Offer #2024-07369

Low-Power Wireless Mesh Networks for the Inria Museum

Level of qualifications required : Master's or equivalent

Fonction : Internship Research

Context

The Inria AIO team works with the team of the Inria Museum to bring in a fun low-power wireless mesh network installation. It consists of 20 AIOT System board equipped with an ultra sonic range-finder, a buzzer and many LEDs. The goal of this internship is to finalize the code for that equipement, test it in the lab and install it in the museum. The next time to visit the museum, you'll be looking at things you will have built!

Assignment

You will be working together with Thomas Watteyne and Remy Taillefer to understand the needs of the museum, work on the fimware and the software, test the system thouroughly, then install it.

Main activities

- Get started with the AIOT System boards, how they work and how to program them.
- Write simple standalone projects which interface with each of the peripherals (the LEDs, the buzzer, the PIR sensor, etc)
- Put together a firmware image which interacts with all peripherals
- Have the AIO Play boards connect wirelessly to the AIOT Gateway
- Develop the software on the AIOT Gateway
- Test the resulting system in the lab
- Install the network at the Inria Museum

Skills

- good "hard" skills
  - some embedded programming experience (understanding an electronic schematic, programming micro-controllers)
  - some experience with IoT systems, as a designer or a user.
  - "computer" programming skills (ideally Python), including some web development (understanding how browser and server communicate, some JavaScript visualization)
  - some understanding of software quality and project management tools (e.g. Git, GitHub, GitHub Actions)
- good "soft" skills
  - we are looking for the "technical leader" type.
  - ideally, some prototyping experience (3D printing, laser cutting, PCB assembly, …). If you have built an automated watering solution for your house plants, let us know!
  - ideally, some open-source project experience, including source code and project management tools (Git, GitHub, etc)

Benefits package

- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT + possibility of exceptional leave (sick children, moving home, etc.)
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage

General Information

- **Theme/Domain :** Networks and Telecommunications
  System & Networks (BAP E)

- **Town/city** : Paris
- **Inria Center** : [Centre Inria de Paris](#)
- **Starting date** : 2024-07-01
- **Duration of contract** : 2 months
- **Deadline to apply** : 2024-06-18

Contacts

- **Inria Team** : [AIO](#)
- **Recruiter** :
  Watteyne Thomas / thomas.watteyne@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

We are looking for a student pursing a Masters of Engineering ("ingénieur") or Masters of Science (MSc, "Master") diploma, typically in your 4th year of studies, although other situations may be acceptable.

> **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

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.