Offer #2023-06785

PhD Position F/M A proof theoretic approach of polymorphic instantiation

**Contract type**: Fixed-term contract

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

**Function**: PhD Position

**Level of experience**: Recently graduated

**About the research centre or Inria department**

The Inria Saclay-Île-de-France Research Centre was established in 2008. It has developed as part of the Saclay site in partnership with Paris-Saclay University and with the Institut Polytechnique de Paris.

The centre has 39 project teams, 27 of which operate jointly with Paris-Saclay University and the Institut Polytechnique de Paris; Its activities occupy over 600 people, scientists and research and innovation support staff, including 44 different nationalities.

**Context**

This position is in the context of a collaboration between Gabriel Scherer (INRIA Saclay) and Paolo Pistone (ENS Lyon). Regular visits between both places are planned, and will of course be funded, in addition to usual scientific travel.

The position is funded by an ANR JCJC (REPRO) of Gabriel Scherer.

**Assignment**

**Assignments**:

The doctoral student is expected to develop their own scientific contribution in the area of the proposed PhD topic.

*(Teaching will also be available if there is interest.)*

**Collaboration**: collaboration with Gabriel Scherer, Paolo Pistone and their scientific teams.

**Responsibilities**:

At the beginning, the student is in a learning phase where their direct responsibilities are limited: scientific enquiry on a topic initially proposed by the advisors, reading the suggested scientific literature, etc. Over time they become more and more autonomous, and will hopefully take a leading role in the presentation of their work to the scientific community (workshops, papers, etc.)

**Main activities**

Main activities (5 maximum):

- read research papers to understand the scientific literature
- study the problem of interest and come up with solutions and new research directions
- evaluate and present their work in the form expected by their research community

**Skills**

The research topic requires some familiarity with mathematics and logical thinking.

Knowledge of lambda-calculus and related fields are a plus.

The research work could benefit from some software experiments (implementing a toy search procedure, proof system, etc., to run simple examples and build intuition), for which programming would be a plus.
Presenting one's research involves both writing skills and oral presentation skills, which are expected to grow during the PhD period. Familiarity with English is useful, as this is a common presentation language.

**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
- 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: 2082€ gross/month
- 3rd year: 2190€ gross/month

**General Information**

- **Theme/Domain**: Proofs and Verification
- **Scientific computing** (BAP E)
- **Town/city**: Palaiseau et Lyon
- **Inria Center**: Centre Inria de Saclay
- **Starting date**: 2023-12-01
- **Duration of contract**: 3 years
- **Deadline to apply**: 2023-12-31

**Contacts**

- **Inria Team**: PARTOUT
- **PhD Supervisor**: Scherer Gabriel / gabscherer@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**

- ability to learn new mathematical concepts
- interest in both mathematical structures and computational properties
- ability to implement small prototypes for experimentation purposes
- interest in communicating ideas

**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). Authorization 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.