



**Offer #2024-07272**

## **Engineer hardware and firmware : Sailing, Augmented**

**Contract type :** Fixed-term contract

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

**Other valued qualifications :** MsC/MEng

**Fonction :** Temporary scientific engineer

**Level of experience :** Recently graduated

### **Context**

**For a better knowledge of the proposed research subject :**

- AIO (<https://aio.inria.fr/>) is a leading research team in low-power wireless communications. The team is designing Tomorrow's Internet of (Important) Things. It pushes the limits of low-power wireless mesh networking by applying them to critical applications such as robotics, industrial control loops, with harsh reliability, scalability, security and energy constraints.

**Collaboration :**

- You will be working in the heart of the vibrant Inria-AIO team, and will receive lots of help if there are tasks you don't know how to carry out (which is normal from an intern!). Thomas Watteyne, the team lead, will be your mentor.
- You will be interacting with many other members of the Inria-AIO team. There will be many other members of the team working on localization, so you will have plenty of opportunities to learn from others.
- You will also be working closely with Falco/Wattson Elements.

**Responsibilities :**

- At the end of your internship, you will have made a major contribution by having put together a key test infrastructure used by the Inria-AIO team.
- We expect your solution to be used at the Olympic games. On the technical side, you will have worked with embedded programming, prototyping, Python software.
- More importantly, you will have developed a "system" view – looking at the full system and putting it all together -- and have worked following state-of-the-art code development tools and practices.
- From a scientific point of view, you will be invited to lead a scientific publication, which will be submitted to either a conference or a journal.

### **Assignment**

**Collaboration :**

- The recruited engineer will work closely with Falco/Wattson Elements
- the work will be performed in collaboration with Ericsson and Orange using their 5G technology

**Responsibilities :**

- Develop a small box (the size of a matchbox) to measure a boat's movement and position to within 10 cm
- Send information from the box via Orange 5G technology with very low latency
- Apply the engineering development work to sailboat tracking in the Olympic games

### **Main activities**

**Main activities:**

- Sailing events at the olympics take place far from the public, and even if there are beautiful helicopter images, we can still only observe from afar. The aim of this project is to bring the spectators into the sailboats.
- From a technological point of view, it involves developing small boxes (the size of a matchbox) which is installed on each boat. These boxes measure the boat's movements, their position and the

- exact distance (to an accuracy of <10cm) between boats and buoys.
- This information is sent using Orange's 5G technology with very low latency, and can be used by media as a way to "augment" their images and boat data comments. We can therefore feel the forces at play, the way in which the boats brush against each other, the excitement of the crews.

## Skills

We are looking for recent graduate with a Masters of Engineering ("ingénieur") or Masters of Science (MSc, "Master") diploma.

- 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 (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking and flexible organization of working hours (after 12 months of employment)
- 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  
Instrumentation et expérimentation (BAP C)
- Town/city** : Paris
- Inria Center** : [Centre Inria de Paris](#)
- Starting date** : 2024-04-01
- Duration of contract** : 9 months
- Deadline to apply** : 2024-06-30

## Contacts

- Inria Team** : [AIO](#)
- Recruiter** :  
Maksimovic Filip / [filip.maksimovic@inria.fr](mailto:filip.maksimovic@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

Broadly, we are looking for someone who is:

- independent and a fast learner
- at ease working on difficult technical hardware and software problems both alone and in a group
- good experience with software, particularly embedded systems
- potentially, interest in sailing and maritime applications

**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.