Research Associate (WiMi) Position to be filled:

Embedded Rust Development for Post-Quantum Cybersecurity in Low-Power Distributed System Software

About our department

The Open and Secure Internet of Things group at Freie Universität Berlin, Department of Mathematics and Computer Science, is led by Prof. Emmanuel Baccelli, supported by Inria and Einstein Center for Digital Future. The group's main working areas include embedded software, cybersecurity, tiny machine learning, distributed systems, low-power network protocols, and Internet Protocol standardization.

Context

The context stems on the one hand from EU Horizon Projects PQ-Life and SUPERstack, and on the other hand from the Ariel OS open source community. This position will focus on designing and leading the development of Rust embedded software building blocks for heterogeneous low-power 32-bit MCUs (Arm Cortex-M, RISC-V, ESP32...) connected with various low-power wireless techniques (BLE, 802.15.4, LoRa...) and secure IPv6 6LoWPAN network stacks. Optionally, depending on your profile and your inclination, this position can be compatible with pursuing a PhD advised by Prof. E. Baccelli, or with a postdoc, resulting in academic publication(s).

Responsibilities

The main goals are to both (i) provide an embedded platform for the transition from pre- to post-quantum security levels for the IoT protocols stack and (ii) provide a versatile, CRA-compliant, secure IoT software update framework for fleets of heterogeneous IoT hardware. The recruited person will be responsible for embedded systems designs, for secure low-power network stack development, and for (continuous) integration aspects. This job is tailored for people who are passionate about embedded Rust, serious cybersecurity and who are open source enthusiasts.

Collaboration

The recruited person will be in connection with the Ariel OS developers community, as well as collaborate with international partners from Inria, Infineon, Orange, Siemens (among many others) in the domains of secure low-power IoT, cryptography and formal verification.

Main activities

• design of embedded systems software architectures
• implementation, evaluation, documentation of embedded Rust modules and Ariel OS
• continuous integration and testing of embedded Rust modules
• interaction with secure low-power IoT network protocols experts
• upstreaming, and participating in open source community steering/events

Academic degree

Applicants must possess a master degree in computer science, mathematics, electrical engineering or similar.

"Hard" skills we are looking for

• Rust
• fundamentals in software security, network protocols, security, cryptography
• git and open source software workflows
• substantial RTOS or bare-metal experience on 32-bit microcontrollers such as ARM Cortex-M, RISC-V, ESP32

“Soft” skills we are looking for

• distributed team work
• excellent English skills (written, spoken, read)
• consensus building

Your Benefits

The below list is in german (for more information, check the bottom of this page).

• moderner Arbeitsplatz im grünen Bezirk Dahlem
• Arbeitsplatzsicherheit
• flexible Arbeitszeiten und mobiles Arbeiten nach Absprache, sofern möglich
• die Vereinbarkeit von Beruf und Familie
• 30 Tage Urlaub bei einer 5-Tage-Woche
• Arbeitsfreie Tage am 24.12. und 31.12.
• vielseitiges Fort- und Weiterbildungsangebot für Ihre individuelle fachliche und persönliche Weiterentwicklung
• Möglichkeiten zur Teilnahme am Hochschulsport und Gesundheitsförderprogramm
• kostenfreie Parkmöglichkeiten am Gebäude und gute Anbindung an den öffentlichen Nahverkehr
• vergünstigtes Job-Ticket für den öffentlichen Nahverkehr
• kostenlose Nutzung des Bibliotheksystems der Freien Universität
• Vergünstigungen in den Mensen
• Rabatte für Mitarbeitende - Corporate Benefits Programm

Start date & Salary

Two positions are open. Both start January 2027. Positions will remain open until they are filled. The salary is according to the standard German public sector wages framework (TV-L).

Applying

We look forward to hearing from your and to receiving your application. Initiate contact by sending your CV asap to emmanuel.baccelli@fu-berlin.de (cc: stefanie.bahe@fu-berlin.de).