RESEARCH CENTER
Grenoble - Rhône-Alpes

FIELD

Activity Report 2017

Section Contracts and Grants with Industry

Edition: 2018-02-19

AGORA Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- We have contracted bilateral cooperation with Rtone, an SME focusing on the connected objects area. This collaboration is associated with the CIFRE PhD grant for Alexis Duque, on the subject of Visible Light Communication.
- We have contracted bilateral cooperation with industrial and academic partners in the context of the PSPC Fed4PMR project (2015-2018). In this context, we are working on the design of new professional mobile radio solutions, compatible with 4G and 5G standards. This collaboration funds the PhD thesis of Jad Oueis and a part of the PhD thesis of Abderrahman Ben Khalifa.

8.2. Bilateral Grants with Industry

- Common Laboratory Inria/Nokia Bell Labs - ADR Network Information Theory.
  Agora is part of the ADR Network Information Theory of the common laboratory Inria/Nokia Bell Labs.
- Spie - INSA Lyon IoT Chaire.
  Agora is involved in the SPIE INSA Lyon IoT Chaire, launched in November 2016. The IoT Chaire partially funds the PhD thesis of Abderrahman Ben Khalifa. The PhD thesis work of Alexis Duque and Amjed Belkhiri are also contributing in this structure.
- Volvo - INSA Lyon Chaire.
  Agora is involved in the Volvo Chaire at INSA Lyon, on the area of autonomous electrical distribution vehicle in urban environments. Razvan Stanica is a member in the steering committee of this structure.

AIRSEA Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

Contract with IFPEN (Institut Français du pétrole et des énergies nouvelles), for the supervision of Adrien Hirvoas. Research subject: Sensitivity of a floating offshore wind turbine to uncertain parameters and identification of observable variables for data assimilation.

The Chair OQUAIDO – for "Optimisation et QUAntification d'Incertitudes pour les Données Onéreuses" in French – is the chair in applied mathematics held at Mines Saint-Étienne (France). It aims at gathering academical and technological partners to work on problems involving costly-to-evaluate numerical simulators for uncertainty quantification, optimization and inverse problems. This Chair, created in January 2016, is the continuation of the projects DICE and ReDICE which respectively covered the periods 2006-2009 and 2011-2015. Reda El Amri's PhD thesis is funded by OQUAIDO.

A 1-year contract with NOVELTIS on the thematic "Développement de démonstrateurs avec AGRIF": see 6.1

A 3-year contract named ALBATROS with Mercator-Ocean on the topic « Interaction océan, vagues, atmosphère à haute résolution ».

ARIC Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

Bosch (Germany) ordered from us some support for implementing complex numerical algorithms.

8.2. Bilateral Grants with Industry

- Miruna Rosca and Radu Titiu are employees of BitDefender. Their PhD's are supervised by Damien Stehlé and Benoît Libert, respectively. Miruna Rosca works on the foundations of lattice-based cryptography, and Radu Titiu works on pseudo-random functions and functional encryption.
- Adel Hamdi is doing is PhD with Orange Labs and is supervised by Fabien Laguillaumie. He is working on advanced encryption protocols for the cloud.
- Within the program Nano 2017, we collaborate with the Compilation Expertise Center of STMicroelectronics on the theme of floating-point arithmetic for embedded processors.

AVALON Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Grants with Industry

7.1.1. IFPEN

We have a collaboration with IFPEN (http://ifpenergiesnouvelles.com/). IFPEN develops numerical codes to solve PDE with specific adaption of the preconditioning step to fit the requirement of their problems. With a PhD student (Adrien Roussel) we are studying the parallel implementation of multi-level decomposition domains on many-core architecture and GPGPU.

BEAGLE Project-Team (section vide)

BIPOP Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- CIFRE PhD Thesis with Schneider Electric (Rami Sayoud), starting 01 January 2018.
- SAFRAN contract (August-December 2017) on the simulation of a weaving machine (F. Bertails-Descoubes)

CHROMA Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

8.1.1. VOLVO-Renault Trucks Group (2016-2019)

Participants: Olivier Simonin, Jilles Dibangoye, Laetitia Matignon.

This collaboration has been built inside the INSA-VOLVO Chair, led by Prof. Didier Remond. In this context, the Chair funds the PhD Thesis of Guillaume Bono (2016-19). The objective is to study how machine learning techniques can deal with optimization of goods distribution using a fleet of autonomous vehicles. In the following of the first results, VOLVO proposed to extend our collaboration by funding a Post-doc position concerning good distribution with a platoon of autonomous vehicles. This Post-Doc will start on February 2018.

8.1.2. Toyota Motor Europe (2006 - 2018)

Participant: Christian Laugier.

The contract with Toyota Motors Europe is a joint collaboration involving Toyota Motors Europe, Inria and ProbaYes. It follows a first successful short term collaboration with Toyota in 2005. This contract aims at developing innovative technologies in the context of automotive safety. The idea is to improve road safety in driving situations by equipping vehicles with the technology to model on the fly the dynamic environment, to sense and identify potentially dangerous traffic participants or road obstacles, and to evaluate the collision risk. The sensing is performed using sensors commonly used in automotive applications such as cameras and lidar.

This collaboration is on the process to be extended for 4 years (period 2018-2021) and Toyota provides us with an experimental vehicle Lexus equipped with various sensing and control capabilities. Several additional connected technical contracts have been signed also.

8.2. Bilateral Grants with Industry

8.2.1. Renault (2015 - 2018)

Participants: Mathieu Barbier, Christian Laugier, Olivier Simonin.

This contract was linked to the PhD Thesis of Mathieu Barbier (Cifre Thesis). The objective is to develop technologies for collaborative driving as part of a Driving Assistance Systems for improving car safety in road intersections. Both vehicle perception and communications are considered in the scope of this study. Some additional short-term contracts (about 3 months) and an evaluation license for the team *CMCDOT* software have also been signed during this period. We are on the process of signing a new PhD research agreement for the period 2018 – 2020, with objective to address the open problem of emergency obstacle avoidance in complex traffic situations (for ADAS applications).

8.2.2. IRT Nanoelec – Perfect project (2012 - 2020)

Participants: Christian Laugier, Jerome Lussereau, Jean-Alix David.

Perfect is a project supported by ANR in the scope of the IRT (Technological Research Institute) Nanoelectronic driven by the CEA (Nuclear Energy Agency). The partners of the project are the CEA-LETI LIALP laboratory, ST-Microelectronics, Schneider Electric and Inria. The goal of this project is to propose integrated solutions for *Embedded Bayesian Perception for Dynamic Environment* and to develop integrated open platforms. The focus is on the application domain of autonomous mobile robots and vehicles, while considering both vehicle and infrastructure issues.

8.2.3. FUI Tornado (2017 – 2020)

Participants: Anne Spalanzani, Christian Laugier, Olivier Simonin, Jerome Lussereau, Jean-Alix David.

The project Tornado is coordinated by Renault. The academic partners of the project are Inria Grenoble-Rhône Alpes, UTC, Institut Pascal, University of Pau, IFSTTAR. The industrial and application partners are Renault, EasyMile, Neavia, Exoskills, 4D-Virtualiz, MBPC and Rambouillet Territoires. The objective of the project is to demonstrate the feasibility of a mobility service systems operating in the commercial zone of Rambouillet and on some public roads located in its vicinity. Several autonomous cars (Autonomous Renault Zoe) and one automatic Shuttle provided by EasyMiles will be customized and used. The *IRT Nanoelec* is also involved in the project as a subcontractor, for testing the perception, decision-making, navigation and controls components developed in the project.

8.2.4. Cooperation with EasyMile (2017 – 2020)

Participants: Christian Laugier, Jerome Lussereau, Jean-Alix David.

A first successful Proof of Concept (PoC) of the implementation of our *CMCDOT* embedded system on the EV10 automatic Shuttle of EasyMile, has been performed during the first trimester of 2017. This work has been done in the scope of the Project Perfect of IRT Nanoelec, and it has conducted to very encouraging results. A multiannual workplan has been prepared in the scope of the IRT Nanoelec for transferring and adapting our technology to the EasyMile shuttles.

CONVECS Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Grants with Industry

7.1.1. Orange Labs

Participants: Umar Ozeer, Gwen Salaün.

Umar Ozeer is supported by a PhD grant (from November 2016 to November 2019) from Orange Labs (Grenoble) on detecting and repairing failures of data-centric applications distributed in the cloud and the IoT (see § 6.5.1), under the supervision of Xavier Etchevers (Orange Labs), Gwen Salaün (CONVECS), François Gaël Ottogalli (Orange Labs), and Jean-Marc Vincent (POLARIS project-team).

7.1.2. Nokia Bell Labs

Participants: Radu Mateescu, Ajay Muroor Nadumane, Gwen Salaün.

Ajay Muroor Nadumane is supported by a PhD grant (from October 2017 to October 2020) from Nokia Bell Labs (Nozay) on IoT service composition supported by formal methods, under the supervision of Gwen Salaün (CONVECS), Radu Mateescu (CONVECS), Ludovic Noirie, and Michel Le Pallec (Nokia Bell Labs).

CORSE Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

- CORSE is involved in a contract with Kalray which objective is the automatic integration of neural networks into the manycore architecture developed by Kalray.

7.2. Bilateral Grants with Industry

- PSAIC Nano2017 is a bilateral Grant with STMicroelectronics. CORSE is involved in the development of trace analysis and hybrid compilation.
- DEMA Nano2017 is a bilateral Grant with STMicroelectronics. CORSE is involved in the development of debugging of multi-threaded applications.

CTRL-A Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

Our cooperation with CEA (an EPIC, industrial and commercial public institution) concerns the LETI/LIST DACLE laboratory at Grenoble Minatec; it is bilateral, currently involving the CEA PhD grant of Adja Sylla, to work with F. Pacull and M. Louvel on high-level programming on top of a rule-based middleware (See Sections 6.1.3 and 6.2.2.1).

7.2. Bilateral Grants with Industry

7.2.1. Orange

We have a cooperation with Orange labs, around a CIFRE PhD grant, on the topic of autonomic device management (see Section 6.2.2.2). This activity is part of the Inria/Orange joint laboratory.

7.2.2. Nokia / Bell labs

We are starting a research action with Nokia / Bell labs, around a PhD, co-advised with project-team Dyonisos at Inria Rennes, on the topic of the integration of FPGA-based accelerators in network nodes, and their reconfiguration management in coordination with higher level Software Defined Networks management. This activity is part of the Inria/ Nokia / Bell labs joint laboratory.

DANTE Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

8.1.1. GranDATA

Participants: Márton Karsai [correspondant], Éric Fleury.

Founded in 2012, Grandata is a Palo Alto-based company that leverages advanced research in Human Dynamics (the application of âbig dataâ to social relationships and human behaviour) to identify market trends and predict customer actions. Leading telecom and financial services firms are using Grandataâs Social Universe product to transform âbig dataâ into impressive business results.

The DANTE team and Grandata started to collaborate in 2014 on the analysis of large datasets provided by the company. The aim of the collaboration is to gain better understanding about the dynamical patterns of human interactions, mobility, and the socio-economic structure of the society.

8.2. Bilateral Grants with Industry

8.2.1. Orange R&D

Participant: Isabelle Guerin Lassous.

A contract has been signed between Inria and France Télécom for the PhD supervision of Laurent Reynaud. The PhD thesis subject concerns mobility strategies for fault resilience and energy conservation in wireless networks.

DATAMOVE Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- **BULL-ATOS SE (2016-2019)**. Two PhD grants (Michael Mercier and Adrien Faure). Job and resource management algorithms.
- **CEA DAM (2016-2018)**. PhD grant support contract (PhD of Estelle Dirand, funded by CEA). In situ analysis for Molecular Simulations.

DATASPHERE Team (section vide)

DRACULA Project-Team

6. Bilateral Contracts and Grants with Industry

6.1. Bilateral Contracts with Industry

The industrial connections of the Dracula team have been made through the "Modeling of the immune response" project. Contacts have been established with both large pharmaceutical companies (Sanofi-Pasteur and Merial) and SMEs (AltraBio and the CosmoTech). The now finished ANR PrediVac project included the two aforementioned SMEs and therefore strengthened the ties between Dracula and its industrial local ecosystem. The same consortium applied to ANR grants on close research topics in 2017. Furthermore, the ties with CosmoTech have been strenghened through a joint CIFRE PhD (A. Bonnaffoux).

6.2. Bilateral Grants with Industry

- A recent cooperation has been initiated with the start up “Neolys Diagnostics” about radiotherapy effects on healthy cells and tumor cells. A PhD student, Aurélien Canet, has started his doctorate studies in January 2016 paid for one half by the start up and for the other half by the labex Milyon. Aurélien Canet is co-supervized by Larry Bodgi (from Neolys), Nicolas Foray (from Inserm) and Laurent Pujo-Menjouet.
- Celine Vial is scientific responsible of a contract with the European Consortium Eurokin and in collaboration with IFP “Energies nouvelles” on the topic: “Design experiments, sensibility and uncertainty analysis and kriging”.

ERABLE Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Grants with Industry

ERABLE was awarded a PhD grant by the ANRt together with the Maat Pharma company. The PhD scholarship was granted to Marianne Borderes, who will be co-supervised starting from January 2018 by Marie-France Sagot and Susana Vinga (IST, Lisbon, Portugal) together with Lilia Boucinha from Maat Pharma.

IBIS Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. BGene

Participants: Johannes Geiselmann, Corinne Pinel.

BGene is a start-up company of Université Grenoble Alpes in the field of DNA engineering. BGene proposes efficient and custom-made modifications of bacterial genomes, leaving no scars or antibiotics resistance genes. The company has know-how and expertise at all stages of the development process, including the *in-silico* design of a desired construction, the choice of the appropriate genetic tools, and the delivery of the finished product. Former IBIS-member Caroline Ranquet and Johannes Geiselmann are co-founders of BGene, together with Marie-Gabrielle Jouan (Floralis, Université Grenoble Alpes). For more information on BGene, see http://www.bgene-genetics.com/.

7.2. Genostar

Participants: Hidde de Jong, Michel Page.

Genostar, an Inria start-up created in 2004, provides bioinformatics solutions for the comparative analysis of bacterial genomes, proteomes and metabolomes. Genostar's software suite performs the annotation of sets of genomic sequences, *i.e.*, the identification of the coding sequences and other features, followed by the prediction of the functions of the gene products. The modules which make up the software suite were originally developed within the Genostar consortium and the HELIX project team at Inria Grenoble - Rhône-Alpes. The software suite also includes the modeling and simulation tool GNA developed by members of IBIS. Unfortunately after the retirement of its CEO, former IBIS member François Rechenmann, Genostar ceased its activity.

IMAGINE Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Grants with Industry

7.1.1. CIFRE SILEANE (2015 - 2018)

Participants: Frédéric Devernay, Romain Brégier.

7.1.2. CIFRE PSA (2017 - 2020)

Participants: Stefanie Hahmann, Jean-Claude Léon, Youna Le Vaou.

MAVERICK Project-Team (section vide)

MISTIS Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

CIFRE PhD with SCHNEIDER (2015-2018). F. Forbes and S. Girard are the advisors of a CIFRE PhD (T. Rahier) with Schneider Electric. The other advisor is S. Marié from Schneider Electric. The goal is to develop specific data mining techniques able to merge and to take advantage of both structured and unstructured (meta)data collected by a wide variety of Schneider Electric sensors to improve the quality of insights that can be produced. The total financial support for MISTIS is of 165 keuros.

PhD contract with EDF (2016-2019). S. Girard is the advisor of a PhD (A. Clément) with EDF. The goal is to investigate sensitivity analysis and extrapolation limits in extreme-value theory with application to extreme weather events. The financial support for MISTIS was of 140 keuros

Contract with VALEO. S. Girard and A. Clément are involved in a study with Valeo to assess the relevance of extreme-value theory in the calibration of sensors for autonomous cars. The financial support for MISTIS was of 15 keuros.

Contract with PIXYL P. Rubini was hired for 18 months for a software valorization task regarding brain MRI segmentation. The financial support for MISTIS was of 63.5keuros

MOEX Project-Team (section vide)

MORPHEO Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Grants with Industry

The Morpheo Inria team and Microsoft research set up a collaboration on the capture and modelling of moving shapes using multiple videos. Two PhD proposals will be part of this collaboration with the objective to make contributions on 4D Modeling. The PhDs will take place at Inria Grenoble Rhône-Alpes and will involve regular visits and stays at Microsoft in Redmond (USA) and Cambridge (UK). At Microsoft, Steve Sullivan, Andrew Fitzgibbon, Jamie Shotton and Marta Wilczkowiak will be participating to the project.

8.2. Bilateral Contracts with Industry

A collaboration with the French Start up Holooh started in 2017. Holooh aims at producing high quality holograms for VR and AR applications, especially for the fashion and music domains. Holooh's objective is to set up a multi-camera studio in Paris for that purpose. Edmond Boyer is involved in the collaboration.

NANO-D Project-Team (section vide)

NECS Project-Team (section vide)

NUMED Project-Team (section vide)

PERCEPTION Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

From December 2016 to November 2017 the PERCEPTION team had a collaborative project with Samsung's Digital Media and Communication R&D Center. The collaboration was fully funded by Samsung Electronics. The topic of this collaboration was *multi-modal approach to human-robot interaction*.

PERVASIVE INTERACTION Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

7.1.1. Learning daily routines by observing activity in a smart home.

Members of the Pervasive interaction team are working with Orange Labs on techniques for observing activity and learning routines in a smart home. Activity is observed by monitoring use of electrical appliances and Communications media (Telephone, Television, Internet). Activities are described using Bayesian Situation Modeling techniques demonstrated in earlier projects. A log of daily activities is used to discover daily routines expressed as temporal sequences of contexts, where each context is expressed as a network of situations. Experiments will be performed using the Smart home living lab that has been constructed as part of the EquipEx Amiqual4home.

7.1.2. IRT Silver Economy

Participants: James Crowley, Pierre Baret, Maxime Belgodere Partners: CEA, Schneider Electric.

Members of the Pervasive Interaction team are working with the CEA and Schneider Electric to develop environmental sensors that can detect when a hospital patient or elderly person has fallen and is unable to get up. The project uses an infrared Bolometric image sensor to observe human activity. Image processing and fall detection logic are to be performed by an embedded image processor on board.

POLARIS Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- ULTRON, bilateral contract with Huawei over 18 months, supporting two postdoctoral researchers, Amélie Heliou and Luigi Vigneri.
- Inria/Orange Labs Laboratory. Polaris is involved in this partnership with Orange Labs by supervising two PhD students members of this common laboratory: Bruno Donnassolo (supervised by Arnaud Legrand, Panayotis Mertikopoulos, and Ilhem Fajjari) and Umar OzeerX (supervised by Jean-Marc Vincent and Gwenn Salaün).
- Cifre contract with Schneider Electric. The PhD thesis of Benoit Vinot (supervised by Nicolas Gast and Florent Cadoux (G2Elab)) is supported by this collaboration.
- A common laboratory between Inria and the Alcatel Lucent-Bell Labs was created in early 2008 and consists on three research groups (ADR). POLARIS leads the ADR on self-optimizing networks (SELFNET). The researchers involved in this project are Bruno Gaujal and Panayotis Mertikopoulos.

PRIVATICS Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

7.1.1. IPSec with pre-shared key for MISTIC security

Title: IPSec with pre-shared key for MISTIC security.

Type: CIFRE.

Duration: Juillet 2014 - Juillet 2017.

Coordinator: Inria

Others partners: Privatics, Moais and Incas-ITSec.

ROMA Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. MUMPS Consortium

In 2017, in the context of the MUMPS consortium (http://mumps-consortium.org), we worked in close collaboration with Toulouse INP to:

- sign or renew membership contracts with EDF, Altair, Michelin, LSTC, FFT-MSC, and with the Lawrence Berkeley National Laboratory, on top of the ongoing contracts with ESI-Group, Safran, Siemens and Total,
- organize point-to-point meetings with several members,
- provide technical support and scientific advice to members,
- provide experimental releases to members in advance,
- organize the third consortium committee meeting, at Altair (Grenoble).

Three engineers have been funded by the membership fees in 2017, for software engineering and software development, performance study and tuning, business development and management of the consortium. Half a year of a PhD student was funded by the membership fees (see Section 9.1). On top of their membership, an additional contract was signed with Michelin to provide a new functionality and study how to best exploit MUMPS recent features in their computing environment.

8.2. The XtremLogic Start-Up

XTREMLOGIC is a spin-off of Inria founded 6 years ago by Alexandru Plesco and Christophe Alias.

XTREMLOGIC leverages the results obtained in both HPC and polyhedral compilation communities to synthesize energy-efficient circuits for FPGA. The circuits commercialized by XTREMLOGIC target markets including HPC, data centers and artificial intelligence. The compiler technology transfered to XTREMLOGIC is the result of a tight collaboration between Christophe Alias and Alexandru Plesco.

XTREMLOGIC won several awards and grants: Rhône Développement Initiative 2015 (loan), “concours émergence OSEO 2013” at Banque Publique d’Investissement (grant), “most promising start-up award” at SAME 2013 (award), “lean Startup award” at Startup Weekend Lyon 2012 (award), “excel&rate award 2012” from Crealys incubation center (award).

SOCRATE Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Grants with Industry

7.1.1. Research Contract with Orange Labs (2015-2017)

The goal of this project "PErformances Théoriques des réseaux cellulaires pour la 5G" No. F05151 (50KEuro) is to develop a theoretical approach allowing to study the energy efficiency spectral efficiency tradeoff for 5G networks, by revisiting information theory for dense networks and short packets transmissions.

7.1.2. Research Contract with Bosch (2016-2017)

This contract between Bosch and two project-teams (AriC and Socrate) focusses on the evolution of high-performance embedded controllers.

7.1.3. Research Contract with Sigfox (2015-2017)

A collaboration with Sigfox to work on extension of SigFox network to multi-base station case: cifre grant.

7.1.4. Research Contract with Atlantic

Socrate has a collaborative contract with Atlantic, around wireless communications in HVAC systems.

SPADES Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

- INRIA and Orange Labs have established in 2015 a joint virtual research laboratory, called I/O LAB. We have been heavily involved in the creation of the laboratory and are actively involved in its operation (Jean-Bernard Stefani is one of the two co-directors of the lab). I/O LAB focuses on the network virtualization and cloudification. As part of the work of I/O LAB, we have cooperated with Orange Lab, as part of a cooperative research contract funded by Orange, on defining architectural principles and frameworks for network cloud infrastructures encompassing control and management of computing, storage and network resources.
- With Daimler (subcontracting via iUTBS): We have bridged the gap between LET as it was originally proposed [59] and its current use in the automotive industry.

7.2. Bilateral Grants with Industry

With Thales: Early Performance assessment for evolving and variable Cyber-Physical Systems. This CIFRE grant funds the PhD of Christophe Prévot.

With Orange: Programming IoT and sofware defined radio with dynamic dataflow models of computation. This CIFRE grant funds the PhD of Arash Shafiei.

STEEP Project-Team (section vide)

THOTH Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. MSR-Inria joint lab: scientific image and video mining

Participants: Cordelia Schmid, Karteek Alahari.

This collaborative project, which started in September 2008, brings together the WILLOW and Thoth project-teams with researchers at Microsoft Research Cambridge and elsewhere. It builds on several ideas articulated in the "2020 Science" report, including the importance of data mining and machine learning in computational science. Rather than focusing only on natural sciences, however, we propose here to expand the breadth of e-science to include humanities and social sciences. The project focuses on fundamental computer science research in computer vision and machine learning, and its application to archeology, cultural heritage preservation, environmental science, and sociology.

8.2. MSR-Inria joint lab: structured large-scale machine learning

Participants: Julien Mairal, Alberto Bietti, Hongzhou Lin.

Machine learning is now ubiquitous in industry, science, engineering, and personal life. While early successes were obtained by applying off-the-shelf techniques, there are two main challeges faced by machine learning in the " big data " era : structure and scale. The project proposes to explore three axes, from theoretical, algorithmic and practical perspectives: (1) large-scale convex optimization, (2) large-scale combinatorial optimization and (3) sequential decision making for structured data. The project involves two Inria sites and four MSR sites and started at the end of 2013.

8.3. Amazon

Participants: Grégory Rogez, Cordelia Schmid.

We received an Amazon Faculty Research Award end of 2016. The objective is 3D human action recognition from monocular RGB videos. The idea is to extend our recent work on human 3D pose estimation published at NIPS 2016 to videos and to develop an approach for action recognition based on temporal pose based on appropriate 3D features.

8.4. Intel

Participants: Cordelia Schmid, Karteek Alahari.

The Intel Network on Intelligent Systems in Europe brings together leading researchers in robotics, computer vision, motor control, and machine learning. We are part of this network and have participated in the annual retreat in 2017. Funding will be provided on an annual basis, every year, as long as we are part of the network.

8.5. Facebook

Participants: Cordelia Schmid, Jakob Verbeek, Karteek Alahari, Julien Mairal.

The collaboration started in 2016. The topics include image retrieval with CNN based descriptors, weakly supervised object detection and semantic segmentation, and learning structured models for action recognition in videos. In 2016, Pauline Luc started her PhD funded by a CIFRE grant, jointly supervised by Jakob Verbeek (Inria) and Camille Couprie (Facebook). THOTH has been selected in 2016 as a recipient for the Facebook GPU Partnership program. In this context Facebook has donated two state-of-the-art servers with 8 GPUs. In 2017, Alexandre Sablayrolles started his CIFRE grant, jointly supervised by Cordelia Schmid and Herve Jegou and Matthijs Douze at Facebook.

8.6. Xerox Research Center Europe

Participants: Cordelia Schmid, Vasileios Choutas, Philippe Weinzepfel [Naver].

The collaboration with Xerox has been on-going since October 2009 with two co-supervised CIFRE scholarships (2009–2012; 2011-2014). Starting June 2014 we signed a third collaborative agreement for a duration of three years. The goal is to develop approaches for deep learning based image description and pose estimation in videos. Jakob Verbeek (Inria) and Diane Larlus (XRCE) jointly supervise a PhD-level intern for a period of 6 months in 2016-2017. XRCE then became Naver in 2017 and the collaboration is still on-going, see next paragraph.

8.7. Naver

Participants: Karteek Alahari, Vladyslav Sydorov, Cordelia Schmid, Julien Mairal, Jakob Verbeek.

A one-year research contract on action recognition in videos started in Sept. 2017. The approach developed by V. Choutas implements pose-based motion features, which are shown to be complementary to state-of-the-art I3D features.

TYREX Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

Transfer contract

Partner: Oppidoc startup

Coordinator: Pierre Genevès

Abstract: the goal of this project is to investigate the integration of advanced static analyses in Oppidoc's flagship product, Oppidum, which is a software framework for constructing web sites with forms for the collaborative edition and publishing of structured documents.