Job vacancy #2023-06473

Development - System - Network engineer for CorteXlab

Contract type: Fixed-term contract
Renewable contract: Yes
Level of qualifications required: Graduate degree or equivalent
Other valued qualifications: Engineer
Function: Temporary scientific engineer
Level of experience: Up to 3 years

About the research centre or Inria department

The Inria research centre in Lyon is the 9th Inria research centre, formally created in January 2022. It brings together approximately 300 people in 16 research teams and research support services.

Its staff are distributed at this stage on 2 campuses: In Villeurbanne La Doua (Centre / INSA Lyon / UCBL) on the one hand, and Lyon Gerland (ENS de Lyon) on the other.

The Lyon centre is active in the fields of software, distributed and high-performance computing, embedded systems, quantum computing and privacy in the digital world, but also in digital health and computational biology.

Context

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Context

This position is funded by the national program for excellence PEPR 5G, for the plateform project. You will join the research team MARACAS to contribute to an international plateform in collaboraiton with many actors (France, Europe, World).

CorteXlab (https://www.cortexlab.fr) is an experimental testbed dedicated to radio communication research, specifically designed for Software Defined Radio experiments. It is hosted in the CITI lab (https://www.citi-lab.fr/), INSA Lyon.

With its 180m² EM shielded room that ensures experiment reproducibility and its 40 high-end SDR-capable radio nodes, CorteXlab provides a unique setup to experiment on new state-of-the-art radio techniques.

A major update of the platform hardware and software is planned for the following years, as well as the integration of the platform in the larger scale European SLICES-FR project (http://slices-ri.eu/), which aims at providing a large scale experimental platform in the domains of network protocols, radio technologies, Cloud, Edge and data services, as well as distributed and parallel computation.

Assignment

The recruited engineer will be part of the CorteXlab team of four people, which gathers both radio communication and signal processing specialists, as well as development / system / network engineers.
He or she will work under the supervision of both the researchers defining the strategic orientation of the platform developments, and the technical director for the maintenance and development of the platform infrastructure. He or she will be tasked to operate the platform, maintain existing hardware or install new hardware, and maintain, improve, or develop the software needed to run the platform, to allow researchers to conduct innovating scientific experiments.

The recruited engineer will work in coordination with the partners involved in the development of the SLICES infrastructure, including EURECOM and Inria/Sophia, Télécoms Paris and Inria/Saclay, under the banner of the SLICES/France label.

**Main activities**

- System and network engineering: setup innovative solutions in the context of scientific experimentation

- In a GNU/Linux Debian environment, contribute to the integration, administration or development of services needed for the operation of the platform. Some of these services are of the shelf standard common components (eg. NFS, DNS, DHCP, ...), while others are more specific (eg. OAR Batch scheduler http://oar.imag.fr/) and some are custom.

- Automate the deployment and configuration of most of the platform services with configuration tools (such as Ansible, Puppet). Until now, these tasks have been done with a custom tool and our goal is to switch to an of the shelf solution such as Ansible (https://www.ansible.com/).

- Contribute to the development, integration and maintenance of the software running the platform. Programming language is mainly Python, especially for the service piloting the experiments, with parts of the code in shell scripting language. Java/Angular/Typescript is used for the platform web frontend. Inter operation with other scientific platforms may also require other languages, such as Ruby.

- Contribute to the maintenance or creation of Docker images providing the software stack for running experiments (in particular: GNU Radio https://www.gnuradio.org/)

- Maintain or install hardware, such as servers, compute nodes, switches, routers, as well as SDR nodes such as NI / Ettus USRP radio nodes (https://www.ettus.com/product-categories/usrp-x-series/)

- Contribute to the maintenance or evolution of the platform network

- Interact with the users of the platform (CorteXlab scientific team as well as larger scientific community using the platform) to understand their needs and provide help and support

- Write or maintain documentation

**Skills**

**Required Skills:**

- Good knowledge of GNU/Linux systems, in particular Debian. Some knowledge / experience with virtual machines or containers are a plus.

- Strong skills in system / network administration and software development

- Basic skills in network administration: IPv4, IPv6, 802.1q VLans, basic network services (DNS, DHCP, NFS, LDAP, ...)

- Good programming skills in Python, or alternatively very good skills in other programming languages insuring a quick adaptation in a Python development environment

- Good practices in Devops style development: version control (git), automatic deployment and configuration (Ansible or Puppet or similar technologies)

- Autonomy for conducting tasks

- Good team work and interaction with researcher using the platform, both in French and in English

- Good writing skills for documentations

- Beginner or first professional experience accepted

**Knowledge in the following topics are not mandatory but are a plus:**

- Signal processing, Radio transmission, GNU Radio

- Machine learning

**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 (90 days/year) 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 under conditions

Remuneration

From 2,652 € (depending on experience and qualifications).

General Information

- **Theme/Domain**: Networks and Telecommunications
- **Software Experimental platforms (BAP E)**
- **Town/city**: Villeurbanne
- **Inria Center**: Centre Inria de Lyon
- **Starting date**: 2023-12-01
- **Duration of contract**: 2 years
- **Deadline to apply**: 2023-11-30

Contacts

- **Inria Team**: MARACAS
- **Recruiter**: Gorce Jean-marie / jean-marie.gorce@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

You are a young engineer with a deep interest for new technologies in the area of networks and especially cellular wireless networks.

You have strong skills in network design and programming, and experimentation. You want to become an expert in wireless network technologies, from layer 1 to layer 3.

You are curious, open-mind, talentuous and you would like to collaborate within a group of engineers.

You want to contribute to the first worldwide international testbed to contribute to the design of future 6G technologies.

**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

Applications must be submitted online on the Inria website.

Processing of applications sent by other channels is not guaranteed.

**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.