RESEARCH CENTER
Bordeaux - Sud-Ouest

FIELD

Activity Report 2018

Section Popularization

Edition: 2019-03-07

AUCTUS Team

10.3. Popularization

10.3.1. Articles and contents

- Jean-Marc Salotti published an article entitled “La robotique humanoïde”, published in Questions Internationales [8]. It briefly describes the main issues and trends in humanoid robotics. Questions Internationales is a journal from La Documentation Française, which is a brand of the “Direction de l’Information Légale et Administrative”, under the direction of the Central Administration of the French Prime Minister.
- David Daney was interviewed regarding the collaboration of Auctus with AIO on the Numii project [10], [11].

10.3.2. Education

- Collaboration with IUT Angoulème. A delegation of professors from IUT Angoulème, GEII Department, came to visit us on December 4, in order to benefit from our expertise on the use of UR3 (Universal Robots) for teaching activities.

10.3.3. Interventions

- Unithé ou café, Inria Bordeaux, February 26: Anna Pugach gave a presentation: “Le textile intelligent”
- Journée portes ouvertes, 10 ans Inria Bordeaux, September 27: Vincent Padois gave demonstrations on collaborative robotics with the Panda robot
- Village des Sciences, Cap Sciences, Bordeaux, October 13: Jean-Marc Salotti animated a movie/debate: “Un robot peut-il partager vos émotions?”
- Village des Sciences, Cap Sciences, Bordeaux, October 14: Vincent Padois and David Daney gave demonstrations on collaborative robotics with the Panda robot
- ENSC inauguration, November 30: Nassim Benhabib gave demonstrations on collaborative robotics with the Panda robot

CAGIRE Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Vincent Perrier is a member of the CUMI-R.
- Vincent Perrier is a member of the CDT, in charge of the evaluation of software projects at the Inria Bordeaux center.
- Vincent Perrier is an elected member of the CLHSCT.
- Vincent Perrier is an elected member of the Inria evaluation committee. [0]
- Vincent Perrier is a member of the CT3-Num committee of Pau University, in charge of managing the computing resources and projects at Pau University.

10.3.2. Interventions

- «Forum des Métiers» organized by Collège Pierre Emmanuel, Pau (64), France, 9 February 2018. A stand was manned during one day with the objective of explaining the activity of researcher to an audience of middle school students. [PB]
- «Savoir en Partage», organized by Lacq Odyssée. [PB [22], JJ and VP [27], [24], RM [29], [28]]
- «Café des Sciences». [PB [23], JJ, RM [30], VP [25]]
- «Fête de la Science - Journée Portes Ouvertes Centre Inria BSO», Talence, France, 13 October 2018. [PB]
- «10 ans du centre Inria BSO: célébration de 10 ans de recherche et de transfert», Talence, France, 28 September 2018. [JJ and VP]

10.3.3. Creation of media or tools for science outreach

- «Science on tourne». [PB, JJ, RM, VP]

  http://www.cestdanslaire.fr/fr/page/science-on-tourne

[0] https://www.inria.fr/en/institute/organisation/committees/evaluation-committee

10.3. Popularization

10.3.1. Interventions

- Héloïse Beaugendre has co-organized (with PlaFRIM and CATIE) the Bordeaux session of the HPC hackathon sponsored by GENCI. This coding competition is open to students and young reserachers and has taken place at the Inria BOS center in December (for more information see `https://www.inria.fr/centre/bordeaux/agenda/hackathon-du-hpc-genci`)
- Algiane Froehly (Mmg-Consortium) and Mario Ricchiuto have set up and animated the CARDAMOM stand during the event "Fête des 10 Ans", held on September 27th, and celebrating the 10 years of the Inria BSO center

CARMEN Project-Team

8.3. Popularization

8.3.1. Internal or external Inria responsibilities

- L. Weynans is responsible for the communication (*Chargé de communication*) of the IMB
- Exhibit at the open days on the occasion of the 10-years anniversary of the Inria center Bordeaux Sud-Ouest.

8.3.2. Interventions

L. Weynans:

- Organization of the day “Filles et Maths, une équation lumineuse”
- Several presentations for high-school students about scientific computing

CQFD Project-Team (section vide)

FLOWERS Project-Team

10.3. Popularization

10.3.1. Teaching and Education

10.3.1.1. Inirobot

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/ 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.

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.

Created pedagogical documents and resources:

- The inirobot pedagogical kit [83]: 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 http://tice33.ac-bordeaux.fr/Ecolien/ASTEP/tabid/5953/language/fr-FR/Default.aspx
- Inirobot website and forum: https://dm1r.inria.fr/ or http://www.inirobot.fr On this website, teachers, animators and general public can download documents, exchange about their use of inirobot's kit.

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

10.3.1.2. MOOC Thymio

Didier Roy played a central role in the design and making of 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. Web: https://www.fun-mooc.fr/courses/course-v1:inria+41017+session01/about

10.3.1.3. Poppy Education

As part of the Poppy Education project, thanks the robotic platform Poppy we created pedagogical kits open-source and low cost for teaching computer science and robotics. It is designed to help young people to take ownership with concepts and technologies of the digital world.

The Pedagogical kits includes robots and pedagogical resources. They have been co-created directly with users (mainly high schools teachers) and evaluated in real life by experiments in classrooms [120].

The activities were designed with the visual programming language Snap! (Scratch like) and Python, but some are in Java / Processing (thanks the robot API you can use the language of your choice).

Most activities are using the robot Poppy Ergo Jr, but some use Poppy Torso (mostly in higher school because of its cost) and Poppy Humanoid (in kinder-garden for dance projects) :

- The Poppy Ergo Jr robot is a small and low cost 6-degree-of-freedom robot arm. It consists of simple shapes which can be easily 3D printed. It has several 3D printed tools extending its capabilities (there are currently the lampshade, the gripper and a pen holder but you can design new ones). They are assembled via rivets which can be removed and added very quickly with the OLLO tool. Each motor has LEDs on (8 different color can be activated). The electronic card (raspberry Pi) is visible next to the robot, that allow to manipulate, and plug extra sensors.
- The Poppy Torso robot is an open-source humanoid robot torso which can be installed easily on tabletops. More affordable than the robot Poppy Humanoid, it is an ideal medium to learn science, technology, engineering and mathematics.

We continued to improve the robots functionalities and you can see below the resources we created :

- A website have been created to present the project and to share all resources and activities. https://www.poppy-education.org/
- To complete the pedagogical booklet [119] that provides guided activities and small challenges to become familiar with Poppy Ergo Jr robot and the Programming language Snap! (https://drive.google.com/file/d/0B2jV8VX-lQHwTUxXZjF3OGxHVGM/view) we provided a list of Education projects. Educational projects have been written for each activity carried out and tested in class. So each projects have its own web page including resources allowing any other teacher to carry out the activity (description, pedagogical sheet, photos / videos, pupil's sheet, teacher's sheet with correction etc.). Their is now 32 activities documented available on Poppy Education website.

You can see the activities on this links (in french):

- Introduction to Ergo Jr and Snap! : https://www.poppy-education.org/activites/initiation-ergo-jr-et-snap
- Ergo Jr and Python tutorials : https://www.poppy-education.org/activites/tuto-python-robot-ergojr
- High-school levels : www.poppy-education.org/activites/activites-lycee
- Middle-school level : www.poppy-education.org/activites/activites-college
- Primary Schools level : https://www.poppy-education.org/activites/activites-primaire/
- Demonstrations (just videos to show the possibilities) : https://www.poppy-education.org/activites/demos/
- We continued to improve the documentation of the robotic platform Poppy (https://docs.poppy-project.org/en/) and the documentation has been translated into French (https://docs.poppy-project.org/fr/.
- A FAQ have been written with the most frequents questions to help users: https://www.poppy-education.org/aide/
- New activities on Poppy Education website and forum.
- New section : Activities with Python.
- Improvements in the Resources page of the Poppy Education website.

10.3.2. Talks and Hands-on

- Thibault Desprez, December 2018 at Inria Bordeaux, welcomed three students from middle-school during two days to discover the working environment and to introduce them to robotics.
- Thibault Desprez, Inria Bordeaux open day, November 2018, exhibition stand to present Poppy Education and Poppy robots
- Thibault Desprez, National Meeting of Educational Robotics, October 2018 at ifé ENS Lyon, two talk to present Poppy robots kits in school.
- Thibault Desprez, National Meeting of Educational Robotics, October 2018 at ifé ENS Lyon, exhibition stand to present Poppy Station and Poppy robots.
- Thibault Desprez, Théo Segonds, Fête de la science (Inria Bordeaux Sud-Ouest), October 2018, 4 programming workshop in 2 days (with middle school students) using Snap! and the robot Poppy Ergo Jr.
- Thibault Desprez, Meet-up & Educate, October 2018 at INP Bordeaux, exhibition stand to student recruitment for a project on Poppy robots.
- Thibault Desprez, PI space inauguration, July 2018 at ESPE Mérignac, exhibition stand to present Poppy Station and Poppy robots.
- Thibault Desprez, Bordeaux Geek Festival, May 2018, Parc expo, Talk about societal problem on robotics.
- Thiabult Desprez, Usine Végétale inauguration, May 2018 at Le Fieu, exhibition stand to present Poppy Education and Poppy robots in rural zone.
- Thibault Desprez, Connect'thouars, April 2018 at Talence, Workshops to initiate in programming.
- Thibault Desprez, Didapro 7, February 2018 at HEP Vaud, Lausanne, talk to present the article : "Poppy Ergo Jr : un kit robotique au coeur du dispositif Poppy Éducation"
- Thibault Desprez, Théo Segonds, Fondation Main à la pate, February 2018 at Paris, Two days to train a group of teachers to robotics and programmation with Poppy Ergo Jr robot.
- Thibault Desprez, e-Fran seminar, January 2018 at Minister of Higher Education, Research and Innovation, poster to present my thesis.
- Théo Segonds. Poppy Ergo Jr Workshop at CERN (Geneve). Construction and programming of the robotic arm Poppy Ergo Jr.
- Théo Segonds. Scientae Robotica, Lausanne. Poppy Ergo Jr Workshop. Construction and programming of the robotic arm Poppy Ergo Jr.
- Benjamin Clement and Alexandra Delmas, EdTech days, may 2018. Presentation of kidlearn and kidbreath projects.
- Theo Segonds, Didier Roy. PLAIRE Festival in Evian with Poppy exhibition during 2 days.
- Alexandra Delmas, Didier Roy. Forum Educavox in Bordeaux. Presentation of kidlearn and kidbreath projects.
- Didier Roy. R2T2 Richter event, remote robotics programming, in caribbean islands, in collaboration with EPFL.
- Didier Roy. Inria Scientific Days, presentation of educational projects in Flowers Team.
- Stephanie Noirpoudre. Poppy Education présent à la journée EIDOS 65 : Le forum des pratiques numériques pour l'éducation. Description and feedback of the 9th edition of the EIDOS 65 day (the digital practice forum for education).
- PY Oudeyer mentored students from College de Cadillac for their robotics project (2 days), march 2018.
- PY Oudeyer gave a talk "Intelligence artificielle: un outil pour nous aider à mieux comprendre l'intelligence naturelle?" at Collège Cadillac, Gironde, may 2018.

- PY Oudeyer gave a talk "Intelligence artificielle: apprentissage automatique et sciences cognitives" at a training event for members of Bordeaux Metropole political and decision staff, Nov. 2018.
- PY Oudeyer gave a talk "Intelligence artificielle: apprentissage automatique et sciences cognitives" at Université de Tous les Savoirs, Arcachon, janv. 2018.

10.3.3. Popularizing inside Inria

- Théo Segonds and Thibault Desprez. Poppy Ergo Jr training for Inria Scientific Mediation members.
- Inria National Scientific Mediation Seminar: Presentation by Stéphanie Noirpoudre and Théo Segonds of Poppy Ergo Jr, and workshop.
- Sébastien Forestier made a presentation on models of curiosity-driven development at Unithé ou Café.

10.3.4. Innovation and transfer

- Since 1 september 2017 until february 2019, PerPoppy and Poppy Station Projects : D. Roy, P.-Y. Oudeyer. These projects aim to perpetuate the Poppy robot ecosystem by creating an external structure from outside Inria, with various partners. After the Poppy Robot Project, the Poppy Education Project has ended and Poppy Station structure is born. Many exchanges have already taken place with potential partners such as the EPFL, the ENSAM network, the «Ligue de l'Enseignement», Génération Robots, the French Institute of Education, several academies, the direction of digital education of the Ministry of Education, ... PerPoppy is the project which is building the new structure, and Poppy Station is the name of the new 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.poppystation.org

10.3.5. Internal or external Inria responsibilities

D. Roy is member of the Class'code team (Inria is member of the consortium of this project) https://pixees.fr/classcode/accueil/. Class'code is a blended formation for teachers and animators who aim to initate young people to computer science and robotics. D. Roy has in charge the robotics module of the project.

D. Roy is adviser of the organization of computer science exhibition in "Palais de la découverte" which has begun on 2018 March. He helps for robotics part.

D. Roy is member of the team "Education en Scène" which organize educational activities with robotics in Bordeaux Digital City.

D. Roy is member of the scientific committee of "Learning Computer Science at School" project in Canton de Vaud (Switzerland).

D. Roy is member of the Robocup Junior French committee, an international robotics challenge http://rcj.robocup.org/.

D. Roy is member of the scientific committee of "Ludovia CH" Conference which will be held in Yverdon (Switzerland) on 2019 March.

D. Roy is project co-leader of MOOC Thymio, in collaboration with EPFL and Inria Learning Lab. The aim of this MOOC is to propose to teachers a training on basics of computer science, using the robotic platform Thymio.

D. Roy is associate member of the EPFL "LEARN" center.

PY. Oudeyer continued to be the PI of the Poppy Education project.

PY. Oudeyer was scientific mentor for stiudents of College de Cadillac, within the program "Main à la pâte" of Maison des Sciences.

10.3.6. Articles and contents

- Adrien Laversanne-Finot wrote a blog post on "Discovery of independently controllable features through autonomous goal setting", https://openlab-flowers.inria.fr/t/discovery-of-independently-controllable-features-through-autonomous-goal-setting/494
- Cédric Colas wrote a blog post on "How Many Random Seeds Should I Use? Statistical Power Analysis in (Deep) Reinforcement Learning Experiments", https://openlab-flowers.inria.fr/t/how-many-random-seeds-should-i-use-statistical-power-analysis-in-deep-reinforcement-learning-experiments/457
- Cédric Colas wrote a blog post on "Bootstrapping Deep RL with population-based diversity search"
- PY Oudeyer was interviewed for an article of **The Economist** on curiosity-driven learning, http://www.pyoudeyer.com/TheEconomist2018.pdf
- PY Oudeyer was interviewed for an article of **Scientific American** on curiosity-driven learning, http://www.pyoudeyer.com/IntelligentMachinesThatLearnLikeChildren-Scientific%20American2018.pdf
- PY Oudeyer was interviewed for an article of **MIT Technology Review** on curiosity-driven learning, http://www.pyoudeyer.com/may17MITTechnology%20Review.pdf

GEOSTAT Project-Team

10.2. Popularization

- C. Sakka, A. Zebadua, N. Brodu and H. Yahia have been participating in the demonstration made by I2s company during the Celebration of the 10 years of the center and presenting results of the demosaicing method applied to digital images.

10.2.1. Interventions

- GEOSTAT has been participating to the 10 years Inria celebration, in the form of a demonstration with I2S company.

HIEPACS Project-Team

9.3. Popularization

9.3.1. Interventions

During the 10th anniversary of the Inria Bordeaux Sud-Ouest centre and the open day, scientific popularisation materials of the HiePACS team's research work were presented to the attendees.

LFANT Project-Team

8.3. Popularization

8.3.1. Articles and contents

- X. Caruso published an article entitled *Polynômes tordus* in the journal *Au fil des maths de la maternelle à l'université...* edited by APMEP.
- H. Cohen wrote in [28] an introduction to Modular forms, which has been published in the book Notes from the International School on Computational Number Theory.

8.3.2. Education

D. Robert is a member of the jury of Agregations de Mathematiques. He is also the codirector with Alain Couvreur of the option "calcul formel" of the Modelisation part of the oral examination.

8.3.3. Interventions

- 24/02/2018 in Olot (Spain), A. Page, with the other participants of Sage Days 93: one day for 20 local high school students to explore mathematical problems.
- 24/05/2018, A. Page: Unithé ou café on the mathematics of wireless communications: *Méthodes algébriques et géométriques pour les communications sans fil : comment l'espace hyperbolique peut-il améliorer vos appels téléphoniques ?*
- 30/05/2018, A. Page: in Poitiers half a day meeting with junior school students who took part in the Al-Kindi competition; introduction to cryptography.
- 27/09/2018 D. Robert and A. Page: demonstration stand on graph-based cryptography at the Inria BSO Party Day.
- 9-11/10/201 A. Page: Fête de la Science at Inria Bordeaux, activity on cryptography (7 groups of students).
- 13/10/2018 D. Robert and A. Page: demonstration stand on graph-based cryptography at the Inria BSO Open Day.
- 11/12/2018 A. Page: talk at the Inria BSO Comité des Projets *Variations arithmétiques et algorithmiques sur le thème << Peut-on entendre la forme d'un tambour? >>*

MAGIQUE-3D Project-Team

9.3. Popularization

9.3.1. Interventions

- Justine Labat participated in scientific 'speed datings' during the 'Filles et Maths' day at Pau in May 2018.
- Justine Labat animated the stand in Mathematics during 'Le Village des Sciences' day at Pau in October 2018.
- Sébastien Tordeux gave a talk on numerical analysis in the Cercle Sofia Kovalevskaïa of Toulouse in May 2018
- Juliette Chabassier participated to a movie - debate event in Cognac in march 2018.
- Juliette Chabassier animated a workshop around virtual piano during the Inria "10 years night" in september 2018.
- Juliette Chabassier animated a workshop around virtual piano during the Inria "fête de la science" in october 2018.
- Robin Tournemenne animated a workshop around virtual piano during the Inria "fête de la science" in october 2018.
- Juliette Chabassier animated a workshop around virtual piano during the Inria "open doors day" in october 2018.
- Juliette Chabassier welcomed L3 students around a virtual piano workshop in december 2018.

MANAO Project-Team

10.3. Popularization

10.3.1. Interventions

- Public exhibitions: Station Campus, Live Painting with Maud Mulliez at the Musée Ethnographique de Bordeaux (November 29th, 2018).
- Talks for schoolchildren: Camille Brunel and Pierre Bénard gave a 30 minutes talk titled *L'art et la science des films d'animation 3D* in front of secondary students during "la semaine des Maths" (March 15th, 2018), "le Printemps de la Mixité" (March 27th, 2018), and "la Fête de la Science" (October 10th, 2018).
- Talk at e-artsup: Pierre Bénard gave a 1 hour talk titled *Sciences et techniques pour l'animation 3D* in front of art students (October 8th, 2018).
- Open days at Inria Bordeaux Sud-Ouest : Demonstration of the *Wedge Camera* at "la Fête de la Science" (October 13th, 2018)

10.3.2. Internal action

- 10-year-celebration of Inria Bordeaux Sud-Ouest : Demonstration of the *Wedge Camera* (September 27th, 2018)

MEMPHIS Project-Team

9.3. Popularization

Afaf Bouharguane has presented her research at the event Unithé ou Café at Inria Bordeaux, November 2018.

Michel Bergmann, "Modéliser et optimiser les énergies renouvelables". Stand for the 10-th year anniversary of Inria Bordeaux South West centre, October 13th 2018.

MNEMOSYNE Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

Thierry Viéville is in charge of mission regarding e-education in particular the collaborations with the UCA university on these subjects, more precisely the LINE laboratory ESPE of Nice where he is affected at 20%, for the creation and co-direction of the MSc and the relation with EducAzur, and the actions within the Class´Code project.

10.3.2. Articles and contents

- For online publications: F. Alexandre in Usbek & Rica (June 8) and Inriality (May 17): https://usbeketrica.com/article/2067-la-singularite-empire-des-machines and https://www.inriality.fr/informatique/informatique-ia-intelligence-artificielle/2067-la-singularite-ou/;
- Interviews in order to popularize: F. Alexandre in La Tribune newspaper (September 10): https://objectifaquitaine.latribune.fr/innovation/2018-09-10/inria-bordeaux-10-ans-de-recherches-a-la-pointe-du-numerique-789911.html; I. Chraibi Kaadoud and A. Garenne in blog scilogs about neural networks: http://www.scilogs.fr/intelligence-mecanique/architecture-reseaux-de-neurones-de-choix/; http://www.scilogs.fr/intelligence-mecanique/architecture-des-reseaux-de-neurones-reseaux-de-neurones-artificiels-classiques-2-3/ and http://www.scilogs.fr/intelligence-mecanique/architecture-des-reseaux-de-neurones-reseaux-de-neurones-impulsionnels-3-3/; X. Hinaut about organizing a Hackathon in https://pixees.fr/hack1-cerveau/; N. Rougier in CNRS website (September 21): http://www4.cnrs-dir.fr/insb/recherche/parutions/articles2018/t-boraud.html and in Le Monde newspaper (September 19): https://www.lemonde.fr/sciences/article/2018/09/19/les-emotions-au-coeur-de-l-apprentissage_5357127_1650684.html; Thierry Viéville is co-editor and/or co-author of about two papers per month on http://binaire.blog.lemonde.fr.

10.3.3. Education

F. Alexandre: Teaching to the high-school professors in Philosophy of the academy of Poitiers about Artificial Intelligence (April, 25); Thierry Viéville has realized more than ten session of formation (over 400 teachers involved) within the scope of the Class´Code project, and co-organized two of them.

10.3.4. Interventions

- National events: participation of the team on the NeuroCampus to the Week of the Brain (Semaine du Cerveau: March 19-23); to the Declics program for high-schools (http://www.cerclefser.org/fr/declics/, Nov. 22); Fête de la Science at Inria Bordeaux and Cap Sciences in October: The humanoid Nao robot was listening to the instructions and learning names of objects. This demo was performed by X. Hinaut and A. Strock with a German collaborator from the University of Hamburg (J. Twiefel).
- Public exhibitions:
  - "Brain and Artificial Intelligence" at Regional Headquarters in Limoges (Feb. 2);
  - "What is the usefulness of Artificial Intelligence ?" at Café des Sciences in Soustons (Dec. 12) (F. Alexandre);
  - Science pour tous (Bordeaux), Machine learning (Communauté Urbaine de Bordeaux), AI Unplugged (Bordeaux), Déambulation autour de l'IA (Bordeaux), L'intelligence artificielle en question (Paris) (N. Rougier);
  - Participation to the Neurocampus Day (S. Pagliarini, poster "Learning an inverse model for vocal production: toward a bio-inspired model");

- Thierry Viéville: Interventions on artificial Intelligence and the development of critical thinking on large audience popularization events (Universcience, Médiathèque de Bordeaux, Semaine du Cerveau, Fête de la Science, Select Sophia-Antipolis, more than 200 persons involved) and three interactive talks in high-school (more than 150 students involved).
- T. Firmo Drumond and B. Teja Nallapu prepared and presented a demo for the 10 years of the Bordeaux Inria Centre (September 27).
- N. Rougier and X. Hinaut participated to a theater performance on AI, showing the state of work of an artistic residence in November.

10.3.5. Internal action

- Internal meetings: T. Firmo Drumond presented Deep Learning to the Inria Bordeaux Café des Sciences (March 22);
- Nicolas Rougier gave a talk about scientifc fraud and misconduct at the institute of neurodegenerative diseases.

10.3.6. 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 begun to design 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

- S. Benzekry is a member of the local Inria commission of informatical tools users (CUMI)
- C. Poignard is an elected member of Inria's national evaluation committee.

10.3.2. Interventions

- O. Saut: Fête de la Science, Cap Science, Bordeaux.

PHOENIX-POST Team

8.3. Popularization

8.3.1. Articles and contents

- Mazon, C., Fage, C. et Sauzéon, H. (2017). “Impacts des technologies numériques pour favoriser l’inclusion scolaire d’élèves avec Trouble du Spectre Autistique”. In *Les Cahiers de l’Actif* (a journal for professionals working in caregiving and assistance).

8.3.2. Interventions

- Bernard Serpette, Mar 12, 2018: participating to the Week of math at the primary school St-Genes in Bordeaux: initiating 1st and 2nd grade pupils to computational thinking via problem-solving games
- Cécile Mazon, Sept 27, 2018: participating to the Open days at Inria Bordeaux: presenting to the general public the scientific projects about technology assistance for young persons with ASD.
- Cécile Mazon, Jan 18-19, 2018: Poster for the symposium UB-CNRS - “Sensibilisation et regards croisés autour du handicap”, Pôle juridique, Université de Bordeaux, France
- Cécile Mazon, Jan 15-19, 2018: managing the internship of a high-school pupil (Roxane Allouche) at Inria Bordeaux

PLEIADE Team

9.2. Popularization

9.2.1. Internal or external Inria responsibilities

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

9.2.2. Interventions

The "Family-3D" activity (see below) was presented on three occasions:

- During the 10 year celebration on the evening of September 27
- During the Open House all day October 13
- During the Fête de la Science, to 8 groups of 12 students

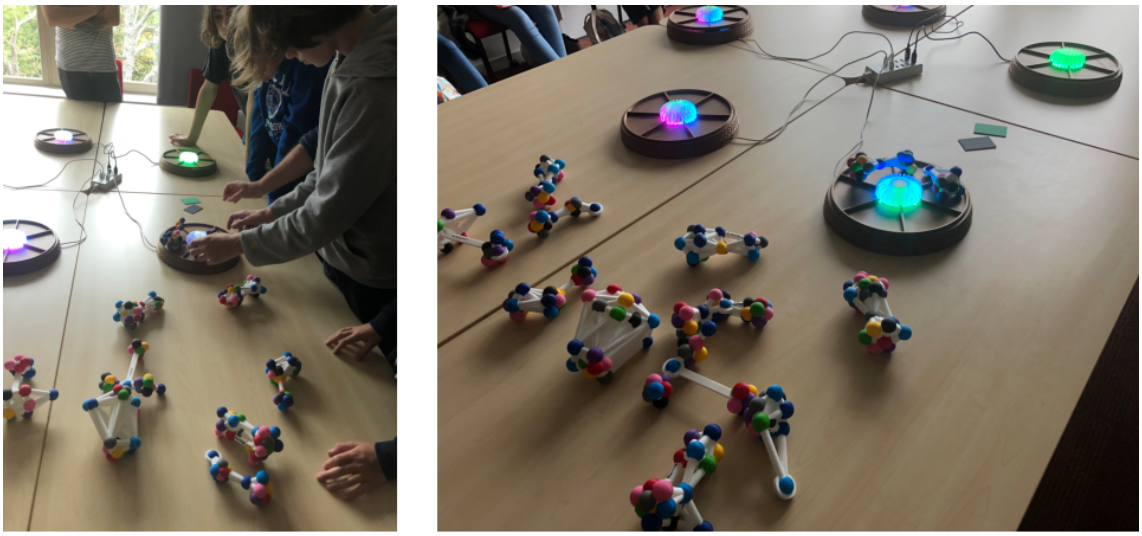

Figure 6. Family-3D activity during the Circuit Scientifique of the Fête de la Science, 2018

9.2.3. Creation of media or tools for science outreach

Pleiade created an interactive activity "Family-3D" to explain the methods and uses of pattern classification of protein families. Using new software developed by the team we laid out 30 families in 3D space and converting those shapes to 3D volumes. The selected families had been previously grouped into biologically pertinent classes by human curators. Each shape was printed with an embedded unique RFID tag. We also designed and printed five interactive terminals, containing a microcontroller, an RFID reader with a custom-designed inductive coil as input, and an LED ring as output. Participants would propose groups of shapes that they believed belonged to the same class, and the terminal would evaluate the group.

David Sherman contributes open-source software development to the Aseba platform for educational robotics [0], deployed in Thymio II robots used by children as well as in the simulator used by Class'Code [0] to train teachers.

David Sherman and Louise-Amélie Schmitt developed AsebaHub, a specialized WiFi hub for connecting Thymio-II robots into a local-area network. AsebaHub acts as either a wireless Access Point to which users may connect, or as a Bridge to an existing local-area network. Robots can be discovered using mDNS-sd (Zeroconf/Bonjour). AsebaHub works out of the box with the Aseba Studio and VPL programming environments, and can also provide an HTTP service that is compatible with Scratch, Snap!, or other environments.

[0] http://aseba.io/
[0] https://pixees.fr/classcode-la-formation-associee-a-pixees/

POTIOC Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Member of editorial Board of Blog Binaire - Le Monde, Pascal Guitton

10.3.2. Articles and contents

- Martin Hachet, *Art et Informatique: Fertilisation croisée*, Blog Binaire - Le Monde, [46]
- Pascal Guitton, *L'accessibilité numérique, pourquoi il faut la développer*, Blog Binaire - Le Monde, [45]
- Bruno Arnaldi, Pascal Guitton & Guillaume Moreau, *Rendez-vous dans 10 ans*, Blog Binaire - Le Monde, [44]

10.3.3. Education

- Potioc booth at EdTech days, Bordeaux, May 18
- "Pensez-vous qu'il soit possible de lire dans les pensées?", Scientific debate to launch the "projets indisciplinés" of University of Bordeaux, October 2018, Fabien Lotte
- "La recherche sur les interfaces cerveau-ordinateur chez Potioc", Presentation for Bachelor 3, ENS Lyon, visiting Inria Bordeaux, December 2018, Fabien Lotte
- "Le futur des interfaces : interfaces invisibles", Master Class Festival Futur.e.s, Lauren Thevin
- Booth at Laval Virtual (Espace Révolution)

10.3.4. Interventions

- Pint of Science, Bordeaux, May 18, Martin Hachet and Philippe Giraudeau
- Cinema Sciences, Merignac, April 18, Martin Hachet
- Goûter des sciences / Les petits débrouillards (Figure 9), Bordeaux, December 18, Martin Hachet, Philippe Giraudeau, Théo Segonds, Nicolas Palard
- Organization of a workshop for middle and high school students, Ethnography museum, University of Bordeaux, 8-11th Oct. 2018, Léa Pillette
- "Optimizing humans digital learning by decoding brain activity in real time", Poster, ESOF Toulouse, France, July 2018, Aurélien Appriou
- "Flow theory for optimizing BCI", CogTalk, Bordeaux, November 2018, Jelena Mladenovic
- "Cerveau et jeux vidéo", CogTalk, Bordeaux, March 2018, Pierre-Antoine Cinquin
- L'accessibilité des jeux vidéo, Masterclass Scientific Game Jam, March 2018, Université de Bordeaux
- Seminar for PhD students – Flow theory for optimizing BCI, ISPED Bordeaux, November 2018, Jelena Mladenovic
- "Contrôler un ordinateur par l'activité cérébrale : Mythe ou Réalité ?", Conférence grand public de restitution des pauses de l'institut des études avancées de l'université de Bordeaux, Talence, June 2018, Fabien Lotte
- "Les Interfaces Cerveau-Ordinateur : Progrès et questions", Centre Culturel du Hâ, Bordeaux, France, May 2018, Fabien Lotte
- "Mixed reality for visual impaired people", Cherchons pour Voir & IJA (Institut des Jeunes Aveugles, Toulouse), Apéro Sciences, Lauren Thévin
- "Accessibilité numérique : pourquoi et comment", Inria Tech Talk, Station F, Paris, Pascal Guitton

10.3.5. Internal action

- Unithé ou Café, Martin Hachet, May 18
- Potioc Demos for 10th anniversary of Inria Bordeaux, Sept. 18
- Fete de la sciences, Demo at CapSciences, Oct. 18.

Figure 9. The Potioc team at Gouter des Sciences / les petits débrouillards, Dec. 18.

REALOPT Project-Team

10.3. Popularization

Organizations

- Local events: "Journée emploi maths et interaction 2018". This day aims to bring together students, researchers and practitioners in mathematics in the Bordeaux area. https://uf-mi.u-bordeaux.fr/sites/jemi/

Interventions

- National events: Fête de la Science in Bordeaux (P. Pesneau and F. Clautiaux)
- RealOpt participated to the events related to the anniversary of Inria BSO

SISTM Project-Team

10.3. Popularization

10.3.1. Internal or external Inria responsibilities

- Mélanie Prague is part of the Inria Commission de Développement Technologique (CDT)
- Mélanie Prague is part of the Inria commission des emplois de recherche.
- Robin Genuer is the webmaster of the publication site of the French statistical society

10.3.2. Articles and contents

- Mélanie Prague participated to an interview for Sud ouest Eco.
- Mélanie Prague made a video of presentation of SISTM team

10.3.3. Interventions

- Chloé Pasin presented "Modélisation et optimisation de la réponse immunitaire" to L3 student from ENS Lyon visiting Inria and Hadrien Lorenzo participated to research speed meetings with these students on December 6 2018.
- Melany Durand, Hadrien Lorenzo, Chloé Pasin and Mélanie Prague participated at the "Fête de la Science" and presented "D'une goutte de sang à ta prochaine visite chez le médecin : bien personnaliser ton traitement" to high school students on October 10 2018.
- Chloé Pasin participated at the "atelier Digit'elles" with the "Femmes and Sciences" organization at the "Fête de la Science" on October 9 2018.

10.3.4. Internal action

- the whole team participated in a showcase of their activity for Inria BSO 10^{th} anniversary on September 27^{th}, 2018 "Une goutte de sang contient-elle plus de données qu'un smartphone ?"
- Marta Avalos and Binbin Xu conducted a workshop on "Vivre la diversité à Inria Bordeaux – Sud-Ouest", within the internal workshop for the Inria BSO 10^{th} anniversary, June 13. Participation to the SO News of June.

STORM Project-Team

9.3. Popularization

9.3.1. Interventions

- Olivier Aumage, Emmanuelle Saillard, Denis Barthou: Welcoming of the general public for the open days at the Inria research center, October 2018.
- Emmanuelle Saillard, Corentin Salingue: Fête de la Science, Inria, October 2018.
- Emmanuelle Saillard, Corentin Salingue: Semaine des maths, Lycée Saint Genès, March 2018.
- Corentin Salingue: Printemps de la mixité, Inria, April 2018.
- Corentin Salingue: Welcoming of schoolchildren: internship of Matthieu Vigier-Lafosse, January 2018.

9.3.2. Internal action

- Emmanuelle Saillard: DevDays, October 2018
- Denis Barthou: Unithé ou café, June 2018

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.

Guillaume AUPY co-organized (with Marthe Bonamy) a 2-day visit of Inria & Labri for undergrad students from ENS Lyon.

10.3.2. Education

- Brice GOGLIN was involved in the MOOC *Informatique et Création Numérique* which focuses at bringing basics about computer science to high-school teachers. He answered numerous questions on the forum. More than 19 000 people registered to the course, and more than 1 500 successfully finished it.
- 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.
- François PELLEGRINI, created a set of ten animated short videos on the digital revolution and its consequences, for high-school pupils and freshman students (Pix/C2i), in collaboration with the services of Université de Bordeaux.

10.3.3. Interventions

- Valentin HONORÉ and Brice GOGLIN went to the St Genes middle school in Bordeaux in March for *Semaine des Maths* to give hands-on sessions about basics of algorithmics and computer science.
- TADAAM presented its research to the general public during the 10th anniversary of the research centre on September 27th.
- Emmanuel JEANNOT was the roundtable presenter of the topic HPC and scientific computing at the Inria Bordeaux 10 years event on September 27th.
- Valentin HONORÉ and Brice GOGLIN presented TADAAM research during the research centre open day on October 13th.
- Guillaume AUPY, Valentin HONORÉ, Nicolas VIDAL and Brice GOGLIN gave seminars and hands-on session about computer science to schools attending *Fete de la Science* in October.
- Guillaume AUPY went to the Sainte-Foy-La-Grande middle school in the context of Maths-en-Jeans to talk about finding a way to share messages in class and how it relates to the internet.
- Brice GOGLIN introduced research, research carriers, high performance computing and data centers to middle-school interns on December 17th.
- François PELLEGRINI delivered a conference entitled "*Tous pirates ?*", at the National Theater of Bordeaux-Aquitaine (TNBA), in relation with the play of same name created by the Traverse and OS'O artist collectives.
- François PELLEGRINI participated in a conference and roundtable "*Ingénieurs, éthique et valeurs face à l'industrie 4.0*" organized by Fondation Anthony Mainguené at École Nationale Supérieure des Arts et Métiers.
- François PELLEGRINI was member of the jury during a fake trial of a self-driving artificial intelligence (*Carambolage du siècle*") at the Appeal Court of Paris, during the *Nuit du droit*.
- François PELLEGRINI delivered a conference on the digital revolution at Le Bar Commun during the *Week of digital Freedoms*.