Offre n°2025-09020

Post-Quantum Security, Continuous Deployment of Software on Microcontrollers and Open Source Embedded Rust

Contrat renouvelable : Oui

Niveau de diplôme exigé : Graduate degree or equivalent

Fonction : Temporary scientific engineer

A propos du centre ou de la direction fonctionnelle

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 **40 project teams** , 32 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.

Contexte et atouts du poste

As part of a collaboration between Inria and Orange, a prototype of CI/CD on heterogeneous microcontrollers and integrating post-quantum security levels will be designed and studied, combining microcontroller-based hardware similar to Nordic nRF52, STM32, ESP32 or RISC-V, via network links such as BLE, 802.15.4 or LTE-M, programmed with an open source operating system coded in embedded Rust (Ariel OS, see https://ariel-os.org/). This prototype will be co-developed and tested jointly with Orange. This project follows the TinyPART project (see https://tinypart.github.io/TinyPART/). Post-quantum security mechanisms will be based on NIST standards/candidates, and open communication standards/drafts from IETF for instance. The worl will also involve collaboration with cryptography experts, among others from Inria.

Mission confiée

Collaboration :
The recruited person will be in connection with the Ariel OS open-source community & developers, collaborators at Orange and Inria researchers in the domain of secure IoT, post-quantum cryptogaphy and low-power wireless networking (BLE, Thread, LTE-M, NB-IoT etc.) as well as the engineers we collaborate with at Campus Cyber.

Responsibilities :
The recruited person will be responsible for core embedded OS development, secure low-power software update network stack developments, post-quantum cryptographic library porting and testing in the field. For preliminary information: check out Ariel OS at https://github.com/ariel-os/ariel-os

Steering/Management :
The person recruited will be a hands-on contact point between Inria, Orange, and Ariel OS maintainers. Depending on the seniority of the profile, the recruited person would supervise a couple of other engineers working at Inria on Ariel OS developement.

Principales activités

Examples of activities:

- implementation, documentation and CI of embedded Rust components
- integration of existing Rust crates and/or embedded C libraries as components in the Rust OS
- hardware prototype developement and testing on IoT hardware use cases
- interacting with secure low-power IoT network protocols experts
- porting and evaluation of cryptographic libraries, interaction with post-quantum experts
- upstreaming and active participation in open-source communities

Compétences

Technical Skills:

- embedded Rust/C
- git
- open-source software workflows
- RTOS or bare-metal experience on 32-bit microcontrollers such as ARM Cortex-M, RISC-V, ESP32
- knowledge of network protocols stack (BLE, NB-IoT, TCP/IP, 6LoWPAN...)
- knowledge of cryptography and post-quantum aspects thereof

Non-Technical / Soft skills:

- distributed team work
- good english skills (written, spoken, read)
- consensus building

Avantages

- 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

Rémunération

Regarding professional experience.

Informations générales

- **Thème/Domaine :** Networks and Telecommunications
  System & Networks (BAP E)
- **Ville :** Palaiseau
- **Centre Inria :** Centre Inria de Saclay
- **Date de prise de fonction souhaitée :** 2025-08-01
- **Durée de contrat :** 2 years
- **Date limite pour postuler :** 2025-07-31

Contacts

- **Équipe Inria :** TRIBE
- **Recruteur :**
  Baccelli Emmanuel / Emmanuel.Baccelli@inria.fr

A propos d'Inria

Inria est l’institut national de recherche dédié aux sciences et technologies du numérique. Il emploie 2600 personnes. Ses 215 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3900 scientifiques pour relever les défis du numérique, souvent à l’interface d’autres disciplines. L’institut fait appel à de nombreux talents dans plus d’une quarantaine de métiers différents. 900 personnels d’appui à la recherche et à l’innovation contribuent à faire émerger et grandir des projets scientifiques ou entrepreneuriaux qui impactent le monde. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 200 start-up. L'institut s'e?orce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

L'essentiel pour réussir

This job is for people who are passionate about prototyping, embedded Rust, low-power hardware and post-quantum cybersecurity. Obviously, being an open-source enthusiast is a plus!

Attention: Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.

Consignes pour postuler

To apply, please provide :

- CV
- Cover letter
- Letter(s) of recommendation, where applicable

Sécurité défense :
Ce poste est susceptible d’être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L’autorisation d’accès à une zone est délivrée par le chef d’établissement, après avis ministériel favorable, tel que défini dans l’arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l’annulation du recrutement.

Politique de recrutement :
Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.