Offer #2023-06940

Post-Doctoral Research Visit F/M Post-doctoral fellow in WuR for multi-technology IoT for sustainable solutions (M/F)

Contract type: Fixed-term contract
Level of qualifications required: PhD or equivalent
Fonction: Post-Doctoral Research Visit
Level of experience: From 3 to 5 years

Context

The postdoctoral fellow recruited will join the Autonomous Pack collaborative project in partnership with GoodFloow, IRCICA, ITM Nord-Europe and ITM Atlantique. The Autonomous Pack project aims to reduce CO2 emissions linked to packaging waste from industries within supply chains. The aim is to study the use of IoT devices attached to reusable packaging, which is generally more expensive. Due to the unprofitability of packaging linked to the lack of responsibility when it is altered, the switch from disposable to reusable packaging by manufacturers remains difficult and is being slowed down. In order to speed up this migration, the solution studied in Autonomous Pack consists of developing multi-technology wireless communication IoT devices that embed Artificial Intelligence (AI) for real-time identification of the various stages in the supply chain. Depending on these stages, predefined actions are executed according to a state machine to transparently assign responsibility for the reusable pack to a person or entity.

Assignment

In this context, the main task of the Inria FUN research team is to define an energy-efficient MAC-level solution to facilitate communication between IoT devices by optimising neighbourhood discovery and reducing collisions during communications. The engineer recruited for the project, in collaboration with the members of the FUN team contributing to Autonomous Pack and all the partners, will firstly have to ensure that the IoT devices operate correctly according to the state machine; secondly, he or she will have to facilitate the integration and evaluation of the proposed algorithms by seeking the best compromise between speed, accuracy and energy consumption. The engineer’s main task will be to implement the work resulting from the FUN team’s research in the GoodFloow system and to take part in full-scale experimental tests and evaluations.

Main activities

The post-doc will be responsible for:
- Contribute to research within the Autonomous Pack project
- Exploring new avenues for improvement (hardware and software)
- Propose energy-efficient communication protocols
- Reduce collisions during communications
- Implement and integrate the proposed solutions
- Evaluate the proposals experimentally (and by simulation if necessary) in collaboration with the technical team.

Skills

The main technical skills for this position can be summarised as follows:
- Knowledge of IoT (sensor networks)
- Knowledge of wake-up radios (WuR)
- Knowledge of wireless communication technologies (BLE, LPWAN, WiFi)
- Knowledge of how low-level layers work (MAC and PHY)
- Knowledge of low-level (C, C++) and high-level (python, matlab, etc.) programming languages.
- English, written, spoken, read

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 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

General Information

- Theme/Domain: Networks and Telecommunications
- System & Networks (BAP E)
- Town/city: Villeneuve d'Ascq
- Inria Center: Centre Inria de l'Université de Lille
- Starting date: 2024-02-01
- Duration of contract: 2 years
- Deadline to apply: 2024-02-06

Contacts

- Inria Team: FUN
- Recruiter: Mitton Nathalie / Nathalie.Mitton@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 someone who is inquisitive and creative, with a critical mind, capable of writing scientific articles and synthesised reports, working as part of a team while being autonomous with a spirit of initiative.

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 send us your CV and cover letter.

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.