Offer #2023-06941

IoT engineer for the development of sustainable solutions (M/F)

**Contract type**: Fixed-term contract

**Level of qualifications required**: Graduate degree or equivalent

**Function**: Temporary scientific engineer

**Level of experience**: Recently graduated

**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 device and to take part in full-scale experimental tests and evaluations.

**Main activities**

The engineer will be responsible for:

- Implementing and integrating communication protocols in IoTs
- Helping to improve IoT devices (hardware and software)
- Integrating and adding new functionalities
- If necessary, migrate source code from one environment to another
- Check that the IoT functions correctly according to the state machine
- Experimentally evaluate the research team’s proposals

**Skills**

The main technical skills for this position can be summarised as follows:

- Knowledge of embedded systems and MCUs (ESP32, STM32, etc.)
- Advanced knowledge of low-level (C, C++) and high-level (python, matlab, etc.) programming languages.
- Knowledge of the Espressif IDF and/or STM32 environment
- Advanced knowledge of collaborative programming (Github, GitLab, etc.)
- Knowledge of the use of energy measurement equipment
- Knowledge of wake-up radios (WuR) and wireless communication technologies (BLE, LPWAN, WiFi).
- English read spoken written

**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
- 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: 2024-09-01
- 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're looking for someone with an inquisitive mind, capable of innovation, who enjoys working in a team and communicating about their work.

**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). Authorization 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.