Offer #2019-01655

Short & medium range Localisation and Communication with vulnerable Road Users

Contract type : Civil Servants Mobility (EU) or Fixed-term contract

Renewable contract : Yes

Level of qualifications required : Graduate degree or equivalent

Fonction : Temporary scientific engineer

About the research centre or Inria department

Inria, the French national research institute for the digital sciences, promotes scientific excellence and technology transfer to maximise its impact.
It employs 2,400 people. Its 200 agile project teams, generally with academic partners, involve more than 3,000 scientists in meeting the challenges of computer science and mathematics, often at the interface of other disciplines.
Inria works with many companies and has assisted in the creation of over 160 startups. It strives to meet the challenges of the digital transformation of science, society and the economy.

Context

The E4SE team of Inria Rennes Bretagne Atlantique is studying local interactions between smart objects to serve the needs of frugal and/or pervasive applications.

With two SMEs from Brittany, the team is involved in a collaborative project founded by Region Bretagne and aiming at developing innovative communication and localisation solutions for workers evolving around heavy equipment

The team is looking for a research engineer to tackle this project.

Assignment

The project aims at developing communication and localisation solutions for workers evolving around heavy equipment (road vehicles, construction machines, agricultural tractors, etc) in order to warn the workers and vehicle drivers about impending dangers. The goal is to design and implement prototypes and to demonstrate them in two scenarii: road works and construction works.

One of the partner companies is an expert of radio communications for Intelligent Transportation Systems (ITS). The second one is specialised in high precision indoor and outdoor localisation of mobile devices.

E4SE team contribution will mainly focus on the state of the art of short range radio communication technologies and architecture, in particular for P2P device cooperation. Our goal is to take benefit of this project to develop “frugal” techniques to localise and communicate with smart personal devices (smartphones, smart wristband / smart watches, etc) in the near environment of vehicles. We intend to develop localisation techniques and associated algorithms, to locate devices thanks to a network of cheap standards communication interfaces (like Bluetooth).

Main activities

- In collaboration with the project partners: Definition of the solutions and the demonstration use cases (localisation and communication scenarii)
- Software Design and Development:
  - Application (algorithm) for fusion of inaccurate data from several sources
  - Low Layer interface with hardware drivers under Linux and/or sensors/embedded boards (Arduino, ESP, ...)
  - Integration of standard technologies (Wifi, Bluetooth, etc.)
- Lab and field test trial

Skills

- OS: Linux (Android would be nice as well)
- Wifi, Bluetooth (BLE and bluetooth 5 if possible)
- Target: tbd (RaspberyPi, ESP32, Arduino...)

Benefits package

- Subsidized meals
- Partial reimbursement of public transport costs

Remuneration

Monthly gross salary from 2562 euros according to diploma and experience

General Information

- **Theme/Domain :** Networks and Telecommunications
  System & Networks (BAP E)
- **Town/city :** Rennes
- **Inria Center :** Centre Inria de l'Université de Rennes
- **Starting date :** 2019-09-01
- **Duration of contract :** 1 year
- **Deadline to apply :** 2019-08-06

Contacts

- **Inria Team :** EASE
- **Recruiter :**
  Couturier Christophe / christophe.couturier@irisa.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.

Instruction to apply

Please submit online : your resume, cover letter and letters of recommendation eventually

For more information, please contact christophe.couturier@irisa.fr

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.