Offer #2025-08832

PhD Position F/M Abstraction of a machine learning profile or how to integrate semantics into static analyses

Contract type : Fixed-term contract

Level of qualifications required : Graduate degree or equivalent

Fonction : PhD Position

About the research centre or Inria department

Created in 2008, the Inria center at the University of Lille employs 360 people, including 305 scientists in 15 research teams. Recognized for its strong involvement in the socio-economic development of the Hauts-De-France region, the Inria center at the University of Lille maintains a close relationship with large companies and SMEs. By fostering synergies between researchers and industry, Inria contributes to the transfer of skills and expertise in the field of digital technologies, and provides access to the best of European and international research for the benefit of innovation and businesses, particularly in the region.

For over 10 years, the Inria center at the University of Lille has been at the heart of Lille's university and scientific ecosystem, as well as at the heart of Frenchtech, with a technology showroom based on avenue de Bretagne in Lille, on the EuraTechnologies site of economic excellence dedicated to information and communication technologies (ICT).

Assignment

This project is part of the ANR Profil programme. The aim is to use Python code to identify the machine learning profile used in order to identify good and bad practices.

After getting to grips with the Moose platform and the Python metamodel, the PhD student will have to define a notebook metamodel and a workflow metamodel. To build the notebook and code models, it will be necessary to define an associated parser to build the models from the Jupyter representation of notebooks, for example. The results of this task will have to be integrated into Moose. A second task will be to build the workflow models, with varying degrees of precision, by successive iterations. This task is being carried out in close collaboration with our partners in Nice. Finally, these workflow models will need to be visualised.

Underlying all this is the question of how to add semantics to static code analyses in order to provide tools dedicated to the business or domain.

Main activities

Main activities :

- Static analysis of Python code
- development of tools on top of the Moose platform
- evaluation of proposed approaches
- reading the state of the art
- writing scientific articles

Skills

Technical skills and level required :

- Object-oriented programming
- Python
- Metamodelling

Language skills :

- English

Additional skills required :

- analytical skills
- writing skills
- high level of abstraction

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 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

2200€ gross per month

General Information

- **Theme/Domain :** Distributed programming and Software engineering Software engineering (BAP E)
- **Town/city :** Villeneuve d'Ascq
- **Inria Center :** Centre Inria de l'Université de Lille
- **Starting date :** 2025-10-01
- **Duration of contract :** 3 years
- **Deadline to apply :** 2025-05-31

Contacts

- **Inria Team :** EVREF
- **PhD Supervisor :**
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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.

Instruction to apply

CV + cover letter

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.