



**Offer #2020-02776**

## **PhD Position F/M declarative constraints for privacy-friendly machine learning (M/F)**

**Contract type** : Civil Servants Mobility (EU) or Fixed-term contract

**Level of qualifications required** : Graduate degree or equivalent

**Fonction** : PhD Position

**Level of experience** : Recently graduated

### **About the research centre or Inria department**

The Inria Lille - Nord Europe Research Centre was founded in 2008 and employs a staff of 360, including 300 scientists working in sixteen research teams. Recognised for its outstanding contribution to the socio-economic development of the Hauts-De-France région, the Inria Lille - Nord Europe Research Centre undertakes research in the field of computer science in collaboration with a range of academic, institutional and industrial partners.

The strategy of the Centre is to develop an internationally renowned centre of excellence with a significant impact on the City of Lille and its surrounding area. It works to achieve this by pursuing a range of ambitious research projects in such fields of computer science as the intelligence of data and adaptive software systems. Building on the synergies between research and industry, Inria is a major contributor to skills and technology transfer in the field of computer science.

### **Context**

This position is funded in the context of the HyAIAI "Hybrid Approaches for Interpretable AI" INRIA project lab (<https://project.inria.fr/hyaiai/>). With this subject, we would like to investigate how declarative languages (e.g. languages stating constraint satisfaction problems, or query languages) can help clarifying both what is expected of the model and what the model truly satisfies. These are aspects of the "model interpretability" not yet tackled within the HyAIAI project.

The recruited collaborator will be supervised by Jan Ramon (MAGNET, INRIA-Lille, France), Elisa Fromont (LACODAM, IRISA/INRIA-Rennes, France) and Siegfried Nijssen (Univ. Louvain-La-Neuve, Belgium). By default, the collaborator will work in Lille, visit the other teams when needed, participate in HyAIAI meetings in Paris and travel when appropriate for dissemination activities.

### **Assignment**

The recruited person will research methods to analyse and optimise privacy-friendly machine learning systems using declarative constraints.

Some more detail on the subject and some references are available at <http://researchers.lille.inria.fr/jramon/jobs/hyaiai-cppriv.pdf>

The recruited person will benefit from the expertise of the MAGNET team on declarative languages, privacy (<https://team.inria.fr/magnet/>), of the LACO- DAM team (<https://team.inria.fr/lacodam/>) in declarative languages and interpretable AI and of the expertise of Siegfried Nijssen in constraint programming and its applications in machine learning and data mining (<https://www.info.ucl.ac.be/~snijssen/>).

### **Main activities**

A person can be hired on this position as a post-doc (vacancy 2020-02772) or PhD student (this vacancy).

In both cases, his main task will consist of research, including developing and analysing new research results, and disseminating them.

In the case a PhD student is recruited, the student will also follow a doctoral training and write a PhD thesis.

### **Skills**

Technical skills and level required : depending on the post-doc or PhD student profile, a scientific background as specified above.

Languages : Very good English

Relational skills : Working in a team, effective reporting and communication with all involved stakeholders.

## Benefits package

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking (after 6 months of employment) and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage

## Remuneration

1st and 2nd year : 1 982€ Gross monthly salary (before taxes)

3rd year : 2 085€ gross monthly salary (before taxes)

## General Information

- **Theme/Domain** : Data and Knowledge Representation and Processing Statistics (Big data) (BAP E)
- **Town/city** : Villeneuve d'Ascq
- **Inria Center** : [Centre Inria de l'Université de Lille](#)
- **Starting date** : 2021-01-01
- **Duration of contract** : 3 years
- **Deadline to apply** : 2020-10-31

## Contacts

- **Inria Team** : [MAGNET](#)
- **PhD Supervisor** :  
Ramon Jan / [jan.ramon@inria.fr](mailto:jan.ramon@inria.fr)

## About Inria

Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

## The keys to success

We would ideally recruit a PhD with the following preferred skills:

- Knowledgeable in constraint programming
- Knowledgeable in machine learning in general
- Good programming skills
- Very good English (understanding and writing)

However, good applications by candidate PhD students will also be considered and, in this case, the position will last 3 years. Candidate PhD students should have a strong background in computer science, especially in relevant subjects such as discrete mathematics, optimisation, constraint programming, machine learning, probability theory and statistics.

The position will be funded by INRIA (<https://www.inria.fr/en/>). See the INRIA web site for the post-doc and PhD wages.

The candidates should send a CV, 2 names of referees and a cover letter to the three supervising researchers mentioned above. Please indicate if you are applying for the post-doc or the PhD position.

**Warning** : you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

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## Instruction to apply

### **Defence Security :**

This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

### **Recruitment Policy :**

As part of its diversity policy, all Inria positions are accessible to people with disabilities.