Offer #2025-09147

Post-Doctoral Research Visit F/M Postdoctoral fellowship: Formal Methods for Software/Hardware Security

Contract type : Fixed-term contract

Level of qualifications required : PhD or equivalent

Fonction : Post-Doctoral Research Visit

About the research centre or Inria department

The Inria Centre at Rennes University is one of Inria's nine centres and has more than thirty research teams. The Inria Centre is a major and recognized player in the field of digital sciences. It is at the heart of a rich R&D and innovation ecosystem: highly innovative PMEs, large industrial groups, competitiveness clusters, research and higher education players, laboratories of excellence, technological research institute, etc.

Context

The work will be part of the PEPR SECUREVAL project funded by France 2030, which aims to improve the tools provided to security evaluators.
The postdoc will be part of the Inria SUSHI team in the IRISA laboratory and hosted at CentraleSupélec Rennes, France.

Assignment

For a better knowledge of the proposed research subject :
Bibliography and scientific references are available at the following URL :
https://team.inria.fr/sushi/files/2025/07/Postdoc_PEPR_Formal.pdf

Collaboration :
The recruited person will be in connection with Pierre Wilke, Guillaume Hiet, and M2/PhD students working on the topic.

Main activities

We seek a postdoc candidate to conduct research using formal methods to prove security at various software/hardware interface levels. A non-exhaustive list of topics that could be explored would be:
• proofs mixing compiler (e.g., CompCert) and hardware support to enforce CFI
• proving security of RISC-V enclaves
• proving that our hardware implementation of a RISC-V processor correctly implements the RISC-V ISA (e.g., with SAIL)
• stating and proving software/hardware contracts
• proofs mixing OS and hardware support for isolation

Skills

Technical skills and level required :

- Fluency with proof assistants
- Knowledge of computer security, compilers, operating systems or hardware design languages would be appreciated.

Languages :

- English

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

Monthly gross salary amounting to 2788 euros

General Information

- **Theme/Domain :** Security and Confidentiality
  Software engineering (BAP E)
- **Town/city :** Rennes
- **Inria Center :** Centre Inria de l'Université de Rennes
- **Starting date :** 2025-10-01
- **Duration of contract :** 2 years
- **Deadline to apply :** 2025-09-15

Contacts

- **Inria Team :** SUSHI
- **Recruiter :**
  Wilke Pierre / pierre.wilke@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

The candidate should have a strong background with formal methods in general and proof assistants in particular.
Knowledge and experience with computer security, compilers, operating systems, or hardware design languages are
welcome.

> **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.

Instruction to apply

Please submit online : your resume, cover letter and letters of recommendation eventually

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.