic and computing in Italy at the birth of the Italian Computer Science, Roma Tre, September 2019

FUN Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- Nathalie Mitton is the referent researcher for the creation of the MATH Laboratory in Nord

9.3.2. Articles and contents

- Nathalie Mitton published a paper in Techniques de l'Ingénieur.
- Valeria Loscri released an interview "Innovation Valeria Loscri, la lumière des LED contre le wifi électromagnétique" for the newspaper La Voix du Nord

GANG Project-Team (section vide)

HIEPACS Project-Team

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.

INDES Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

Tamara Rezk was member of the editorial board of Interstices (<https://interstices.info/>) and Blog Binaire Le Monde (<https://www.lemonde.fr/blog/binaire/>).

9.3.2. Articles and contents

- Nataliia Bielova has been interviewed by the Usine Digitale on 22 November 2019, title "Fuite massive de données à AccorHotels : ce que risque l'entreprise", <https://www.usine-digitale.fr/article/fuite-massive-de-donnees-a-accorhotels-que-risque-l-entreprise.N906279>.
- Nataliia Bielova has been interviewed by the L'OBS on 29 November 2019, title "Entre réalité augmentée et reconnaissance faciale, on a parcouru le supermarché de demain", <https://www.nouvelobs.com/economie/20191129.OBS21725/entre-realite-augmentee-et-reconnaissance-faciale-on-a-parcouru-le-supermarche-de-demain.html>.
- Nataliia Bielova and Tamara Rezk have contributed to the Inria white book on CyberSecurity, published in January 2019: <https://hal.inria.fr/hal-01993308>.
- The browser extension "Cookie Glasses" developed by Celestin Matte and Nataliia Bielova has been extensively discussed on the general public media due to a complaint made by NOYB to the CNIL on the GDPR and ePrivacy violations of several e-commerce websites: <https://noyb.eu/say-no-to-cookies-yet-see-your-privacy-crumble/>.

9.3.3. Education

- Nataliia Bielova: *Moderation and Animation of the MOOC Protection de la vie privée dans le monde numérique*, 05/2019-06/2019.

9.3.4. Interventions

- Nataliia Bielova made an intervention with high school students during Semaine De La Science with Cinesciences at the cinémathèque of Nice on 4 October 2019.
- Celestin Matte presented his work on "Tracage Wifi et Bluetooth" at the public event called "Pas Sage en Seine" in June 2019, <https://programme.passageenseine.fr/>.
- Nataliia Bielova made a presentation with BSc and MSc students during the ACM-W Ukrainian Chapter celebration on December 5, 2019, <https://women.acm.org/2019-2020-celebrations/>.
- Imane Fouad presented her work on "detection of third-party trackers" at Inria PhD Seminars in December 2019.

KERDATA Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

Alexandru Costan

- In charge of internships at the Computer Science Department of INSA Rennes.
- In charge of the organization of the IRISA D1 Department Seminars.

MARACAS Team (section vide)

MIMOVE Project-Team (section vide)

Myriads Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- Martin Quinson is on the scientific board of the Blaise Pascal foundation, boosting the scientific outreach in the domains of Maths and Computer Science.

9.3.2. Education

- Guillaume Pierre shared his experience as the coordinator of a H2020 Maria Skłodowska Curie Action project with CCRRDT, the Brittany Region's consultative committee for research and technological development. January 14th 2019.
- "L codent L créent" is an outreach program to send PhD students to teach Python to middle school students in 8 sessions of 45 minutes. Tassadit Bouadi (Lacodam), Camille Maumet (Empenn) and Anne-Cécile Orgerie (Myriads) are coordinating the local version of this program, initiated in Lille. The first session in Rennes occurred in April 2019, and a new session has started for 2019-2020. The program is currently supported by: Fondation Blaise Pascal, ED MathSTIC, Université Rennes 1 and Fondation Rennes 1.
- "J'peux pas, j'ai informatique" is an outreach program to deconstruct IT stereotypes. Organized over one day, this program welcomes 110 college students (5ème) each year and is coordinated by Anne-Cécile Orgerie. The next event is planned in April 2020.
- Martin Quinson participated to the DIU EIL (Enseigner l'Informatique au Lycée), training existing maths and engineering teachers so that they can teach Informatics in their colleges.
- Martin Quinson is in charge of a M2 lecture on scientific vulgarization at ENS Rennes. The students are asked to come up with new activities (or improve existing ones) on their research field.
- Martin Quinson gave a doctoral teaching on December 13 on scientific outreach targeting either schools or science forums at IRISA laboratory.

9.3.3. Internal action

- Anne-Cécile Orgerie, Martin Quinson and Matthieu Simonin: organize experimenter meetings for the large-scale systems department of IRISA: <https://xug.gitlabpages.inria.fr/meetings/>

9.3.4. Creation of media or tools for science outreach

- Martin Quinson is working on a set of new outreach activities with his Master 2 class at ENS Rennes since several years. The most promising activities are then tested on field in schools during another lecture at ENS Rennes, at Licence 3 level. All available resources are freely available at <https://github.com/InfoSansOrdi/pedago-rennes/>.

NEO Project-Team

10.3. Popularization

10.3.1. Interventions

- Sara Alouf presented the Researcher profession at the *Forum des Métiers*, Collège Emile Roux, Le Cannet, on 15 March 2019, to a total of 62 students in 6 groups, aging 12-14 years.

POLARIS Project-Team

10.3. Popularization

Patrick Loiseau wrote with Oana Goga an article “Publicité en Ligne : reprenons la main !”, that was co-published co-published by the blog Binaire (Le Monde) and The Conversation France, June 3, 2019.

10.3.1. Internal or external Inria responsibilities

- B. Gaujal is a member of the CR2 hiring committee in Grenoble.
- J.-M. Vincent is in charge of the relation Rectorat / Inria-Grenoble for the organization of scientific events (Festival of Science, Schools Visits, organization of Conference Cycles on research in CS and Applied Mathematics for teachers in Colleges)
- J.-M. Vincent is
 - Member of the national coordination of the Diplôme Inter-Universitaire “Enseigner l’Informatique au Lycée” (50 universities involved).
 - Local Head of DIU EIL in Academy of Grenoble
 - Member of the organization of the teaching sessions for all the teachers in CS coming from abroad
 - Member of the national Commission Inter-Irem in Informatics
 - Member of the first national jury for the competitive recruitment of teachers in computer science (Capes NSI 2019-20)

10.3.2. Articles and contents

Arnaud Legrand participated in the writing of a book [39] on Reproducible Research, which aims at helping students and engineers and researchers to find efficient and accessible ways leading them to improve their reproducible research practices.

10.3.3. Education

- V. Danjean is the head of the DU ISN formation (Diplôme Universitaire Informatique et Sciences du Numérique)
- V. Danjean co-organized the new DIU EIL formation (Diplôme Inter-Universitaire Enseigner l’Informatique au Lycée). He is involved both at the national level (for the coordination and the definition of the content of this formation provided in more than 30 universities in France), and at the local level (coordination of the local teams, courses scheduling, conference organization, ...)

10.3.4. Interventions

- V. Danjean participated in “La Fête de la Science”, animating several sessions of “unplugged computer science”
- P. Loiseau co-organized and animated a workshop “IA, éthique et société”, Forum Ecobiz Grenoble, October 2019.
- P. Loiseau participated in a debate “Ethique et numérique : quels enjeux sociétaux ?”. Festival Transfo, Grenoble, France, January 2019.

RESIST Team

10.3. Popularization

10.3.1. Articles and contents

Abdelkader Lahmadi and Frédéric Beck provided a podcast about the security of connected devices available at Interstices (<https://interstices.info/des-outils-pour-evaluer-la-securite-des-objets-connectes/>)

Thibault Cholez gave an interview for the *factuel* (newsletter of the University of Lorraine) to present the H2020 project CONCORDIA (<https://factuel.univ-lorraine.fr/node/11394>). He also wrote a blog entry entitled "Assessing blockchains' network infrastructure: why it matters for cybersecurity" for the CONCORDIA website (<https://www.concordia-h2020.eu/blog-post/assessing-blockchains-network-infrastructure-why-it-matters-for-cybersecurity/>).

Isabelle Chrisment contributed to the ARCEP Report entitled "The State of the Internet in France", June 2019, page 19, https://www.arcep.fr/uploads/tx_gspublication/rapport-etat-internet-2019-270619.pdf (French version) or https://en.arcep.fr/uploads/tx_gspublication/report-state-internet-2019-eng-270619.pdf (English version).

Jérôme François has been interviewed by France 3 Lorraine to present how cyberthreat can be predicted in the context of ThreatPredict (section 9.4.3.1). He also gave an introduction to network security in the context of FAN (<https://fan.inria.fr/>)

10.3.2. Education

Isabelle Chrisment participated in the SNT (Sciences Numériques et Technologie) MOOC, more especially in the design of a video entitled "Internet IP, a universal protocol?" in the module "Internet and Networks. The SNT MOOC is a FUN Project dedicated to the teachers in high schools to help them within the context of the high school reform.

10.3.3. Internal action

Jérôme François presented ThreatPredict (section 9.4.3.1) at the "Café des Sciences" in Inria Rocquencourt Center.

RMOD Project-Team

10.3. Popularization

10.3.1. Articles and contents

- Olivier Auverlot, Stéphane Ducasse, Luc Fabresse. *TinyBlog: Créer votre première application web avec Pharo* [15].
- Olivier Auverlot, Stéphane Ducasse, Luc Fabresse. *TinyBlog: Develop your First Web App with Pharo* [16].
- Stéphane Ducasse. *Pharo with Style* [17].

10.3.2. Education

- A MOOC for Pharo is online (Stéphane Ducasse).
<http://mooc.pharo.org>
- The Pharo Consortium was part of GSOC (Google Summer of Code) again in 2019. Oleksandr Zaitsev was co-organizer. RMoD mentored some of the Students.

10.3.3. Interventions

- Multiple public Pharo Sprints in Lille.
<https://association.pharo.org/events>
- RMOD co-organized and participated at ESUG 2019.
<http://www.esug.org/wiki/pier/Conferences/2019>

10.3.4. Internal action

- 30 Minutes de Sciences, Inria Lille - Nord Europe. 25 octobre 2019: *Hard bugs and how to track them with Unanticipated Debugging*, Steven Costiou.

ROMA Project-Team (section vide)

SOCRATE Project-Team

8.3. Popularization

8.3.1. Education

Florent de Dinechin gave a lecture in Grenoble for high-school teachers, in the framework of the ISN convention between Académie de Grenoble and Inria.

SPIRALS Project-Team

10.3. Popularization

10.3.1. Interventions

Pierre Laperdrix gave a talk in May at the RuhrSec IT security conference organized by the Ruhr University Bochum. The aim of the conference is to popularize different topics to an audience of non-experts so that they are familiar with the latest trends in computer security.

STACK Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- S. Ibrahim, Online publication <http://emergences.inria.fr/2019/newsletter-n59/159-Kerstream>: *Un intergiciel post-Hadoop pour gérer les flux de données.*

10.3.2. Articles and contents

As a follow-up of the aLIFE workshop (Nantes, Jan. 2018), organized in partnership with colleagues from IMT Atlantique and gathering both academic and industrial partners, H el ene Coullon and Jacques Noy e have participated to a booklet publication [29] summarizing the workshop discussions and proposing a shared vision of what software research could bring to Industry 4.0 initiatives.

STORM Project-Team

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

10.3. 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”).

TRIBE Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

1. **Aline C. Viana** was the President of the Scientific Commission at Inria Saclay, responsible for the selection of candidates for the CORDI-S, Post-Doc and Delegation campaigns.
2. **Aline C. Viana** is the coordinator of the ANR MITIK project to start Feb 2020 and was the international coordinator of the EMBRACE associated team of Inria.
3. Together with the members of the team, **Aline C. Viana** has submitted the short proposal of the new team as well as has presented it at the BCEP and CEP, for validation. TRiBE was officially created in Jun 2019.
4. **Aline C. Viana** is a member of BCEP, evaluating Inria teams in process of creation, discussing main issues related to different scientific commissions, discussing changes in the institution.
5. **Aline C. Viana** is co-Coordinator of the mentoring program for researchers at Inria Saclay (<https://project.inria.fr/mentoratscl/>). The program goal is the coach of junior researchers by more experienced ones in order to provide them with a complementary perspective for their career, independently of any hierarchical link.

WHISPER Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Julia Lawall: Chair of the Commission des Emplois Scientifiques, with Mazyar Mirrahimi.

10.3.2. Education

- Julia Lawall: Coccinelle: Practical program transformation for the Linux kernel. Ecole de Jeunes Chercheurs en Programmation.

10.3.3. Interventions

- Julia Lawall: Systèmes d'exploitation. Girls Can Code.

WIDE Project-Team

9.3. Popularization

Algorithm Watch wrote an article about a recent work involving Erwan Le Merrer, concernant remote transparency. The article is called "Explainable AI doesn't work for online services – now there's proof". Available at <https://algorithmwatch.org/en/story/explainable-ai-doesnt-work-for-online-services-now-theres-proof/>.

ALICE Team

10.3. Popularization

Dmitry Sokolov continues to develop TinyRenderer⁰ computer graphics lectures. More than 1M views in 2019, 14k GitHub stars in total.

⁰<https://github.com/ssloy/tinyrenderer/wiki>

ALMANACH Project-Team

10.3. Popularization

10.3.1. Articles and contents

- BS was interviewed by David Larousserie, from the French daily newspaper Le Monde, about the release of CamemBERT, in October and December 2019. This resulted in an article in the newspaper, accessible [here](#) (subscription required).
- LR was interviewed the radio France Culture about the release of CamemBERT, in October 2019. The interview was aired on the radio.
- AC has taken in charge the content management of the Time Us project's research blog since April 2019, which aims at presenting sources, good practices and results used and elaborated by all the project members.

10.3.2. Interventions

- Welcoming of schoolchildren at Inria Paris (half a day with ALMANACH members within an one-week-long stay; December 2019)
- Clémentine Fourrier co-organised the Young Women Mathematician Days (Inria Paris edition): 2 days of talks, mathematical animations and speed meetings with women scientists or engineers at the Inria Paris center, for high school girls
- Clémentine Fourrier was a speaker at the ESPCI highschool students summer school, to introduce the different jobs of computer science engineer to high school girls, in research and the industry, and animated an introductory software development workshop in Python over an afternoon
- Alix Chagué was the speaker for 6th workshop organised by the Alumni Association of the École nationale des chartes's Masters (ADEMEC), to introduce the software Transkribus and guidelines for text extraction (March 2019).

10.3.3. Internal action

- BS presented the January 2019 edition of the "demi-heure de science" at Inria Paris, whose target audience is researchers from all Inria Paris teams
- BS presented the June 2019 edition of Inria Paris' "my team in 180 seconds" event, whose target audience is both researchers and non-scientific Inria personnel
- CF presented softwares and good practices (Docker, GitLab and version control, Diverting Gitlab to create a small website) at the Inria developer meetup, whose target audience is both researchers and engineers.

Auctus Team

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.

AVIZ Project-Team

10.3. Popularization

10.3.1. Articles and contents

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

10.3.2. Interventions

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

10.3.3. Creation of media or tools for science outreach

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

CEDAR Project-Team

9.3. Popularization

9.3.1. Articles and contents

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

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

9.3.2. Interventions

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

CHORALE Team

9.3. Popularization

9.3.1. Articles and contents

Philippe Martinet and Renato Martins have been interviewed in December 2019 by France 3 Côte d'Azur in order to popularize the work of CHORALE in the field of Connected Autonomous Vehicles. Real demonstrations of autonomous driving have been done at Inria Sophia Antipolis, and another one at CASA experimental site. An FR3 magazine will be launched in february 2020.

9.3.2. Interventions

- Patrick Rives has presented the topic of Autonomous vehicle during the day "Formation IA pour les professeurs des lycées", Sophia Antipolis, 14/11/2019

CHROMA Project-Team

10.3. Popularization

A. Spalanzani made a cross interview on women in robotics (<https://www.inria.fr/centre/nancy/actualites/une-carriere-en-robotique-regards-croises-sur-des-parcours-d-exception>)

10.3.1. Articles and contents

O. Simonin gave an interview to Le Monde Informatique - IT Tour à Lyon "*La voiture autonome : mythe ou réalité ?*" (<https://www.lemondeinformatique.fr/actualites/lire-interview-video-olivier-simonin-professeur-inria-insa-lyonetgrenoble-77605.html>) (26/09/19)

10.3.2. Education

A. Spalanzani made a seminar on "social autonomous vehicle navigation" in the scope of "cycle de conférences ISN".

COML Team

9.3. Popularization

E. Dupoux presented the startup project BabyCloud at the CNRS innovatives SHS Salon, May 14-16, Lille.

DEFROST Project-Team

10.3. Popularization

- <http://handsonsoftrobotics.lille.inria.fr/>
- SIDO 2019: SIDO is leading European Solutions and Technologies event for IoT, Artificial Intelligence and Robotics for strategic decision-makers in innovation and business operations. Jeremie Dequidt has presented current research works around Soft Robotics.

10.3.1. Interventions

- Fête de la science 2019: Bruno Carrez and Olivier Goury took part in the "village des sciences" at the "Gare Saint-Sauveur" in Lille city center to present soft robots to several groups of students from middle school and high school which represents about 150 children over 2 days between October 10th and 11th 2019.
- FOSDEM 2019 Brussels: its an open-software manifestation which happen every years during 2 days. Some people of our team (Damien Marchal, Eulalie Coevoet, Bruno Marques, Bruno Carrez and Félix Vanneste) went there to help the SOFA consortium to make some advertisement of our simulation tools.
- ISN intervention: Olivier Goury presented the field of soft robotics to high school students taking a Computer Science option (Informatiques sciences du numérique) and exchanged about the school projects on March the 20th 2019.
- Défi Robotique at Lycée Baggio: Olivier Goury took part in the Défi Robotique at Lycée Baggio in which teams of middle school, high school, preparatory classes and engineering students have 24 hours to solve a robotics challenge. Olivier Goury gave a conference on Soft Robotics and was a member of jury.
- Journée de la recherche Centrale Lille: Alexandre Kruszewski, Thor Morales-Bieze and Bruno Carrez presented the research activities (with live demos) in a showroom dedicated to the promotion of the scientific activities of the Laboratory of the campus.

EX-SITU Project-Team

9.3. Popularization

9.3.1. Articles and contents

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

9.3.2. Education

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

9.3.3. Interventions

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

FLOWERS Project-Team

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 2nd 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 Foundation, 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.

GRAPHDECO Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- George Drettakis chairs the local “Jacques Morgenstern” Colloquium organizing committee and was elected a member of the Inria Scientific Council.

9.3.2. Articles and contents

J. Philip participated in the Youtube video interview: Intelligences artificielles: créatives mais perverses ? - Macroscopie La chaine - [Video link](#) - July 2019.

The work of J. Philip was the topic of a press release: L’algorithme d’apprentissage profond qui permet de changer l’éclairage des photos et de vidéos. [Link to inria Press release](#) and other media coverage [Link to Pix Fan press release](#)

The work Multi-view relighting using a geometry-aware network was presented at Adobe Max - November 2019. The project was part of the 11 projects selected out of 200 to be presented at Adobe MAX under the name project #LightRightSneak [Link to the event](#).

Some press coverage of this event regarding the project : [Link to Tech cafe](#) listen starting at 32’00". [Link to srlrouge](#). [Link to petapixel](#).

GRAPHIK Project-Team

9.3. Popularization

Michel Chein gave two talks on Artificial Intelligence: a public conference in the context of the Academy of the Sciences and Humanities of Montpellier and a radio interview (RCF) - both in March 2019.

HEPHAISTOS Project-Team

9.3. Popularization

- J-P. Merlet gives 3 talks in the Alpes-Maritimes in the framework of the *Science pour Tous* association. He has also participated in a seminar on *robotics and media* involving 6 robotics experts and 6 journalists for a reflexion on the bias of the presentation of robotics to a general audience. He was also a member of the scientific committee for the permanent exhibition *Robot* at the Cité des Sciences, Paris
- Y. Papegay is actively participating to the Math.en.Jeans initiative for Mathematics teaching for undergraduate students.
- Y. Papegay is developing several pedagogical resources based on small robotics devices at high-school level.
- Y. Papegay organized and animated summer schools in experimental mathematics and computer sciences. Several one week sessions have been held in Oxford in June, July, August and November gathering more than 70 high-school students - most of them were awardees in Mathematics Olympiads.
- O. Pourtallier is corresponding researcher for two MATH.en.JEANS workshops, an initiative for Mathematics teaching for undergraduate students.
- E. Wajnberg gives 5 talks in the Alpes-Maritimes in the framework of the *Science pour Tous* association

9.3.1. Interventions

- the HEPHAISTOS project has on average about 100 visitors per year, either young students or teachers, to which we present our robotics and assistance activities

9.3.2. Internal action

- the HEPHAISTOS project has developed a set of cable-driven parallel robots, the MARIONET-SCHOOL series, that is used to illustrate visually scientific concepts in various domains

HYBRID Project-Team

10.3. Popularization

10.3.1. Articles and contents

- Ouest-France: Interview of Anatole Lécuyer (October 2019)
- France Inter: Interview of Anatole Lécuyer in the broadcast "Du vent dans les synapses" (November 2019)
- France TV: Interview of Guillaume Moreau and Jean-Marie Normand in "Télématin"

10.3.2. Interventions

- "Technoférence Humain Augmenté": Presentation from Rebecca Fribourg (Nantes, January 2019)
- "Made by DV-Group": Event organized by Rennes Metropole about "VR and Cinema", presentations and demos from Ferran Argelaguet (Rennes, February 2019)
- "Laval Virtual 2019": Demos of FIVE/SEVEN software (March 2019)
- "Journées Nationales de l'Archéologie": Demos made by Ronan Gaugne and Valérie Gouranton (Champs Libres, Rennes, June 2019)
- "Journées Européennes du Patrimoine": Conference and Demos made by Ronan Gaugne and Valérie Gouranton (Musée des Beaux Arts, Rennes, September 2019)
- "Festival Demain/Maintenant" : Presentation from Anatole Lécuyer (Rennes, October 2019)
- "Fête de la Science" 2019 : Presentation from Anatole Lécuyer (Saint-Louis, October 2019)
- "Journée Science et Musique" : Demos made by Florian Nouviale, Ronan Gaugne and Valérie Gouranton (Rennes, October 2019). Rebecca Fribourg and Diane Dewez also participated in the organization of the event.
- "Festival du Livre du Var" 2019 : Presentation from Anatole Lécuyer (Toulon, November 2019)
- "Digital Design Days" 2019 : Presentation from Ronan Gaugne (Milano, Italy, November 2019)

10.3.3. Internal action

- Inria/IRISA "VR Hackathon" 2019: Hackathon (20 participants) organized by Hybrid team and open to all members of Inria Rennes center (May 2019).
- "20 years of Immersia": Event organized by Inria Rennes/IRISA center, with presentations from Anatole Lécuyer and Bruno Arnaldi, and demos made by Florian Nouviale and Ronan Gaugne (November 2019).

10.3.4. Creation of media or tools for science outreach

The ANR-FRQSC INTROSPECT project produced a transparent 3D printing of the content of an Egyptian mummy cat from a CT scan. The mummy is part of the collection of the Musée des Beaux-Arts of Rennes. The 3D printing is permanently exhibited in the Museum, next to the real mummy (Figure 21)

The immersive VR application of the LSI project developed during the hosting of the invited professor Franz Fischnaller from Albertina Accademy of Fine Arts around the Last Supper painting of Leonardo da Vinci was deployed and exhibited in the Deep Space 8K of the Ars Electronica center in Linz, Austria (Figure 22).



Figure 21. The mummy cat and its copy in the Museum des Beaux-Arts in Rennes.



Figure 22. The LSI project in the Ars Electronica center in Linz.

ILDA Project-Team

10.3. Popularization

10.3.1. Articles and contents

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

IMAGINE Project-Team (section vide)

LACODAM Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- (E. Fromont) 2018-?: Nominated at the scientific council of the "Fondation Blaise Pascal" (dedicated to scientific mediation, funded by Inria)

10.3.2. Education

- In 2019, Alexandre Termier and Elisa Fromont are co-heads of a special training for high school teachers, ordered by the Ministry of Education. From September 2019, French high school students will have the opportunity to have reinforced Computer Science courses, with the same importance as Mathematics or Physics for example. As new teachers are not yet hired to teach these courses, there was thus an urgent need to train existing high school teachers so that they can train the new teachers. A national formation has been set up, with some coordination between all universities. Alexandre and Elisa represent the University of Rennes, which is the formation center for all of Brittany. The formation load is 125 teaching hours, to a group of 71 high school teachers.
- Elisa Fromont is also leading the set up of a CAPES in University of Rennes 1, which will allow to prepare future high school teachers in computer science.

10.3.3. Interventions

- A. Termier participated at a mediation action on Artificial Intelligence for a general technical public, the "Trial of metro car number 42", at the Digital Tech in Rennes (november 2019, <https://www.ladigital.tech/proces-rame-metro-numero-42/>)
- Alexandre Termier did two 2h interventions at the Emile Zola high school, aimed at math teachers. The topics were "Artificial Intelligence" and "Big Data".
- (E. Fromont) 6/12/2019: Master Class at La Digital Tech Conference on "IA, Machine learning et Deep learning : démêlons les concepts !", Rennes.

LARSEN Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Amine Boumazza is a member of the editorial board of “Interstice”.

10.3.2. Articles and contents

- Pauline Maurice gave an interview for Radio Canada (radio).
- Serena Ivaldi gave an interview to France 3 (TV) during the inauguration of the Creativ’Lab.

10.3.3. Education

- Vincent Thomas gave a tutorial on path planning for teachers during “journées ISN-EPI 2019” (Nancy, France).

10.3.4. Interventions

- Public workshop on robot programming with Thymio at “Fête de la Science” [Alexis Scheuer, Olivier Buffet, Jessica Colombel, Francis Colas, Yassine El Khadiri, Vincent Thomas, Yang You]
- Pauline Maurice gave a talk at the Forum Sciences Cognitives 2019 in Université de Lorraine.
- Jean-Baptiste Mouret was invited to debate about artificial intelligence at “La Tronche en Biais”, an online popularization channel (27k view for this video)
- Eloïse Dalin and Pierre Desreumaux participated to a “Café des Sciences” artificial intelligence and robotics at the “Cité des Sciences et de l’Industrie” (Paris)
- Serena Ivaldi participated to the “Fête de la Science” as tutor for school children in Inria/Loria

LINKMEDIA Project-Team

10.3. Popularization

10.3.1. Articles and contents

- Vincent Claveau was interviewed for his activities about fake news detection in: hors-série 199 de Sciences et avenir Oct/Nov 2019; Sciences Ouest n375; Télérama; Science et vie; Science et avenir; 01net N 894.
- Vincent Claveau was interviewed for his activities about text mining the Grand Débat contributions: AEG infos; Ouest France.
- Ewa Kijak and Vincent Claveau were interviewed for the TV show Télématin Science, nov 2019.
- Ewa Kijak was interviewed about fake news and deepfake detection in: AFP, Le Télégramme, Data Analytics Post, Sciences Ouest n375, Le Temps, FranceTV Info (TV show "Vrai ou Fake"), tv5 monde
- Ewa Kijak was invited on the radio show "La méthode scientifique", France culture, on "Deepfake : faut-il le voir pour le croire ?"
- Teddy Furon was interviewed by Data Analytics Post about the connection of deepfake and watermarking.

10.3.2. Education

LINKMEDIA has been actively involved into the "L codent, L créent" initiative with Cyrielle Mallart and Oriane Siméoni.

10.3.3. Interventions

- Guillaume Gravier gave an invited talk entitled "Strengths, weaknesses and limits of AI illustrated" at the West Data Festival (professional forum, 100 attendees)
- Ewa Kijak gave an invited talk entitled "Fighting Fake news and deep fakes" at the CEPIC congress (Coordination of European Picture Agencies Stock, Press and Heritage)

LINKS Project-Team

10.3. Popularization

10.3.1. Education

RIC Days S. Salvati organizes the *Recherche Innovation et Créativité days*. It presents research professions to student (primarily Master students)

10.3.2. Interventions

Introduction to programming I. Boneva has supervised second year students from DUT while they conducted activities on introduction to programming to 9-10 years old students in Villeneuve d'Ascq

TFJM² In 2019, L. Gallois participated in the organization of this event of the *Tournoi Français des jeunes mathématiciennes et mathématiciens*, a national contest of mathematics for high-school students

10.3.3. Internal action

- Inria by Lille: J. Niehren contributed an article in the december issue of "Inria by Lille" titled "Interroger les bases de données d'une manière plus intelligente"

LOKI Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

AIRLab selection committee for the funding of **art and science projects**, Stéphane Huot (representative for Inria Lille – Nord Europe)

10.3.2. Articles and contents

The Mother Of All Demos, l'autre révolution de 1968, interview for **Carré, Petit, Utile : Le programme radio des gens du numérique** on Radio <FMR>, Stéphane Huot
web series Dopamine on Arte.tv, scientific expertise, Stéphane Huot

10.3.3. Interventions

Intervention during the official **launch event** of the new **NF Z71-300** French keyboard standard at the Assemblée Nationale: Mathieu Nancel

MAGNET Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

AURÉLIEN BELLET is member of the Operational Committee for the assesment of Legal and Ethical risks (COERLE).

PASCAL DENIS is administrator of Inria membership to Linguistic Data Consortium (LDC).

9.3.2. Articles and contents

AURÉLIEN BELLET and MARC TOMMASI provided expertise for the Dopamine TV program on Arte about new technologies ⁰.

AURÉLIEN BELLET co-authored an article in the French daily newspaper Libération on AI and transparency ⁰.

RÉMI GILLERON authored a book (in French) introducing Machine Learning ⁰.

RÉMI GILLERON gave a talk in order to popularize Artificial Intelligence.

9.3.3. Interventions

In educational institutions: MARC TOMMASI was facilitator for the event *Jouer à débattre*, about machine learning in high school (Tourcoing).

⁰<https://www.arte.tv/fr/videos/RC-017841/dopamine/>

⁰https://www.liberation.fr/debats/2019/04/07/grand-debat-et-ia-quelle-transparence-pour-les-donnees_1719944

⁰<https://www.editions-ellipses.fr/accueil/4741-apprentissage-machine-cle-de-l-intelligence-artificielle-une-introduction-pour-non-specialistes-9782340028807.html>

MAGRIT Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

Erwan Kerrien is Chargé de Mission for scientific mediation at Inria Nancy-Grand Est, and thereby is part of the Inria scientific mediation network. As such, he is a member of the steering committee of "la Maison pour la Science de Lorraine"⁰, and member of the IREM⁰ steering council.

9.3.2. Education

- Pierre-Frédéric Villard is involved with the secondary school of Champigneulle (France) as a "Collège Pilote" of "La Main à la pâte" foundation. He gave a seminar on augmented and virtual realities to the pupils, he helped the teacher with preparing some activities with augmented and virtual reality technologies. Finally, he is supervising Université de Lorraine students to produce teaching applications with augmented and virtual reality technologies that will be used in secondary school classes.
- Erwan Kerrien participated in the creation and animation of a MOOC for teachers of the new SNT class (Sciences du Numérique et Technologie - *Digital Science and Technology* included in the 1st year of core curriculum in upper secondary education, see <https://www.fun-mooc.fr/courses/course-v1:inria+41018+session01/about>), where he brought his expertise in image processing. This MOOC is part of the Class'Code project (<https://pixees.fr/classcode-v2>).

He also participates in *MOOCFOLIO*, a PIA3-funded project (<https://www.fun-mooc.fr/news/pia-3-le-projet-moocfolio-est-laureat/>). The objective is to create a MOOC to help students choose their undergraduate studies to pursue after high schools. Erwan is part of a working group to create a module about studies and professions related to digital usages and sciences.

He also participated in the creation, and teaching, of a 5-day training course for scientific animators (in a broad sense, from science club animators to science teachers). This course was funded by Région Grand-Est (see <https://fan.loria.fr>).

He gave a 2-day class about the use of unplugged computer science to introduce computer science in science class, along with another researcher and 2 secondary school maths teachers. This class has been organized with Maison pour la Science since 2015, and is proposed to around 20 maths and science secondary school teachers each year.

9.3.3. Interventions

Erwan Kerrien was an associate researcher to a MATH.en.JEANS workshop (<https://www.mathenjeans.fr>) within Loritz high school in Nancy.

He also regularly intervenes to demonstrate computer science unplugged activities and/or give conferences to secondary school pupils and teachers.

9.3.4. Internal action

Pierre-Frédéric Villard participated to open days and science festival in the IUT of Saint-Dié des Vosges. He presented augmented and virtual reality demos and their link to the high school mathematics program.

⁰"Houses for Science" project, see <http://maisons-pour-la-science.org/en>

⁰Institut de Recherche sur l'Enseignement des Mathématiques - *Research Institute for Teaching Mathematics*

MANAO Project-Team

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).

MAVERICK Project-Team

8.3. Popularization

8.3.1. Articles and contents

- Fabrice Neyret maintains the blog [shadertoy-Unofficial](#) and various shaders examples on [Shadertoy site](#) to popularize GPU technologies as well as disseminates academic models within computer graphics, computer science, applied math and physics fields. About 26k pages viewed and 12k unique visitors (87% out of France) in 2019.
- in 2019, Fabrice Neyret launched the blog [desmosGraph-Unofficial](#) to popularize the use of interactive grapher [DesmosGraph](#) for research, communication and pedagogy. For this year, about 1k pages viewed and 800 unique visitors (95% out of France).

8.3.2. Interventions

In the scope of [MathC2+](#) (partnership with French ministry of Education and "Fondation Sciences mathématiques de Paris") Inria Rhône-Alpes hosted in June, 2019 a selection of about 30 motivated high-school students (level "second") for a day of presentations, demos and discussions. Fabrice Neyret did a 1h presentation on "Math and Physics in special effects and video games" plus discussions about his curriculum and questions.

MFX Project-Team

10.3. Popularization

10.3.1. Articles and contents

Sylvain Lefebvre co-authored a position paper for NEM on Creative AI [18], and appeared in a short movie on the Creativ'Lab's shared fabrication space and MFX's research.

10.3.2. Interventions

In March 2019, IceSL was presented at the **Maker Faire Lille**, with a focus on color printing, printing big parts using cavities and polyfoams (all results from prior years now available in IceSL). IceSL was presented during an **Inria Tech Talk at Station-F** in Paris, along with a display of best prints ⁰.

In April 2019, IceSL was presented to an audience of designers for the second part of **Affinité Design** (<http://www.affinitedesign.com/>), with a discussion about the transition from 3D printing to "4D printing", in a joint talk with Sylvain Lefebvre, Jean-Claude André and Samuel Kenzari (http://www.nancy.archi.fr/fr/biennale-du-design-grand-est-2019_-e.html). In October 2019, Pierre Bedell and Pierre-Alexandre Hugron presented IceSL at **OctoberMAKE**, a meeting organised by the French FabLabs network (<http://www.fablab.fr/octobermake/>). Sylvain Lefebvre gave an IceSL tutorial at the **Soft Robotics days** in Lille (<https://jrs2019.sciencesconf.org/>). Sylvain Lefebvre created quick tutorial videos on Youtube (channel *icesl-fr*), to help introduce new users to IceSL.

Sylvain Lefebvre gave a presentation at **Grand-Est Numerique 2019**, geared towards start-ups, presenting results from MFX.

10.3.3. Internal action

The team actively participated to the inauguration of the Creativ'Lab space in December 2019.

⁰<https://french-tech-central.com/events/du-modele-3d-a-la-piece-fabriquee-utilisez-icesl-pour-vos-prototypages/>

MIMETIC Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Franck Multon is coordinating the national action of Inria in sports

10.3.2. Interventions

- Charles Pontonnier - "La simulation musculo-squelettique pour la robotique" - 4èmes rencontres interdisciplinaires Innovation, Robotique et Santé, December 2019
- Franck Multon - "fête de la Science" Rennes in Champs Libres for two days (October 4th and 5th) demos in the field of VR for sports for a wide public audience
- Franck Multon - "fête de la science" Paris (October 5th), stand-up talk about VR & Sports to the wide public audience, interview with "Esprit Sorcier" for a web-Tv diffusion
- Franck Multon - Sport Unlimitech Lyon, a large event about new technologies for sports (September 19-21), with keynote talks/round tables, managing the booths of Inria
- Armel Crétual - "La science sur les planches", Spectacle "Marcher!!!" avec le Collège Théophile Briant de Tinténiac et la compagnie Kali&Co
- Richard Kulpa - "La réalité virtuelle pour le sport, ludique mais encore ?", Mardis de l'Espace des Sciences, December 2019
- Richard Kulpa - Inria booth at Sport Unlimitech Lyon, a large event about new technologies for sports, September 2019
- Richard Kulpa - Booth at FIFA Women's World Cup 2019
- Anthony Sorel - Inria booth at Sport Unlimitech Lyon, a large event about new technologies for sports, September 2019

10.3.3. Internal action

- Franck Multon - "Journées scientifiques Inria", June 5-6th, plenary talk entitled "La réalité virtuelle pour le sport : un jeu vraiment sérieux ?"
- Franck Multon, Ronan Gaugne - "20 years of Immersia": Event organized by Inria Rennes/IRISA center, November 2019, plenary talks

MOEX Project-Team

8.3. Popularization

8.3.1. Interventions

- Présentation “L’intelligence artificielle en perspective”, Université Inter-Âges du Dauphiné (UIAD), Grenoble (FR), 2019-03-06 (Jérôme Euzenat)
- Introduction of the *Class?* game to a fourth graders (CM1-CM2) class, Montbonnot (FR), 2019-06-25 (Line van den Berg and Jérôme Euzenat)
- Introduction of the *Class?* game to a tenth graders (2nd MathC2+) group, Montbonnot (FR), 2019-06-25 (Line van den Berg and Jérôme Euzenat)
- Introduction of the *Class?* game to seventh and eighth graders (5^e et 4^e) classes within the Fête de la science (Science fair), Montbonnot (FR), 2019-10-10 (Line van den Berg and Jérôme Euzenat)
- Introduction of the *Class?* game to general public within the Fête de la science (Science fair), Montbonnot (FR), 2019-10-12 (Line van den Berg and Jérôme Euzenat)
- Presentation of the *Class?* game to the meeting of the Société Francophone de Classification, Nancy (FR), 2019-09-03–04 (Jérôme Euzenat)

8.3.2. Creation of media or tools for science outreach

Class? We are developing mediation material for explaining to the general public what knowledge representation is and how it may evolve. Its main goal is to show children that the same individuals may be classified in different and evolving ways and that it is possible to communicate such classifications without expressing them. For that purpose, we have designed a card game called *Class?*⁰ which allows players to guess the hidden ontology of another player. It has been presented to school classes from year 5 of primary school (fourth graders) to year 11 (tenth graders), albeit shows features of interest for a wider audience.

⁰<https://moex.inria.fr/mediation/class/>

MORPHEO Project-Team

10.3. Popularization

10.3.1. Articles and contents

- Edmond Boyer was interviewed by the journal *Vivre à Grenoble* en février 2019. An article mentioning his work with the Kinovis platform was published in april 2019.

MULTISPEECH Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Member of the Commission Information et Edition Scientifique of Inria Nancy (A. Deleforge).

10.3.2. Articles and contents

Interview for “Un assistant vocal qui protège les données”, *France 3 Grand Est*, Jun. 7, 2019 (E. Vincent)

Interview for “La voix crescendo”, *L’Usine Nouvelle*, Jun. 27, 2019 (E. Vincent)

Interview for “On transmet beaucoup plus d’informations par la voix qu’un message”, *Rue89 Strasbourg*, Nov. 20, 2019 (E. Vincent)

Participation to the white paper “AI in the media and creative industries”, New European Media (NEM) consortium (E. Vincent) [52]

10.3.3. Education

5 interventions (3 hours) : "Dyslexic pupils in mainstream and special education". Training of trainers. ESPE de l’Académie de Nancy-Metz. Feb., Mar. & May 2019 (A. Piquard-Kipffer)

10.3.4. Interventions

6 interventions (1 hour) on robot audition and artificial intelligence research in classes from 5th (CM2) to 12th (*terminale*) grade around Nancy, Jan. 2019 (A. Deleforge)

Talk “Parole & deep learning: succès et grands défis”, Journée IA, Langage et Citoyens, LORIA, Mar. 2019; and also at Meetup IA Nancy, Jun. 2019 (E. Vincent)

Panel discussion on “Se positionner à l’Europe, une opportunité à saisir”, General assembly of Pôle Materialia, Nancy, Apr. 2019 (E. Vincent)

Demos and talk "Aider des enfants ayant des troubles du langage, quels métiers ? Quels outils ?" Forum des métiers, Collège Péguy, Le Chesnay, Apr. 2019 (A. Piquard-Kipffer)

4 interventions (1 hour) on robot audition and artificial intelligence research in high-school classes in Serbia, Sep. 2019 (A. Deleforge)

Demo “Apprendre aux robots à nous entendre” at the “Nuit des Chercheurs” of Belgrade, Serbia in Sept. 2019 and of Nancy for the 80th anniversary of CNRS in Oct. 2019 (A. Deleforge)

Demos “Apprendre aux robots à nous entendre” and “Assistants vocaux et vie privée”, Fête de la Science, Université de Lorraine, Oct. 2019 (A. Deleforge, I. Illina, M. Sahidullah, B. M. L. Srivastava, E. Vincent)

Panel discussion “Tous connectés et après : les enjeux des applications d’interactions vocales”, Shadok, Strasbourg, Nov. 2019 (E. Vincent)

10.3.5. Internal action

“H2020 COMPRISE”, Internal “Café’In” event, Inria Nancy, Jun. 2019 (E. Vincent & Z. Chelly-Dagdia)

10.3.6. Creation of media or tools for science outreach

Video “Exposed by your own voice”, <https://www.youtube.com/watch?v=gm2cC8za8Us>.

Video “When voice assistants don’t understand”, <https://www.youtube.com/watch?v=-HvADcfEOuE>.

Video “Why is voice assistant integration so expensive”, <https://www.youtube.com/watch?v=5LQb9X3RtUs>

ORPAILLEUR Project-Team (section vide)

PANAMA Project-Team

9.3. Popularization

9.3.1. *Journée Science et Musique (JSM 2019)*

Participants: Nancy Bertin, Rémi Gribonval, Nancy Bertin, Frédéric Bimbot, Ewen Camberlein, Stéphanie Gosselin-Lemaile, Corentin Louboutin, Antoine Chatalic, Clément Gaultier, Cássio Fraga Dantas, Diego Di Carlo.

with contributions and support from: Claire Cury, Elisabeth Lebret, Valérie Gouranton, Ronan Gaugne, Florian Nouviale, Evelyne Orain, Agnès Cottais, Catherine Jacques-Orban and many more.

PANAMA coordinated the organization of a public event called “Journée Science et Musique” (“Music and Science Day”). This yearly event organized by the METISS/ PANAMA Team since 2011 aims at sharing with the wide audience the latest innovations and research projects in music. The motivation for hosting this event is to explain and promote the technology behind audio-processing that people face in their daily lives. The event is free to everyone and people have the possibility to attend talks by selected speakers or meet numerous experts that demonstrate current projects in which people can interactively participate. Edition 2019 hosted approximately 300 visitors and was a partner of the “Festival des Sciences” and an official event of CNRS 80th birthday celebrations.

9.3.2. *Participation to Equinoxes#1*

Frédéric Bimbot gave a popularization conference at the **Equinoxes#1** event, organised by Artoutaï (13 October 2019), on "the mysterious spectrum of sound" (4 times during the day)

9.3.3. *Internal or external responsibilities*

Frédéric Bimbot is a member of a working group of the CNRS/DR17 on the topic "changer le regard sur le handicap au travail"

PERCEPTION Project-Team (section vide)

PERVASIVE Project-Team (section vide)

PETRUS Project-Team

9.3. Popularization

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

POTIOC Project-Team

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 interfacier cerveaux et machines" - Fabien Lotte

RAINBOW Project-Team

9.3. Popularization

- Due to the visibility of our experimental platforms, the team is often requested to present its research activities to students, researchers or industry. Our panel of demonstrations allows us to highlight recent results concerning the positioning of an ultrasound probe by visual servoing, vision-based shared control using our haptic device for object manipulation, the control of a fleet of quadrotors, vision-based detection and tracking for space navigation in a rendezvous context, the semi-autonomous navigation of a wheelchair, the power wheelchair simulator, and augmented reality applications. Some of these demonstrations are available as videos on VispTeam YouTube channel (<https://www.youtube.com/user/VispTeam/videos>).

9.3.1. Interventions

- François Pasteau participated to the Tech'in Vitré forum with an interview in March 2019.
- Solenne Fortun participated to the Société de gérontologie de l'ouest et du centre (SGOC) congress with an interview in May 2019.
- Marie Babel animated an interactive session organized in Inria Rennes about "J'peux pas, j'ai informatique" on April 3rd, 2019 for secondary-school pupils.

RITS Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

- Fawzi Nashashibi was audited by a joint committee from the Parliament-Senat and cited in a OPECST report titled “*End of thermal vehicles in 2040: what realistic scenarios*”. Authors: Mrs. Huguette Tiegna (Parliament Deputy, Vice President) and Mr. Stéphane Piednoir (Senator). ISSN: 1249-3872.
- Participation of several team members to PAC V2X “Forum des acteurs” through oral scientific presentations - Paris, September 11, 2019.
- Participation of several team members in oral presentations and demonstrations with real mobile platforms during the *Journées du Patrimoine (Heritage Days)*, Rocquencourt, September 21, 2019.

9.3.2. Articles and contents

Fawzi Nashashibi was interviewed by Eric Gibory in *Le Monde*⁰: “Flottes d’entreprise : “De nouveaux services pour la voiture connectée vont apparaître avec la 5G””, October 24th 2019.

Fawzi Nashashibi was interviewed by Muriel Jaoën in *Les Echos*⁰: “Le véhicule autonome en site ouvert ? Pas avant 2050”, February 8th 2019.

9.3.3. Interventions

Raoul de Charette: *What is the limitation of artificial intelligence ?*, Arbre des Connaissances, Paris, France, February 12th 2019.

Raoul de Charette: *Dangers de l’intelligence artificielle ?*, Crégy-lès-Meaux, France, March 2019.

Raoul de Charette: *Qu’est-ce que l’intelligence artificielle ?*, Oissery, France, May 28th 2019.

Raoul de Charette: *Intelligence artificielle*, Arbre des Connaissances, Paris, France, June 17th 2019.

Fawzi Nashashibi: panelist, round table on the “Vehicle of the Future”, Maison de la Recherche, Paris, April 2019.

Fawzi Nashashibi: panelist, round table on the “Autonomous Vehicle”, Centrales-Supélec, Paris, September 16, 2019.

⁰(https://www.lemonde.fr/economie/article/2019/10/24/flottes-d-entreprise-de-nouveaux-services-pour-la-voiture-connectee-vont-apparaître-avec-la-5g_6016755_3234.html)

⁰(<https://www.lesechos.fr/tech-medias/intelligence-artificielle/fawzi-nashashibi-le-vehicule-autonome-en-site-ouvert-pas-avant-2050-963047>)

SEMAGRAMME Project-Team

9.3. Popularization

9.3.1. Internal or external Inria responsibilities

Maxime Amblard is the vice head of editorial board of Interstices.info

9.3.2. Articles and contents

- Karën Fort: 3 articles in volume 140 of *Culture et Recherche* (Journal of the Ministry of Culture):
 - Ouvrir le dédale des données des recherches myriadisées (with Lisa Chupin, Université Paris-Descartes)
 - Les jeux ayant un but : des sciences participatives ? (with Bruno Guillaume)
 - Sciences participatives et diversité linguistique : retours d'expériences (with Alice Millour, Sorbonne Université)

9.3.3. Interventions

Maxime Amblard was an organizer of the *Forum des Sciences Cognitives* in Nancy

Maxime Amblard organized a Diabolo Science presentation with Marie Duflot-Kremer for PintOf-Science

Maxime Amblard gave a presentation for high school students in the laboratory

Karën Fort: ethics and citizen science class at the Museum national d'histoire naturelle (3h)

9.3.4. Creation of media or tools for science outreach

Maxime Amblard was the leader of the project Happy Family Cards Game, which aimed to develop such a game for promoting computer science as a scientific field. 20 000 copies have been printed and are currently being distributed. The project was presented at the Fête de la Science panel in Paris.

Maxime Amblard designed an unplugged activity on syntactic parsing (about rabbits and carrots), [25].

Karën Fort: participation in the Sorbonne Université portal for citizen science with ZombiLUDik and Recettes (with A. Millour) : <https://www.science-ensemble.org/>

SIROCCO Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- C. Guillemot is responsible of the theme « compression et protection des données images » for the realization of the encyclopedia SCIENCES of the publisher ISTE/Wiley (2019-2021).

Stars Project-Team

9.3. Popularization

9.3.1. Articles and contents

- François Brémond was interviewed for *Web Interview* on Facial recognition: limits and challenges for society, 16 Oct 2019.
- François Brémond was interviewed for *Graphical novel* about the challenges of AI, 29 Oct 2019.
- Antitza Dantcheva was interviewed for an article in *Science et Vie* on facial analysis in October 2019.
- Antitza Dantcheva was interviewed for an article in *Charlie Hebdo* on facial recognition in February 2019.

9.3.2. Interventions

- François Brémond, Thibaud L'Yvonnet, David Anghelone and Sandrine Boute represented STARS on the 19 October at the *La fête de la science* in Palais des Congrès d'Antibes Juan-les-Pins.
- STARS presented demos for Unlimitech Sport, Lyon, 18-21 September 2019.

THOTH Project-Team (section vide)

TITANE Project-Team

10.3. Popularization

10.3.1. Interventions

- Pierre Alliez gave a talk on geometric modeling in a high school in Cannes, April 26th.

TYREX Project-Team (section vide)

VALDA Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Serge Abiteboul is the president of the strategic committee of the Blaise Pascal foundation for scientific mediation.

Pierre SENELLART is a research fellow within the CERRE (Centre on Regulation in Europe), a European think tank that produces policy papers and organize events about the regulation of network industries. He contributes in particular to reflections on the use of artificial intelligence techniques and on the interoperability of software platforms.

10.3.2. Articles and contents

Serge Abiteboul writes regular columns on popularization of computer science in La Recherche and Le Monde (Économie). He is a founding editor of the *binaire* blog for popularizing computer science. See <https://www.lemonde.fr/blog/binaire/>.

WILLOW Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

J.P. Laumond is the scientific curator of the permanent exhibition at Cité des Sciences et de l'Industrie. The aim of this exhibition is to help the general audience to understand the concepts of robotics. Indeed, the notion of robotics today is packed with many preconceived notions, phobias, and utopias, all fed by literature and a rich film culture. The real challenge of the exhibition is the presentation of authentic working robots that raises awareness of our relationship to these singular machines. How do they work? What are they for? What are their performances today and what will they be tomorrow? The exhibition lays bare the actual capabilities of robots and provides insight into the current issues.

WIMMICS Project-Team

10.3. Popularization

10.3.1. Education

Artificial Intelligence training course for high school teachers (Inria Sophia Antipolis) - “Qu’est-ce que l’IA ?” by Jérôme Delobelle.

10.3.2. Interventions

Science Festival (“Fête de la Science”) 2019, presentation of the WASABI project by Michel Buffa during “Journées Science et Musique” organized by IRISA in Rennes, October 2019.

10.3.3. Internal action

Presentation of Artificial Intelligence to college students by Jérôme Delobelle during their week-long visit to Inria Sophia Antipolis.

ZENITH Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

F. Masegla is "Chargé de mission auprès de la DGD-S Inria pour la médiation scientifique" (50% of his time) and heads Inria's national network of colleagues involved in science popularization.

10.3.2. Articles and contents

- F. Masegla is co-author of [21], [40] on the feedback of Class'Code after 3 years of project and on a vision about future work for computational thinking education and computer science popularisation.
- A. Joly has given several interviews to different media giving rise to web articles about Pl@ntNet (see e.g. Google news with keyword Pl@ntNet).

10.3.3. Education

Computer science is, for the first time in France, an official discipline taught in high school (Lycée) with the common course about "Sciences Numériques et Technologie". As written by Inria's CEO Bruno Sportisse: *"For over a decade, the institute has carried out actions that have paved the way with the firm conviction that "training in and through digital technology" is strategic: I am thinking here, in particular, of the Class'Code project."*

F. Masegla is the initiator, with Serge Abiteboul, of the program called "1 scientifique — 1 classe : Chiche !" with the goal of reaching *all* the students of a specific level. This massive plan should concern all scientists at Inria and our partners in France.

F. Masegla was ambassador of Inria for the Science Celebration Day (Fête de la science):

- <https://www.youtube.com/watch?v=13957C9FxVg>
- <https://www.youtube.com/watch?v=yqnQe91Pztc>

F. Masegla gave a one day training on the Thymio robot for education in the media library network professionals. February 1. Montpellier. 18 attendees.

F. Masegla gave a one day training to teachers of French National Education on computational thinking. March 12. Montpellier. 20 attendees.

F. Masegla gave a one day training to teachers in pediatric hospitals (CHU Arnaud de Villeneuve). February 2. Montpellier. 10 attendees.

F. Masegla gave two days of training to computer science, robotics and computational thinking to reference teachers ("conseillers pédagogiques"). April 15 & 16. Montpellier. 20 attendees.

F. Masegla gave two days of training to the media library network professionals on Poppy Ergo Jr. June 28 & September 6. Montpellier. 11 attendees.

F. Masegla is a member of the scientific committee of a conference cycle on "Science and Society" organised with MSHSud.

P. Valdrieux gave an invited talk on "Succeed in your Ph.D. Thesis: good practices and return of experience" at the Ph.D. meeting at LIRIS, Lyon, on Dec 11.

A. Joly was a member of the scientific advisory board of the **AI Family Challenge** organized by the NGO **Iridescent** that "supports girls, children, and their families to identify problems in their communities and find technology based solutions".

He organized an educational outing at the Montpellier Botanical Garden as part of the summer school organized each year by Polytech Montpellier (June 11). He participated in the organization and animation of the **"wild salad"** training organized by the association "Les écologistes de l'Euzière" 13-15 March.

10.3.4. Interventions

F. Masseglia participated in the LIRMM events on science popularisation ("Fête de la science" on Feb 19, "accueil de stagiaires" on Oct 11), Montpellier.

A. Joly participated in: the animation of the Inria stand at the SIDO exhibition (April 10-11, Lyon); the PI@ntNet launch ceremony in Costa Rica in the presence of the Minister of Research and decision-makers (April 20).

E. Pacitti participated in Polytech'Montpellier International Summer School (Flow) on the subject of Data Science - Plant Phenotyping.

A. Joly participated in the day "**Ramène ta science**" co-organized by TelaBotanica and "Sciences Avenir" associations at the Halle Tropisme in Montpellier (as part of the Labbota initiative). He co-facilitated a participatory workshop and a debate with citizens on the theme of participatory science.

10.3.5. Creation of media or tools for science outreach

In the context of the Floris'tic project, A. Joly participates regularly to popularization, educational and citizen science actions in France (with schools, cities, parks, associations, etc.). The softwares developed within the project (PI@ntNet, Smart'Flore and ThePlantGame) are used in a growing number of formal educational programs and informal educational actions of individual teachers. For instance, Smart'Flore is used by the French National Education in a program for reducing early school leaving. PI@ntNet app is used in the Reunion island in an educational action called Vegetal riddle organized by the Center for cooperation at school. It is also used in a large-scale program in Czech republic and Slovakia (with a total of 100 classrooms involved in the program). An impact study of the PI@ntNet application did show that 6% of the respondents use it for educational purposes in the context of their professional activity.

F. Masseglia participated in the work group on "Jeu des 7 familles de l'informatique". This card game provides support for education to computer science from the history point of view.

A. Joly actively participates to the design and development of all PI@ntNet dissemination tools in particular **PI@ntNet web site** that contains contents for the press, articles for the general public, tutorials of PI@ntNet tools, guidelines for users of the API, etc.