Activity Report 2017

Section Popularization

AROMATH Project-Team (section vide)

DATASHAPE Project-Team

10.3. Popularization

10.3.1. Inria-Industry Meeting

Marc Glisse, Miro Kramar and Steve Oudot held a booth for half a day.

Marc Glisse played for a small video which is now on the InriaInnovation YouTube channel https://youtu.be/lKNjGk-Z6b4.

KAIROS Team (section vide)

<p style="text-align:center">**MARELLE Project-Team**</p>

8.3. Popularization

Laurent Théry gave a talk in high-school (Centre International de Valbonne) in the context of the annual "Fête de la Science".

Damien Rouhling and Cécile Baritel-Ruet participated to the event "My thesis in 180 seconds" at the regional level.

ACUMES Project-Team

8.3. Popularization

- J.-M. Loubes and P. Goatin, *"La prédiction dans les transports"*, Les Big Data à découvert, CNRS Editions (2017), pp. 124-125.

- Press article: *Les mathématiciennes ont de plus en plus confiance*, La Tribune, May 2017. Portrait of P. Goatin by L.J. Baudu.

- P. Goatin gave the talk *"Le trafic routier en équations"* at Luxembourg University and at Lycée Aline Mayrisch du Luxembourg on October 5, 2017, as part of the conference cycle *"La Recherche au féminin"* organized by the French Institute of Luxembourg.

- Web Press articles : *On a Collision Course with Game Theory* about the Royal Society Proceedings paper [13] in https://phys.org/news/2017-09-collision-game-theory.html and in http://www.sciencenewsline.com/news/2017092714240040.html

APICS Project-Team

8.3. Popularization

- M. Olivi is responsible for Scientific Mediation and president of the Committee MASTIC (Commission d'Animation et de Médiation Scientifique) https://project.inria.fr/mastic/. Her main contributions related with this mission were:

    – management of the contract "région PACA: Science Culture Lycée" and organization of about thirty conferences in the high schools of the region (100 students per conference),

    – co-organization of 10 robotics sessions for 2 classes of middle school students (device "MEDITES" http://medites.fr, founded by ANRU, the "Agence Nationale de Rénovation Urbaine"),

    – co-organization of the "stage MathC2+", a four-day internship for 50 high school students ("secondes", about 16 years old) organized by the Commitee MASTIC and its partners (June 14-17),

    – co-organization of Inria participation to the event "Le Village des Sciences et de l'Innovation" in Antibes (October 7 & 8, 10000 people),

    – co-organization of about 10 "cafés scientifiques" (c@fé-in's and cafés Techno, 30 to 80 participants each),

    – supervision of a (2 months) internship, done by Sabrina Ballauris, for the realization of objects to manipulate, in view of illustrating some mathematical results and scientific principles (Pythagora's puzzles, Galton's board, Galileo's experiment, the fastest toboggan, ...)

    She was a member of the scientific committee of the "Forum Mathématiques Vivantes", a national event (initiated by CFEM, the French Commission for Mathematics Education, http://forum-maths-vivantes.fr/) organized in Lille, Lyon, Rennes, Toulouse during the Mathematics Week. She participated into the reviewing process for the book "Panorama Mathématiques et Langages" published in this occasion by CFEM.

- M. Olivi animated two half-day workshop sessions "activités débranchées" at "l'ESPE de Nice" for primary school students (March 16 & 24), 200 students each session). She gave three presentations for high school students in Gap and Marseille. With K. Mavreas, she participates to the event "Le Village des Sciences et de l'Innovation" in Antibes (October 7 & 8, 10000 people).

- A. Cooman gave a presentation at the "stage MathC2+", a four-day internship for high-school students organized by the Committee MASTIC and its partners (June 14-17).

ECUADOR Project-Team (section vide)

MCTAO Project-Team

9.3. Popularization

J.-B. Caillau participates in the MASTIC initiative at Inria and has given conferences at the high school level in Sophia (MathC2+ event, June 2017) and Grasse (Lycée Amiral, Sep. 2017).

NACHOS Project-Team (section vide)

TOSCA Project-Team (section vide)

ABS Project-Team

7.3. Popularization

This section describes the activities of Dorian Mazauric (member of the popularization committee of Inria Sophia Antipolis - Méditerranée).

– **Founding**.

- Coordinator of the project GALEJADE (*Graphes et ALgorithmes : Ensembles de Jeux À Destination des Écoliers*) founded by Fondation Blaise Pascal (2017 - 2018). We aim at developing an educational kit for primary schools in order to play with the notions of graphs and algorithms. We also propose conferences for the general public.

– **Resources**.

- 13 posters - *Transmission de pensée - La magie du binaire*: [22].
- 2 posters - *Tour de cartes - La magie des graphes et du binaire*: [21].

– **Activities**.

- Training with Laurent Giauffret of 30 teachers (cycle 1) of Académie de Nice (*Jeux avec les graphes et les algorithmes*).

- Stage MathC2+: half day activities for 40 high school students (Boruvka algorithm for the minimum spanning tree problem played on "real" graphs constructed with plastic hoops and slats).

- Fête de la Science 2017
    - Village des sciences et de l'innovation au Palais des Congrès d'Antibes Juan-les-Pins.
    - Conferences (classe préparatoire, 2 classes de seconde, une classe de sixième, 2 classes de CM1).

- 4 conferences in high schools (Aix-en-Provence, Antibes, Grasse, Miramas), dispositif Science Culture PACA.

- One conference in a secondary school (French *college*) (Cagnes-sur-Mer).

ASCLEPIOS Project-Team

9.3. Popularization

M. Lorenzi gave a general audience lecture during the "Semaine du Cerveau" at the CHU of Nice (March 2017).

Nina Miolane participated to the following popularization events:

- Speaker at Unesco France's Ceremony for 70th Anniversary.
- Speaker at the Women Forum Global Meeting 2016. How to bring more women in the sci-tech workforce?
- Speaker at the L'Oreal-Unesco Prizes Ceremony 2016.
- Journal regional de France 3 Azur (Oct. 31 2016)
- Invited on "Le Club de la Tete au Carre". France Inter (National Radio), Oct. 14 2016.

ATHENA Project-Team

10.3. Popularization

- The P300 speller enjoyed a large publicity: on French TV *Le Magazine de la Santé* of France 5 in January 2017. It was featured in a newspaper article in La dépêche du midi in February 2017.

- M. Clerc gave interviews for Le Temps (Switzerland), Science et Vie Magazine on the topic of Brain-Computer Interfaces.

BIOCORE Project-Team

10.3. Popularization

The activities related to microalgae have generated many articles in national newspapers (Le Monde, Nice Matin, ,...), and broadcasts on national TV (France 3).

O. Bernard gave a popularization conference "Will we drive with fuels brought algae in 2030?" in the framework of the "science for all" cycle of conferences organized by the city of Biot. 30th of March, 2017.

P. Bernhard has been involved in popularization of applied mathematics with two highschool conferences: Lycée Alexandre Dumas, Cavaillon and Centre International de Valbonne, Valbonne-Sophia Antipolis, on January 10 and 11 respectively.

M. Chaves gave a "180s" presentation "A mathematical tool for determining the dynamics of biological modules interconnection", at Journées Scientifiques Inria, Sophia Antipolis (June 2017).

M. Chaves gave a presentation on circadian clocks at Café-in, for all Inria personnel, at Inria Sophia Antipolis (October 2017).

BIOVISION Team

10.3. Popularization

- Dora Karvouniari participated in "Maths C2+" at Inria week 19-23 June 2017. Maths C2+ hosts schoolboys and schoolgirls in a research environment. The goal is to allow young people to imagine the scientific future.

- Selma Souihel participated to the "fête de la science" as part of the scientific animation commission "MASTIC". She was in charge of vulgarizing her PhD research subject in order to make it intelligible by a public of young scholars, and their parents. She also took part in a pedagogical robot training "Poppy Ergo", aimed at introducing robotics and sequential programming to students in primary school.

CAMIN Team

9.3. Popularization

CAMIN participed into Fête de la Science at LIRMM with 2 demos (cycling, EMG robotics hand control).

David Andreu presented the job of researcher in secondary school Collège Vincent Badie (Montarnaud)

Christine Azevedo organized Initiation sessions to informatics using Thymio robot at Collège Léon Cordas (Montpellier) in 3 classes (one 5e and two 6e). 3 sessions of 1h30 per class were organized followed by a half day visit at LIRMM robotics hall. One day session was also organized with École primaire Valfalis (Montbazin) in CE2 level.

CASTOR Project-Team (section vide)

COFFEE Project-Team (section vide)

LEMON Team

8.3. Popularization

Antoine ROUSSEAU gave several conferences for highschool students and their teachers, on the topics of mathematical modeling for environmental sciences:

Fête de la Science, Oct. 2017, Genopolys Montpellier (2 days)

Maths au lycée, Apr. 2017, Lycée de Castelnaudary (1 day)

Antoine ROUSSEAU is member of the national Inria network for scientific outreach *Médiation scientifique*

Antoine ROUSSEAU is member of the editorial board of Interstices

Antoine ROUSSEAU is member of the scientific board of Fondaton Blaise Pascal

Antoine ROUSSEAU co-authored the Calendrier Mathématique 2017

MATHNEURO Team (section vide)

MORPHEME Project-Team

8.3. Popularization

Anca Grapa, Kévin Giulietti and Gaël Michelin participated as exhibitors to the "Fête de la science 2017" manifestation in Juan-les-Pins (palais des congrès). The objective was to initiate non-scientic audience to the research issues in Morpheme team, and more generally to numerical science.

Laure Blanc-Féraud gave a talk for the PhD students association of the doctoral school STIC of Université Côte d'Azur "Voir l'intérieur d'une cellule vivante : lunettes numériques au secours du microscope" , mai 2017.

VIRTUAL PLANTS Project-Team

8.3. Popularization

- C. Godin gave an invited 2 hours seminar to 4 classes of high-school students for the Math week (March) at the Lyce ´e International de Valbonne, France.
- C. Godin gave a couple of 2h classes at Lyce ´e Pompidou (Montpellier).
- C. Godin participated to the writing of a collective book reviewing the recent discoveries in Biology and dedicated to a wide audience including politicians and medias.
- O. Ali is a member of the Sam & You newsletter (the newsletter of the SAM Inria research center) writing committee.
- H. Oliveri took part in the Class'Code Initiative, a Mooc produced by Inria and OpenClassRoom providing supports and guidelines for people wanting to teach computer science to young childrens.

COATI Project-Team

9.3. Popularization

Jean-Claude Bermond

> Gave a talk "50 years of passion trying to solve delectable problems about graphs and networks" on March 24 during a seminar C@fé ADSTIC organized by the ADSTIC (Doctoral Association of the SophiaTech campus).

Nathann Cohen and David Coudert

> Article "le défi des 1001 graphes" [61] relating how we addressed (and won) the Flinders Hamiltonian Cycle Project Challenge. Published in Interstices on December 12, 2017.

Frédéric Havet

> Co-organised the "Village des Sciences" of Vinon-sur-Verdon, France, October 9-14, 2017. Gave many talks and animated several stands during the whole week;

> Animated a stand "Mathémagie" at the "Village des Sciences" of Aix-en-Provence, October 8, 2017;

> Organised the "Science Tour" at Rians, January 25-28, 2017. Animated several stands during the four days;

> Gave the conferences "Beauty in Mathematics", "Le métier de chercheur", "La science du ballon de football" to five classes of the International School of Manosque, France, during the "Semaine des Mathématiques", March 13-19, 2017;

> Gave an interactive conference and animated stands about "Becs, pattes et plumes des oiseaux" and " Nids des oiseaux" to four classes at Rians elementary school, France, January 9 and March 23, 2017;

> Gave the conference "Élégance en Mathématiques" at Valgaudemar, France, July 6, 2017;

Frédéric Havet, Joanna Moulierac

> Supervised the one-week internship of two 3eme schoolboys.

Nicolas Nisse

> Co-organized (with "Les petits débrouillards", see http://www.lespetitsdebrouillards.org/) series of animations for a group of schoolboys, Inria Sophia Antipolis, July 20, 2017;

> Animated, during "Fête de la Science", several stands during the "Village des Sciences" at Vinon-sur-Verdon, France, October 10-13, 2017;

> Animated, during "Fête de la Science", several stands in Palais des Congrès de Juan-Les-Pins, October 7-8, 2017;

> Realization of series of posters for scientific popularization [62], [63], [64], [65];

> Member of MASTIC (Médiation et Animation scientifiques Inria, see https://project.inria.fr/mastic/).

Frédéric Havet, Joanna Moulierac, Nicolas Nisse

> Involved in the GALEJADE project supported by Fondation Blaise Pascal. The main objective of this project is to develop a series of games for initiating schoolchildren to graphs and algorithms, and to put them in a pedagogical kit and on the web.

DIANA Project-Team

9.3. Popularization

Chadi Barakat keeps participating to the organization of the Mediterranean Students Days @ Campus SophiaTech. The fifth edition took place on Feb 28 - March 2, 2017, and the sixth edition will take place on February 12 - 14, 2018. All details on this event can be found at http://univ-cotedazur.fr/events/meddays.

Arnaud Legout and Damien Saucez participated in the "fête de la science" event. They presented the ElectroSmart project and the R2lab Testbed.

Walid Dabbous published a popularization article on Network Architecture for Big Data in the book "Les Big Data à découvert" edited by CNRS editions [29].

Damien Saucez is part of the MASTIC [0] group at Inria. MASTIC groups all the activities for scientific dissemination for Inria Sophia Antipolis. Within this activity we visit schools to make conferences on Internet and privacy related matters and Arnaud Legout made a talk during MathC2+. Within the team, we gave a 3h game-based class to Collège interns that made an internship at Inria in November to introduce them to the fundamental algorithms used in the Internet (shortest-path, longest prefix matching, distance-vector, AIMD). We also served on the Inria stand for "fête de la science" to welcome kids and families and present mathematical games, the R2LAB testbed, and Electrosmart. In December 2017 Damien Saucez made a Café-in in Sophia Antipolis which is a 1h informal talk on the presenter's research with all Inria collaborators (administrative, technical, and scientific). In addition to these regional activities, we also took part in the ICN Fun MOOC [0] where Damien Saucez made a 10 minutes explanations of the fundamentals behind Operating Systems. As of today, the video [35] has been watched more than 9k times on YouTube.

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[0]https://project.inria.fr/mastic
[0]https://www.fun-mooc.fr/courses/inria/41014/session01/about

FOCUS Project-Team

9.3. 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;

- S. Martini has given various talks at institutes and workshops on the teaching methods for Computer Science, including a talk on "Educare all'informatica nella scuola?", working day on "La cultura informatica come fattore di sviluppo" Roma, Camera dei Deputati, December 2017.

- S. Martini is coordinator of some initiatives for the 'Hour of Code' (see e.g., http://www.programmailfuturo.it). M. Lodi is also involved.

- M. Lodi is in charge of preparing material "unplugged" to teach the principles of computational thinking in elementary schools.

- M. Lodi has been involved in meetings aimed at forming teachers of elementary and high schools in the Bologna province. These include a 15-hour course "Coding e robotica: tecnologie e metodologie per una didattica integrata nella scuola secondaria di I grado", and a 12-hour course "Scratch avanzato: funzionalità e applicazione alla didattica", both organised by Fondazione Golinelli (Bologna).

- M. Lodi has given talks on computational thinking and programming languages for teaching computer science to children, including: "Coding - Che cosa è e perché?" and "Coding con Scratch", at Mathesis Piacenza; "CoderDojo: Pensiero computazionale e informatica creativa... anche a scuola?", Convention Diesse; introduction to computer science for high school students, as part of an event of introduction to management ("Giardino delle imprese"), Fondazione Golinelli, Bologna; "L'illusione del coding" and "TeacherDojo", at the contest "CoderDojo Coolest Projects Milano", Milan; "Ragazze, siate coraggiose: la vostra intelligenza puo' crescere (ma il "coding" non basta!)", at "Festival della Cultura Tecnica 2017", Bologna; a talk and youtube video "Quattro domande sul pensiero computazionale" (https://www.youtube.com/watch?v=ANlwOckhcVU).

- M. Lodi has has been member of the evaluation commission for the awards "Programma le Regole", set by Italian Ministry of Education and Research (MIUR) and "Programma il Futuro".

D. Hirschkoff takes part in several popularization activities in schools, in Lyon (association "Maths en Jeans").

9.3.1. *Other duties*

S. Martini is Head of the Department of Computer Science and Engineering, University of Bologna, for the term 2015-2018.

G. Zavattaro is coordinator of undergraduate studies at the Department of Computer Science and Engineering, University of Bologna (Informatica per il Management).

INDES Project-Team

7.3. Popularization

Tamara Rezk and Nataliia Bielova were contributors to the Security White Report of Inria to provide an overview of the research in the area of IoT security and Web Tracking technologies carried out by Inria teams.

Nataliia Bielova has presented a joint work with Privatics team at the EU Parliament meeting dedicated to the analysis of the new EU ePrivacy Regulation in June 2017. https://www.inria.fr/en/centre/sophia/news/nataliia-bielova-at-the-european-parliament.

Nataliia Bielova gave a general audience talk on Web Tracking technologies and protection mechanisms for Web users at Carnegie-Mellon University (remotely) and SKEMA Business school in October and at Cafe-techno organised by Inria in November.

NEO Project-Team

10.3. Popularization

- S. Alouf gave a radio interview to journalist J. Colombain; the interview aired on France Info on 6 August 2017 and is available here (audio + abstract): http://www.francetvinfo.fr/replay-radio/nouveau-monde/nouveau-monde-faut-il-dire-le-ou-la-wi-fi_2294141.html;

- D. Politaki participated to the "Fête de la science", Antibes Juan-les-Pins (7-8 October). She animated two games based on the pythagorean theorem and finding the shortest path respectively, Thymio and scratch.

- D. Politaki participated in the organization of MOMI: Le MOnde des Mathématiques Industrielles. This is a two-day event organized by PhD candidates of Inria's center in Sophia-Antipolis, dedicated to discovering how Mathematics are useful in the Industrial world.

- D. Politaki participated to Stage MathC2+ (18-21 Juin 2017) which is organised by Inria (SAM).

GRAPHDECO Project-Team

9.3. Popularization

Theo Thonat gave demos of Image Based Renderings during the 2017 "Fete de la science" at the Inria stand (Oct. 7.) for school children and adults audience.

GRAPHIK Project-Team

10.3. Popularization

- M. Chein, "Sur la science informatique et son installation à Montpellier" Association Française pour l'Avancement des Sciences, Montpellier, April 2017.

- M. Chein, "L'informatique : la science au coeur du numérique", Académie des Sciences et Lettres de Montpellier, May 2017.

- J.-F. Baget, Animation of a panel on "Artificial Intelligence", Lycée Jean Monnet, Montpellier, December 2017.

HEPHAISTOS Project-Team

10.3. Popularization

- J-P. Merlet and A. Coulbois participated to Inorobot and several other events, exhibiting a cable-driven parallel robot for education
- J-P. is a member of the Scientific Committee managing the future permanent exhibition on robotics 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 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.

LAGADIC Project-Team

10.3. 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, grasping and dual arm manipulation by Romeo, 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, and augmented reality applications. Some of these demonstrations are available as videos on VispTeam YouTube channel (https://www.youtube.com/user/VispTeam/videos). This year there were among others, demonstrations organized for the new year's lab greetings, for the Inria industry journey focused on data and applications in Paris, for the "Semaine de l'Informatique Graphique et de la Réalité virtuelle", and for the Science and music journey.

- Marie Babel participated as a member in a panel discussion during the Digital Tech Conference organized in Rennes in December 2017.

- Julien Pettré wrote a vulgarization paper [68], explaining how crowd simulation is used in the field of visual effects for the movie and the video-game industries. The crowd simulation topic was presented during the "Pint of Science FR 2017" event, which organizes mini conferences animated by researchers in public places such as cafes and bars.

STARS Project-Team (section vide)

<p style="text-align:center">**TITANE Project-Team**</p>

10.3. Popularization

Pierre Alliez gave two seminars at CIV (olympic internship in mathematics) and for the national olympiads in geosciences (IESO).

WIMMICS Project-Team

10.3. Popularization

Michel Buffa:

- New-York-Times, March 14th: "Let a Robot Be Your Museum Tour Guide" [0].

- Nice-Matin December 8th: "Et si vous visitiez une exposition à l'autre bout de la planète, sans bouger de votre salon" [0].

Catherine Faron Zucker:

- Interview on Artificial Intelligence for Higher Education in *L'Etudiant* online journal [0].

Fabien Gandon:

- Interview for Science et Vie Junior about Semantic Web

- Interview for Survey Magazine about Semantic Web

- SIF article on the history of the Web [62]

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[0]https://www.nytimes.com/2017/03/14/arts/design/museums-experiment-with-robots-as-guides.html
[0]http://www.nicematin.com/sciences/dossier-et-si-vous-visitiez-une-exposition-a-lautre-bout-de-la-planete-sans-bouger-de-votre-salon-190462
[0] http://www.letudiant.fr/educpros/entretiens/intelligence-artificielle-entre-dans-enseignement-superieur.html

ZENITH Project-Team

10.3. Popularization

Zenith has major contributions to science popularization, as follows.

10.3.1. Code Teaching for Kids

Teaching code is now officially in the school programs in France. Class'Code is a PIA project that aims at training the needed 300,000 teachers and professionals of education France. The project is a hybrid MOOC (both online courses and physical meetings). Florent Masseglia is co-author of the first course and scientific referent of the other courses.

Along with Class'Code, the association "La main à la pâte" has coordinated the writing of a school book on the teaching of computer science teaching, with Inria (Gilles Dowek, Pierre-Yves Oudeyer, Florent Masseglia and Didier Roy), France-IOI and the University of Lorraine. The book has been requested by and distributed to 15,000 readers in less than one month. The extension of this book for the French "Collège" has been released this year with new activities and new scientific content.

F. Masseglia is giving a doctoral training at different doctoral schools in Montpellier, in order to train facilitators for helping teachers and people of the education world to better understand the "computational thinking". So far, 14 people have been trained. He is also a member of the management board of "Les Petits Débrouillards" in Languedoc-Roussillon and the scientific responsible for school visits in the LIRMM laboratory.

F. Masseglia is member of the pedagogic committee of "Edu'up", a project from France-IOI on learning code and computational thinking.

10.3.2. Science Outreach

In the context of the Floris'tic project, A. Joly participates regularly to the set up of popularization, educational and citizen science actions in France (with schools, cities, parks, etc.). The softwares developed within the project (Pl@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. Pl@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 the Czech republic (with an objective of 40 classrooms in the end). An impact study of the Pl@ntNet application did show that 6% of the respondents use it for educational purposes in the context of their professional activity.

10.3.3. Events

Zenith participated to the following events:

- F. Masseglia co-organized and co-animated the Inria's stand at "La fête de la science", Montpellier, held by Genopolys (a science village).
- F. Masseglia co-organized the regional Code-Week events with the local network of media-library ("réseau des médiathèques de Montpellier Méditerranée Métropole").
- F. Masseglia is member of the project selection committee for "La fête de la science" in Montpellier.
- A. Joly designed/animated several stands and public demos in events: "La fête de la science" (Montpellier, 1 day demo), 50 ans de l'Inria (Paris, 2-days demo), Expomobile Homonumericus (Itinerant expo in France).