



RESEARCH CENTER
Lille - Nord Europe

FIELD

Activity Report 2016

Section Contracts and Grants with Industry

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DREAMPAL Project-Team (section vide)

DOLPHIN Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- Beckman (2015-2018): the goal of this contract concerns the strategic and operational planning for medical laboratories (Phd of Sohrab Faramarzi).
- Strat&Logic (2012-2016): the objective of this CIFRE contract is the optimization of economic decisions in a competitive business management simulator (Phd of S. Dufourny).
- PIXEO (2014-2018): the objective of this bilateral project is the predictive models and knowledge extraction for insurance web comparator (Phd of A-L. Bedenel).
- Alicante (2014-2017): the objective of this CIFRE contract is the design of new optimization methods to extract knowledge from hospital data (Phd of M. Vandromme)
- Intel (2015-2016) Bilateral academic and research partnership between Université Lille 1 and Intel. In this context, Intel provides Lille 1 with training and technical support for the dissemination of its activities related to High Performance Computing.
- Nvidia (2016) Nvidia GPU Research Center, (see: <https://developer.nvidia.com/academia/centers/universit%C3%A9-lille-1>).

8.2. Bilateral Grants with Industry

- Intel 2015-2016 Intel has supported with a budget equivalent to 22Keuros the acquisition of a cluster of 2 multi-core servers and 8 Intel Xeon Phi coprocessors. The objective is to develop research and teaching on multi and many-core computing on coprocessors. The hybrid cluster has been deployed in 2016.

INOCS Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

- Fluxys (2016-2018). Study of optimization problems arising in the management of gas networks.
- Colisweb (2015-2016). Study of optimization problems arising in courier scheduling. This bilateral contract leads to the creation of an Inria Innovation Lab at the end of 2016.

7.2. Bilateral Grants with Industry

- PARROT (Planning Adapter performing ReRouting and Optimization of Timing), part of BEWARE Fellowships Academia funded by the COFUND program of the European Union (FP7 - Marie Curie Actions). INFRABEL is the industrial partner of this project.(2014-2018)
- Design and Pricing of Electricity Services in a Competitive Environment within the Gaspard Monge Research Program (PGMO) funded by the Fondation Mathématiques Jacques Hadamard. EDF is the industrial partner (2015-2018).
- BENMIP: A generic bender decomposition-based (mixed) integer programming solver within the Gaspard Monge Research Program (PGMO) funded by the Fondation Mathématiques Jacques Hadamard.(2015-2017)

MEPHYSTO Project-Team (section vide)

MODAL Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Arcelor-Mittal

Participant: Christophe Biernacki.

Arcelor-Mittal is a leader company in steel industry. This 11 months contract aims at optimizing predictive maintenance from mixed data (continuous, categorical, functional) provided by multiple sensors disseminated in steel production lines.

It is a joint work with Martin Bue and Vincent Kubicki (InriaTech engineers).

8.2. Banque Accord

Participants: Christophe Biernacki, Vincent Vandewalle.

Banque Accord is a credit scoring company. This 3 months contract aims at improving credit scoring performance by using the clustering principle inside the predictive process. In addition, directly managing mixed data (continuous, categorical, missing) has to be taken into account.

It is a joint work with Quentin Grimonprez (InriaTech engineer).

8.3. Vallourec

Participant: Christophe Biernacki.

Vallourec is a world leader in premium tubular solutions for the energy markets and for other demanding industrial applications. This 9 months contract aims at predicting quality of tubular connections from mixed data (continuous, categorical, functional).

It is a joint work with Vincent Kubicki (InriaTech engineer).

8.4. Cylande

Participants: Christophe Biernacki, Vincent Vandewalle.

Cylande is a software editor for retail. This 12 months contract aims at predicting future sales from past sales, including also many other available information.

It is a joint work with Etienne Goffinet and Vincent Kubicki (InriaTech engineers).

8.5. NFID

Participants: Benjamin Guedj, Quentin Grimonprez.

NFID is the agency dedicated to innovation policies of the Hauts-de-France region.

This 3 months contract aims at clustering companies from Hauts-de-France based on their economic, social, environmental, innovation, activities data. The proposed methodology relies on the MixtComp software developed within Modal, and allows for the creation of a predictive analysis tool for NFID. This predictive tool aims at identifying regional companies with the highest innovative abilities, and has a great economic and politic impact.

NON-A Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

Contract with Neotrope (Tourcoing, France), Technologies & Augmented Human UX. Subject: De-correlation of GSR measurements with acceleration, from March 2016 to September 2016, D. Efimov, R. Ushirobira.

8.2. Bilateral Grants with Industry

Project of Autonomous control of clinic table with La Maison Attentive, 2016.

8.3. Bilateral Grants with Industry

Collaboration with Safran Electronics & Defense (Massy-Palaiseau) in the framework of the CIFRE PhD thesis of Guillaume Rance on robust stabilization of gyrostabilized platforms (2014-2018).

RAPSODI Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

C. Cancès supervises the PhD Thesis of Nicolas Peton at IFPEN since October 15, 2015. The bilateral contract enters the framework agreement between Inria and IFPEN.

SEQUEL Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- contract with “500px”; PI: Romaric Gaudel.

Title: Recommender System for Photos

Duration: May 2016 – Oct. 2016 (6 months)

Abstract: Recommender Systems aim at recommending items to users. Advances in that field are targeting more and more personalized recommendation. From a recommendation based on market segment to a recommendation based on individual user taste. From a recommendation based on user’s information to a recommendation based on any feedback from any user. From a recommendation based on logged data to a recommendation including latest trends... 500px is a Canadian company which is part of this trend. 500px offers solutions to store pictures online, to share pictures, and to browse among pictures exhibited by other users. Given the huge amount of pictures stored by 500px, users need help to find pictures which corresponds to their tastes. 500px offers several tools to filter the content presented to users. But the tools allowing exploration of the pictures landscape are not personalized, the selection is mostly based on the popularity of pictures/galleries. The most personalized recommendations are obtained by following other users: you see recent pictures of that users. But such recommendations requires you (i) to discover by yourself relevant users, (ii) to explicitly tag these users. The aim of the project is to scan state of the art in Collaborative Filtering and to design a tool which recommends pictures to users based on their implicit actions: given the list of followed users, faved pictures, commented pictures, browsed pictures, ..., infer user’s tastes and recommend to that user pictures and/or other user to look at. The system would also make use of informations on the pictures and of user profiles.

- contract with “Orange Labs”; PI: Philippe Preux

Title: Sequential Learning and Decision Making under Partial Monitoring

Duration: Oct. 2014 – Sep. 2017

Abstract: In applications such as recommendation systems, or computational advertising, the return collected from the user is partial: (s)he clicks on one item, or no item at all. We study this setting in which only a “partial” information is gathered in particular how to learn to behave optimally in such a setting.

- contract with “55”; PI: Jérémie Mary

Title: Novel Learning and Exploration-Exploitation Methods for Effective Recommender Systems

Duration: Oct. 2015 – Sep. 2018

Abstract: In this Ph.D. thesis we intend to deal with this problem by developing novel and more sophisticated recommendation strategies in which the collection of data and the improvement of the performance are considered as a unique process, where the trade-off between the quality of the data and the performance of the recommendation strategy is optimized over time. This work also consider tensor methods (one layer of the tensor can be the time) with the goal to scale them at RS level.

- contract with “What a nice place” ; PI: Jérémie Mary

Title: Deduplication of pictures

Duration: Mar. 2016 – Jan. 2017

Abstract: “What is nice place” is a start up which aggregates products from different sources in order to provide some home staging advises. Uniqueness of presence for the items in their database can be

hard to achieve because of the differences over names and variations of a product. Here we build a classification and deduplication system based on deep neural networks. In this contract we received support from Inria Tech and transferred them some knowledge about deep neural networks.

- contract with “What a nice place” and “Leroy Merlin”; PI: Jérémie Mary

Title: New Shopping Experience - Virtual Coach

Duration: Jun. 2016 – Fev. 2017

Abstract: The goal of this project is to use pictures of house interiors in order to propose automatically some products which would fit in nicely. The relations are learnt automatically using deep neural networks and recommendation systems techniques. We made a first version which focuses on lamps which is available for demonstration at <https://whataniceplace.leroymerlin.fr/>

BONSAI Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

The PhD thesis of Léa Siegwald is funded by a CIFRE contract with the biotechnology company Gènes Diffusion.

FUN Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- Evolution

Participants: Gabriele Sabatino, Nathalie Mitton [correspondant].

This collaboration aims to set up a full RFID system on the basis of AspireRFID middleware and pre-existing RFID modules issued from FUN research in the Evolution company facility and to integrate them with their IS.

RMOD Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Grants with Industry

8.1.1. *BlockChain*

We started a new collaboration with a local company about tools and languages in the context of Blockchain systems. The collaboration started with a 2 month exploration phase involving an engineer at Inria Tech. A postdoc or PhD will start in 2017.

8.1.2. *Worldline CIFRE*

We are working on improving the testing behaviour of the developers. The PhD started in October 2014 and is ongoing.

8.1.3. *Thales CIFRE*

We are working on large industrial project rearchitecture. The PhD started in January 2015 and is ongoing.

8.1.4. *Pharo Consortium*

The Pharo Consortium was founded in 2012 and is growing constantly. As of end 2016, it has 23 company members, 12 academic partners and 3 sponsoring companies. Inria supports the consortium with one full time engineer starting in 2011. More at <http://consortium.pharo.org>.

SPIRALS Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. ip-label

Participant: Romain Rouvoy [correspondant].

A software exploitation license of the APISENSE[®] crowd-sensing platform has been sold to the **ip-label** company. They use this platform as a solution to monitor the quality of the GSM signal in the wild. The objective is to provide developers and stakeholders with a feedback on the quality of experience of GSM connection depending on their location.

8.2. Orange Labs

Participants: Laurence Duchien [correspondant], Amal Tahri.

This collaboration aims at bridging the gap between home networks and cloud environments for the design, the provisioning and the administration of distributed services. The purpose is to define solutions, essentially software design tools and runtime infrastructures, for the seamless migration of distributed applications and services between home networks and cloud environments. The envisioned approach is based on the research activities that we are conducting in the domain of software product lines.

This collaboration is conducted in the context of the ongoing PhD thesis of Amal Tahri.

8.3. Scalair

Participants: Yahya Al-Dhuraibi, Philippe Merle [correspondant].

This collaboration aims at proposing a framework to deal with elasticity in cloud computing environments. This framework must cover all kind of resources, IaaS, PaaS, SaaS, must provide a solution for interoperability between different clouds and virtualization technologies, and must enable the specification and composition of reactive and predictive strategies.

This collaboration is conducted in the context of the ongoing PhD thesis of Yahya Al-Dhuraibi.

8.4. OpenIO

Participants: Philippe Merle, Romain Rouvoy [correspondant], Lionel Seinturier.

This collaboration aims at producing a scientific and technical state-of-the-art analysis of solutions for the large scale storage of object data in the cloud. This study aims at identifying the main properties of the existing solutions, and their differentiating factors. The solution provided by the OpenIO company will be positioned with respect to the other solutions existing on the market and in the international scientific community. Starting from this state-of-the-art, several perspectives will be identified and a research roadmap will be defined.

DEFROST Team

8. Bilateral Contracts and Grants with Industry

8.1. A.I. Mergence

A.I. Mergence is a startup company based in Paris. The transfer contract was about building a soft robot prototype. The aim of the demonstration was to show that we can improve the appearance and user interaction. They have a usage of our license for 12 months. Amount of the contract: 1500 euros.

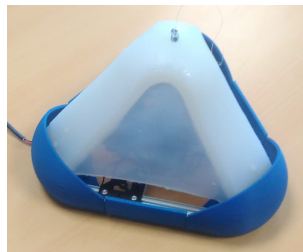


Figure 5. Prototype for A.I. Mergence

8.2. TruPhysics

TruPhysics is a German startup, using SOFA for the simulation of industrial robots. We did an expertise and research contract on modeling grasping tasks in SOFA with a deformable gripper. Amount of the contract: 7940 euros.

8.3. InSimo

InSimo is a French startup, based in Strasbourg, that was created by members of the team in 2013. The goal of InSimo is to create a new generation of surgical simulators with high quality biomechanics. We have signed a contract to work on the simulation of suture during the years 2016-2017. Amount of the contract: 33000 euros.

LINKS Project-Team (section vide)

MAGNET Project-Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

8.1.1. *Cifre Clic and Walk (2013-2016)*

Participants: MIKAELA KELLER [correspondent], PAULINE WAUQUIER, MARC TOMMASI.

We have a one to one cooperation with the CLIC AND WALK company that makes marketing surveys by consumers (called clicwalkers). The goal of the company is to understand the community of clicwalkers (40 thousands in one year) and its evolution with two objectives: the first one is to optimize the attribution of surveys to clicwalkers, and the second is to expand company's market to foreign countries. Social data can be obtained from social networks (G+, Facebook, ...) but there is no explicit network to describe the clicwalkers community. But users activity in answering surveys as well as server logs can provide traces of information diffusion, geolocalisation data, temporal data, sponsorship, etc. We study the problem of adaptive graph construction from the clicwalkers network. Node (users) classification and clustering algorithms are applied. For the problem of survey recommendations, the problem of teams constitution in a bipartite graph of users and surveys is studied. Random graph modeling and generative models of random graphs will be one step towards the prediction of the evolution of clicwalkers community.

8.1.2. *ADEME*

ADEME project MUST: Méthodologie d'exploitation des données d'usage des véhicules et d'identification de nouveaux Services pour les usagers et les territoires. JAN RAMON is the local PI at Inria of this project.

MINT Project-Team

7. Bilateral Contracts and Grants with Industry

7.1. Bilateral Contracts with Industry

Hap2U SME is licenced two patents of MINT team.

Mjolnir Team

8. Bilateral Contracts and Grants with Industry

8.1. Bilateral Contracts with Industry

- **Mock-up of a tool for dynamic media pre-production:** we are currently working with the HCOP holding company on the design of new tools for the pre-production of dynamic medias such as videos, e-learning animations, etc. This work involves interviews of professional video producers, the identification of opportunities for tools that could help them, and the production of descriptions and mock-ups of these tools.
- **Recognition and interpretation of piano fingering:** we have started a new collaboration with **Hugues Leclère**, concert pianist and professor at the “Conservatoire à rayonnement régional de Paris”. Our objective is to investigate new sensing technology and interpretation algorithms for accurate live recognition of piano fingerings. Ultimately, this technology would ease the transcription of fingerings directly onto scores during play and support both the learning and training of piano fingerings, given appropriate visualization and interaction techniques that we will investigate in a second phase of this collaboration.