RESEARCH CENTER
Sophia Antipolis - Méditerranée

FIELD

Activity Report 2018

Section Contracts and Grants with Industry

Edition: 2019-03-07

ABS Project-Team (section vide)

ACUMES Project-Team (section vide)

AROMATH Project-Team (section vide)

ATHENA Project-Team (section vide)

BIOCORE Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

BioEnTech: the collaboration with the BioEnTech start-up is aiming at developing new functionalities for ODIN in order to improve the advanced monitoring and control of industrial anaerobic digesters.

Inalve: with the Inalve start-up we develop a breakthrough process that we patented, in which microalgae grow within a moving biofilm. The objective of the collaboration is to optimize the process by enhancing productivity, while reducing environmental footprint.

8.2. Bilateral Grants with Industry

Exactcure: in the collaboration with the start-up Exactcure (Nice), the goal of the project is to study pharmacokinetic models. Exactcure funded the M2 internship of J.B. Excoffier.

BIOVISION Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

7.1.1. Could hardware solutions coming from the automotive industry be useful in the context of low vision?

Participants: Josselin Gautier, Nicolas Chleq [Inria, SED], Pierre Kornprobst, Frédéric Dosière [Bosch Visiontec (Sophia Antipolis, France)], David Coupé [Bosch Visiontec (Sophia Antipolis, France)]

Duration: August 2017 to March 2018

Thanks to a partnership with Bosch Visiontec (Sophia Antipolis, France), we have investigated how hardware solutions coming from the automotive industry (RENESAS Starter-Kit RCar H3) could be used to design real-time vision-aid-systems based on augmented reality. We focused on the detection and enhancement of faces. We analysed the performance of a selection of enhancement algorithms and optimised them taking into consideration the hardware limitations.

Based on the same ideas, a working prototype has also been developed using a Fove 0 head-mounted display and tested with three patients with central vision loss (see Sec.6.1.1).

CAMIN Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

- collaboration contract with FEETME (http://www.feetme.fr) company.
- collaboration contract with Innopsys (https://www.innopsys.com/en) company.
- collaboration contract with ISIDU (https://isidu.eu/) company.
- collaboration contract with Berkelbike (https://berkelbike.com) company.

7.2. Bilateral Grants with Industry

- collaboration contract with NEURORESP (http://neuroresp.com/) company (CIFRE PhD thesis).
- collaboration contract with SubseaTech (https://www.subsea-tech.com/) company, CIFRE PhD thesis about the on-the-fly optimization of actuators steering for underwater vehicles.

CASTOR Project-Team (section vide)

COATI Project-Team (section vide)

COFFEE Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- Contract with Andra financing the two year postdoctoral position of Joubine Aghili (october 2017 - september 2019) and dealing with the simulation of compositional liquid gas Darcy flows in highly heterogeneous porous medium with network of fractures using Discrete Fracture Matrix models (DFM). It is applied to the simulation of the desaturation of the nuclear waste storage in the neighbourhood of the galleries. Supervision Roland Masson and Konstantin Brenner from LJAD-Inria, Jean-Raynald de Dreuzy from Geosciences Rennes and Laurent Trenty from Andra.

DATASHAPE Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- Collaboration with Sysnav, a French SME with world leading expertise in navigation and geopositioning in extreme environments, on TDA, geometric approaches and machine learning for the analysis of movements of pedestrians and patients equipped with inetial sensors (CIFRE PhD of Bertrand Beaufils).
- Research collaboration with Fujitsu on the development of new TDA methods and tools for Machine learning and Artificial Intelligence (started in Dec 2017).

8.2. Bilateral Grants with Industry

- DATASHAPE and Sysnav have been selected for the ANR/DGA Challenge MALIN (funding: 700 kEuros) on pedestrian motion reconstruction in severe environments (without GPS access).

DIANA Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

7.1.1. SAFRAN

Participants: Damien Saucez.

We have a bilateral contract covering 2017 and 2018 with Safran Electrical and Power in order to build a network simulator specialised for aeronautical networks.

7.2. Bilateral Grants with Industry

7.2.1. QWANT

Participants: Arnaud Legout.

The PIA ANSWER project is led by the QWANT search engine and the Inria Sophia Antipolis Méditerranée research center. This proposal is the winner of the "Grand Challenges du Numérique" (BPI) and aims to develop the new version of the search engine http://www.qwant.com with radical innovations in terms of search criteria, indexed content and privacy of users. In the context of this project, we got with Nataliia Bielova from the INDES project-team a funding for a 3 years Ph.D. working on Web tracking technologies and privacy protection.

ECUADOR Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

- Ecuador and Lemma have a bilateral contract to share the results of Stephen Wornom, Lemma engineer provided to Inria and hosted by Inria under a Inria-Lemma contract.

EPIONE Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

7.1.1. Microsoft Research

Microsoft Research is funding through the Inria-Microsoft joint lab the projects "4D Cardiac MR Images"[0] and "Medilearn"[0] which aim at analyzing large databases of cardiac images to help the diagnosis of cardiac diseases and planning of therapy. This project involves A. Crimisi from MSR and partially funds the PhDs of Pawel Mlynarski.

7.1.2. Spin-off company Therapixel

Therapixel[0] is a spin-off of the Asclepios (Inria Sophia Antipolis) and Parietal (Inria Saclay) project teams founded in 2013. Therapixel makes surgical information systems. It relies on depth sensing, advanced software processing and innovative user interfaces to provide touchless control of the computer. This technology allows for a direct control of the computer, which sterility constraints made impractical in the past. In 2015, Therapixel obtained the CE marking of its product on touchless visualization of medical images.

7.1.3. Spin-off company inHEART

inHEART[0] is a spin-off of the Asclepios team and IHU Liryc founded in 2017. inHEART provides a service to generate detailed anatomical and structural meshes from medical images, that can be used during ablation interventions. inHEART received 2 awards, one from Aquitaine region and one i-LAB from the BPI.

7.1.4. Siemens HealthCare

Siemens Healthcare, Medical Imaging Technologies, Princeton, NJ (U.S.A). is funding the PhD work of Julian Krebs which aims at developing robust medical image registration methods

7.1.5. Median Technologies

Median technologies, Sophia Antipolis (FR) funded the 5 months gap year internship of Souhaiel Riahi and the 6 months Master 2 level internship of Nour Ediine al Orjany, co-advised by Xavier Pennec and Hervé Delingette on the characterization of hepatic lesions and fibrosis in CT image using machine learning methods

[0] http://www.msr-inria.fr/projects/4d-cardiac-mr-images
[0] http://www.msr-inria.fr/projects/medilearn
[0] http://www.therapixel.com/
[0] http://www.inheart.fr/

FACTAS Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

7.1.1. Contract CNES-Inria-XLIM

This contract (reference Inria: 11282) accompanies the PhD of David Martinez and focuses on the development of efficient techniques for the design of matching network tailored for frequency varying loads. Applications of the latter to the design output multiplexers occurring in space applications will be considered.

7.1.2. Contract Inria-SKAVENJI

This is a scientific consulting activity for the start-up company SKAVENJI. The latter develops an innovative and communicative device to facilitate the production and home consumption of small amounts of energy, produced by one or more local sources of renewable energy. Our contribution consisted in designing a simple controller improving the energy efficiency of the energy production while minimizing the number of charge and discharge cycles of the associated battery. The retained control strategy was based on consumption and production profiles.

FOCUS Project-Team (section vide)

GRAPHDECO Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

- Valentin Deschaintre has a CIFRE PhD fellowship on Material Acquisition using Machine Learning, in collaboration with Optis - Ansys, a company specialized in material acquisition and rendering.
- As part of a long standing collaboration with Adobe, Theo Thonnat interned with Sylvain Paris (Boston), Julien Philip works with Michael Gharbi (San Francisco) and J. Delanoy with Aaron Hertzmann (San Francisco).
- Adrien Bousseau and Bastien Wailly worked with the InriaTech engineers to implement a sketch recognition engine in the context of a collaboration with the start-up EpicNPoc.

GRAPHIK Project-Team (section vide)

HEPHAISTOS Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

8.1.1. Symbolic tools for modeling and simulation

Participant: Yves Papegay.

This activity is the main part of a long-term ongoing collaboration with Airbus whose goal is to directly translate the conceptual work of aeronautics engineers into digital simulators to accelerate aircraft design.

An extensive modeling and simulation platform - MOSELA - has been designed which includes a dedicated modeling language for the description of aircraft dynamics models in term of formulae and algorithms, and a symbolic compiler producing as target an efficient numerical simulation code ready to be plugged into a flight simulator, as well as a formatted documentation compliant with industrial requirements of corporate memory.

Technology demonstrated by our prototype has been transferred : final version of our modeling and simulation environment has been delivered to Airbus in November 2012 and developer level know-how has been transferred in 2013 to a software company in charge of its industrialization and maintenance.

Since 2014, we are working on several enhancements and extension of functionalities, namely to enhance the performances and the numerical quality of the generated C simulation code, ease the integration of our environment into the airbus toolbox, help improving the robustness of the environment and the documentation.

INDES Project-Team

6. Bilateral Contracts and Grants with Industry

6.1. Bilateral Grants with Industry

The ANSWER project (Advanced aNd Secured Web Experience and seaRch) is lead by the QWANT search engine and the Inria Sophia Antipolis Méditerranée research center. This proposal is the winner of the "Grand Challenges du Numérique" (BPI) and aims to develop the new version of the search engine http://www.qwant.com with radical innovations in terms of search criteria, indexed content and privacy of users. The project started on January 1, 2018. In the context of this project, we got

- with Arnaud Legout from the DIANA project-team a funding for a 3 years Ph.D. student to work on Web tracking technologies and privacy protection. Imane Fouad was hired to work on this project.
- a funding for 18 months Postdoc to work on Web application security. Yoonseok Ko was hired to work on this project as a postdoc.

KAIROS Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

8.1.1. Safran: Desir/Glose

Participants: Julien Deantoni, Giovanni Liboni, Robert de Simone.

We participate to the bilateral collaborative program Desir, put up by Safran to work with selected academic partners. We share the Glose project started in this program with HyComes, and DiverSE Inria project teams. Technically, the goal of this project is to elaborate on the (under development) Safran's system engineering method to make it simulable at different steps of the development, possibly early in the design process and possibly mixing models at different maturity level. This project is strongly connected to results depicted in Section 7.6 .

8.1.2. IRT Saint-Exupery ATIPPIC

Participants: Paul Bouche, Amin Oueslati, Robert de Simone, Julien Deantoni.

In an attempt to build an extension of IRT Saint-Exupery from Occitanie to PACA region, the Thales Alenia Space company promoted the ATIPPIC project, to build the computing digital electronic structure of micro-satellites on ordinary, "COTS" processors. The project was accepted for 30 months, funds two temporary research engineers working under our own supervision, while exchanging extensively with the rest of the ATIPPIC project, which is actually hosted by Inria. The technical content of our contributions is described in Section 7.5 and 7.7 .

8.1.3. Renault Software Lab

Participants: Frédéric Mallet, Marie-Agnès Peraldi-Frati, Robert de Simone.

We have just started, at the end of 2018, a collaboration with Renault Software Labs on the definition of rules for ensuring safe maneuvers in autonomous vehicles. The rules express conditions from the environments, safety rules to preserve the integrity of the vehicles, driving legislation rules, local rules from the authorities. The rules must be updated dynamically when the vehicle evolves and are used to monitor at run-time the behavior of the ADAS. While the ADAS contains several algorithms relying on machine learning, the monitoring system must be predictive and rules must guarantee formally that the system does not cause any accident. So it can be seen as a way to build trustworthy monitoring of learning algorithms. A CIFRE PhD will start at the beginning of 2019.

8.1.4. Accenture Labs, Sophia

Participant: Luigi Liquori.

We started in 2018 a collaboration with Accenture Labs, Sophia on the following topics:

- Smart Contract languages for permissioned blockchains. We saw in the recent years the development of different platforms that focuses on the so-called private (or permissioned) blockchain(s) and digital ledgers. Almost the totality of private blockchain(s) present their own implementation of Smart Contract. Between public and private blockchains we are observing a wide variety of different languages with different capabilities and limitations. Both public and private blockchain often lack maturity and a formal semantic as they have been under pressure of the sudden and rapid explosion of blockchain popularity. A CIFRE PhD will start in 2019.
- Oracles in Smart Contract for IoT and and CPS. Oracles are third party services which are not part of the blockchain consensus mechanism. The main challenge with oracles is that people need to trust these sources of information. Whether a website or a sensor, the source of information needs to be trustworthy. The main challenges for oracles are dealing with small computation power, mobility, security and dealing with time. A CIFRE PhD is planned to start in 2019.

LEMON Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

LEMON has been collaborating for a while with Olivier Boutron (La Tour du Valat) and we had a specific contract in 2018 to adapt our software SW2D to specificities of Camargue lakes and lagoons. This has lead to a common paper.

MARELLE Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

Together with IMDEA Madrid (Spain), INESC TEC (Portugal), the Catholic University of Louvain (Belgium), Google, and Ecole Polytechnique, with have a contract with Amazon Web Services. The financial return for Marelle is 67kEuros.

MATHNEURO Team (section vide)

MCTAO Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contract with Industry

A bilateral research contract between the company CGG and the team took place in 2018. Duration: 6 months.

8.2. Bilateral Grant with Industry

A grant “PEPS AMIES”, title: “Conception d’un électrostimulateur intelligent”, has been obtained, co-financed by AMIES and SEGULA. PI: Bernard Bonnard. Start: December 2018. Duration: two years.
A grant PEPS UCA MSI (Maison de la Simulation de l’Innovation) on "Effet des résonances sur la moyennisation en contrôle optimal appliqué à la mécanique spatiale" with Inria and Thales Alenia Space (Cannes). PI: J.-B. Caillau Start: January 2018. Duration: six months

MORPHEME Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

General Electric Healthcare: a 36 months (from feb. 2016 to jan. 2019) companion contract for the Cifre thesis of E. Poulain.

Bayer, Lyon: a 36 months (from aug. 2018 to jul. 2021) companion contract for the Cifre thesis of S. Laroui.

NACHOS Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

7.1.1. Numerical study of light absorption in a photovoltaic glass

Participants: Alexis Gobé, Badre Kerzabi [Sunpartner Technologies, Rousset], Stéphane Lanteri.

Sunpartner Technologies is a company in the field of novel technologies for a sustainable environment, which develops innovative photovoltaic solutions dedicated to the connected object, building and transport markets. In particular, the company is designing devices using solar energy to improve the autonomy of connected objects such as smartphones. Supartner Technologies also offers glass modules that can be integrated on the screen of a watch or a smart e-reader, for example. These glass modules are transparent and integrate photovoltaic cells to recover solar energy in order to recharge the batteries. In all these products, nanostructuring of constituent materials is an exploited strategy to maximize the absorption of sunlight. In addition to measurement, the simulation of the interaction between light and nanostructured matter is an important ingredient in the implementation of this strategy. As an extension of the simulation, the optimization of nanostructuring makes it possible to explore many solutions before the design stage. In the context of this partnership that has started this year, we aim at adapting and applying a DGTD solver from the DIOGENeS software suite to characterize and further optimize the nanostructuring of a photovoltaic glass.

Neo Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

NEO members are involved in the

- Inria-Nokia Bell Labs joint laboratory: the joint laboratory consists of five ADRs (Action de Recherche/Research Action) in its third phase (starting October 2017). NEO members participate in one ADR "Distributed Learning and Control for Network Analysis" (see §8.1.1).
- Inria-QWANT joint laboratory "Smart search is privacy" (see §8.1.2);
- Inria-Orange Labs joint laboratory (see §8.1.3).

8.1.1. ADR Nokia on the topic "Distributed Learning and Control for Network Analysis" (October 2017 – September 2021)

Participants: Eitan Altman, Konstantin Avrachenkov, Mandar Datar, Maximilien Dreveton, Alain Jean-Marie.

- Contractor: Nokia Bell Labs (http://www.bell-labs.com)
- Collaborator: Gérard Burnside

Over the last few years, research in computer science has shifted focus to machine learning methods for the analysis of increasingly large amounts of user data. As the research community has sought to optimize the methods for sparse data and high-dimensional data, more recently new problems have emerged, particularly from a networking perspective that had remained in the periphery.

The technical program of this ADR consists of three parts: Distributed machine learning, Multiobjective optimisation as a lexicographic problem, and Use cases / Applications. We address the challenges related to the first part by developing distributed optimization tools that reduce communication overhead, improve the rate of convergence and are scalable. Graph-theoretic tools including spectral analysis, graph partitioning and clustering will be developed. Further, stochastic approximation methods and D-iterations or their combinations will be applied in designing fast online unsupervised, supervised and semi-supervised learning methods.

8.1.2. Qwant contract on "Asynchronous on-line computation of centrality measures" (15 December 2017 – 14 May 2020)

Participants: Nicolas Allegra, Konstantin Avrachenkov.

- Contractor: Qwant
- Collaborator: Sylvain Peyronnet

We shall study asynchronously distributed methods for network centrality computation. The asynchronous distributed methods are very useful because they allow efficient and flexible use of computational resources on the one hand (e.g., using a cluster or a cloud) and on the other hand they allow quick local update of centrality measures without the need to recompute them from scratch.

8.1.3. Orange CIFRE on the topic "Self-organizing features in the virtual 5G radio access network" (November 2017 – October 2020)

Participants: Eitan Altman, Marie Masson.

- Contractor: Orange Labs (https://orange.jobs/site/en-innovation-rd/)
- Collaborator: Zwi Altman

The considerable extent of the complexity of 5G networks and their operation is in contrast with the increasing demands in terms of simplicity and efficiency. This antagonism highlights the critical importance of network management. Self-Organizing Networks (SON), which cover self-configuration, self-optimization and self-repair, play a central role for 5G Radio Access Network (RAN).

This CIFRE thesis aims at innovating in the field of managing 5G RAN, with a special focus on the features of the SON-5G. Three objectives are identified: a) develop self-organizing features (SON in 5G-RAN), b) develop cognitive managing mechanisms for the SON-5G features developed, and c) demonstrate how do the self-organizing mechanisms fit in the virtual RAN (vRAN).

8.1.4. Huawei CIFRE on the topic "Scalable Online Algorithms for SDN controllers" (June 2016 – May 2019)

Participants: Zaid Allybokus, Konstantin Avrachenkov.

- Contractor: Huawei Technologies (http://www.huawei.com/en/about-huawei/research-development)
- Collaborators: Jérémie Leguay

Software-Defined Networking (SDN) technologies have radically transformed network architectures. They provide programmable data planes that can be configured from a remote controller platform.

The objective of this CIFRE thesis is to provide fundamental answers on how powerful SDN controller platforms could solve large online flow problems to optimize networks in real-time and in a distributed or semi-distributed fashion. We use methods from both optimization and dynamic programming.

STARS Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- *Toyota:* (Action Recognition System): This project runs from the 1st of August 2013 up to 2019. It aimed at detecting critical situations in the daily life of older adults living home alone. The system is intended to work with a Partner Robot (to send real-time information to the robot) to better interact with the older adult. The funding was 106 Keuros for the 1st period and more for the following years.
- *Gemalto:* This contract is a CIFRE PhD grant and runs from September 2018 until September 2021 within the French national initiative SafeCity. The main goal is to analyze faces and events in the invisible spectrum (i.e., low energy infrared waves, as well as ultraviolet waves). In this context models will be developed to efficiently extract identity, as well as event - information. These models will be employed in a school environment, with a goal of pseudo-anonymized identification, as well as event-detection. Expected challenges have to do with limited colorimetry and lower contrasts.
- *BluManta:* This contract is a CIFRE PhD grant and runs from August 2018 to August 2021. The aim is to develop an end-to-end 3D face analysis model, involving a unified deep neural network in charge of (a) creating a depth map, (b) extracting embeddings, (c) embeddings similarity estimation. This model will be targeted for high accuracy in tasks such as face authentication.
- *Kontron:* This contract is a CIFRE PhD grant and runs from April 2018 until April 2021 to embed CNN based people tracker within a video-camera.
- *ESI:* This contract is a CIFRE PhD grant and runs from September 2018 until March 2022 to develop a novel Re-Identification algorithm which can be easily set-up with low interaction.

TITANE Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Grants with Industry

8.1.1. Google Chrome University Research Programme

Participants: Pierre Alliez, Cédric Portaneri.

We developed a novel approach and software prototype for the compression of 3D models. Our main focus is on progressive compression of surface triangle meshes with color textures, with emphasis on fine grain, genericity and flexible metric. The proposed methodology is to turn the input models into a stream of refinements, in which both mesh and texture refinement details are multiplexed in accordance to rate-distortion principles. Fine grain is achieved through considering all components, local as well as non-local, from both the mesh and its textures: mesh complexity, vertex accuracy, texture definition and accuracy. We leveraged the recent advances on perceptual metrics to improve the visual appearance, and performed joint consolidation and encoding of the models to further optimize the rate-distortion tradeoffs and visual perception.

8.1.2. Dorea technology

Participants: Vincent Vadez, Pierre Alliez [contact].

In collaboration with SME Dorea Technology, our objective is to advance the knowledge on the thermal simulation of satellites, via geometric model reduction. The survival of a satellite is related to the temperature of its components, the variation of which must be controlled within safety intervals. In this context, the thermal simulation of the satellite for its design is crucial to anticipate the reality of its operation. The project started in August 2018, for a total duration of 3 years.

8.1.3. Luxcarta

Participants: Jean-Philippe Bauchet, Florent Lafarge [contact].

The goal of this collaboration is to design automated approaches for producing city models from the last generation of satellites. The models should conform to the level 2 (LOD2) of the popular CityGML format. The project started in October 2016, for a total duration of 3 years.

8.1.4. CNES and Acri-ST

Participants: Onur Tasar, Pierre Alliez, Yuliya Tarabalka [contact].

The aim is to devise efficient representations for satellite images. The project started in October 2017, for a total duration of 3 years.

8.1.5. CSTB

Participants: Hao Fang, Florent Lafarge [contact].

The goal of this recent collaboration is to develop methods for analyzing and exploring scale-spaces into urban 3D data. The project started in March 2016, for a total duration of 3 years.

TOSCA Project-Team

6. Bilateral Contracts and Grants with Industry

6.1. Bilateral Contracts with Industry

- M. Bossy is member of a MERIC project (MERIC is the marine energy research & innovation center in Chile) on stochastic Lagrangian models to better estimate energy production variability with water turbine, granted with the Lemon Inria Team.
- M. Bossy is the Coordinator of the POPART Industrial partnership project at UCA-JEDI on the modelling of fibre transport in turbulent flow. This partnership is granted by EDF and by UCA, and in collaboration with Observatoire de la Côte d'Azur.

WIMMICS Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

8.1.1. Joint Lab Inria - Qwant

Fabien Gandon is director of the joint Lab Inria - Qwant

8.1.2. Intelliquiz Carnot Project

Participants: Oscar Rodríguez Rocha, Catherine Faron Zucker.

Partner: Qwant/GAYAtech.

This project ended in March 2018. It was a joint project with GAYAtech (acquired by Qwant during the project) on the automatic generation of quizzes from the Web of Data. It is a continuation of a former collaborative project with GAYAtech on the recommendation of pedagogical resources based on ontology-based modelling and processing. We developed an approach to generate quizzes from DBpedia and we experimented it on the geographical domain for primary school students.

8.1.2.1. Joint Lab EduMICS

Catherine Faron Zucker is the scientific leader of the EduMICS (Educative Models Interactions Communities with Semantics) joint laboratory (LabCom, 2016-2018) between the Wimmics team and the Educlever company. Adaptive Learning, Social Learning and Linked Open Data and links between them are at the core of this LabCom. The purpose of EduMICS is both to develop research and technologies with the ultimate goal to adapt educational progressions and pedagogical resource recommendation to learner profiles. During the second year of the project, we continued the deployment of Semantic Web technologies within the industrial context of Educlever, showing the added value of Semantic Web modelling enabling ontology-based reasoning on a knowledge graph. To continue our collaboration, we submitted a project proposal to the call for projects *AAP Partenariat d'Innovation et Intelligence Artificielle*; we successfully passed the first phase.

8.1.3. PREMISSE Collaborative Project

Participants: Molka Dhouib, Catherine Faron Zucker, Andrea Tettamanzi.

Partner: SILEX France.

This collaborative project with the SILEX France company started in march 2017, funded by the ANRT (CIFRE PhD) and UCA (post-doc). SILEX France is developing a B2B platform where service providers and consumers upload their service offers or requests in free natural language; the platform is intended to recommend service providers to the applicant, which are likely to fit his/her service request. The aim of this project is to develop a solution to link together service providers and consumers.

8.1.4. Synchronext Collaborative Project

Participants: Raphaël Gazzotti, Catherine Faron Zucker, Fabien Gandon.

Partner: Synchronext.

This project is funded by the ANRT (CIFRE PhD). Synchronext is a startup aiming at developing Semantic Web business solutions. The goal of this project is to develop a NLP and semantic Web based artificial agent for online support in the insurance domain. The objective is to reduce the dropout rate of Internet users on FAQs and to reduce the number of incoming calls and e-mails. This will enable to customer advisers to focus on more difficult questions. As a first step, we are working on automatically categorizing online requests to properly rout them.

8.2. Bilateral Grants with Industry

8.2.1. Accenture

Wimmics received two grants from Accenture to support work on explainable AI. They will fund the PhD of Nicholas Halliwell on that topic.

ZENITH Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. SAFRAN (2018)

Participants: Reza Akbarinia, Florent Masseglia.

SAFRAN and Inria are involved in the DESIR frame-agreement (Florent Masseglia is the scientific contact on "Data Analytics and System Monitoring" topic). In this context, SAFRAN dedicates 80K€ for a joint study of one year on time series indexing. The specific time series to be exploited are those of engine benchmarking with novel characteristics for the team (multiscale and multidimensional).