



Offer #2022-05273

Engineer: Development of an autonomous multi-robots platform

Contract type : Fixed-term contract

Level of qualifications required : Master's or equivalent

Other valued qualifications : Master in Robotics/control

Fonction : Temporary scientific engineer

Level of experience : Recently graduated

About the research centre or Inria department

The Inria Sophia Antipolis - Méditerranée center counts 34 research teams as well as 7 support departments. The center's staff (about 500 people including 320 Inria employees) is made up of scientists of different nationalities (250 foreigners of 50 nationalities), engineers, technicians and administrative staff. 1/3 of the staff are civil servants, the others are contractual agents. The majority of the center's research teams are located in Sophia Antipolis and Nice in the Alpes-Maritimes. Four teams are based in Montpellier and two teams are hosted in Bologna in Italy and Athens. The Center is a founding member of Université Côte d'Azur and partner of the I-site MUSE supported by the University of Montpellier.

Context

The ACENTAURI research team (<https://team.inria.fr/acentauri/>), located in the Inria Center of the Côte d'Azur University in Sophia-Antipolis, is offering a research engineer position in robotics for 3 years.

ACENTAURI is a robotics team that studies and develops autonomous and intelligent robots that collaborate with each other to perform difficult tasks in complex and dynamic environments. The team addresses perception, decision and control problems for multi-robot collaboration by proposing an original hybrid approach to artificial intelligence based on models and data and by studying efficient algorithms. The team focuses on applications such as multi-robot patrol systems for environmental monitoring and transporting people and goods. In these applications, several robots share multi-sensor information possibly coming from the infrastructure. The effectiveness of the proposed approaches is demonstrated on real robotic systems such as cars and drones in collaboration with industrial partners.

ACENTAURI is working to set up an autonomous multi-robot platform composed of aerial drones and autonomous vehicles that communicates with each other and with the infrastructure in order to carry out collaborative operations. ACENTAURI is setting up a team of engineers led by a permanent staff to fulfill all the missions entrusted to the team but also to the partnerships currently in place, particularly in the ANR ANNAPOLIS projects (<https://team.inria.fr/annapolis>), and ANR SAMURAI (<https://team.inria.fr/samurai>). In ANNAPOLIS, an autonomous vehicle communicates with the infrastructure in order to increase its perception and navigate autonomously in the presence of pedestrians and electric scooters. In SAMURAI, two autonomous vehicles and two drones navigate together autonomously in order to provide both continuous charging and recharging service for the drones (these land and take off on the moving cars), but also the mapping of website and its update.

Travel: Travel is expected for system development, data acquisition and demonstrations.

Assignment

The missions entrusted to the engineer will mainly be the following:

- Definition and implementation of an open architecture for autonomous vehicles (2 robotic electric ZOE's) for environment perception, situation analysis and understanding, decision making and vehicle control (Ubuntu 20.04, ROS2, Open-Rox[1])
- Integration and calibration of sensors (Cameras, Lidar, IMU, ...)
- Data acquisition and annotation for the ANNAPOLIS and SAMURAI consortia
- Autonomous vehicle navigation V2V and V2I communications

- Support for the integration of partner contributions
- Development of unit and non-regression tests
- Evaluation of integration tests and upward compatibility of versions
- Support for experiments
- Setting up demonstrations
- Report and documentation

[1] Open-ROX is a software suite developed in the ACENTAURI team

Collaboration : The candidate will therefore work in close collaboration with the engineers, doctoral students and post-docs of the team.

Responsibilities: The candidate will have to integrate into the ACENTAURI engineering team and participate in the animation of the projects. In addition, he (she) will have to perform the important tasks of communication, report writing, and methodology implemented in ACENTAURI (project monitoring and project management under Git and Gitlab)

Main activities

Main activities:

- Analyze the needs of {partners, users}
- Propose solutions
- Develop programs/ applications/ interfaces
- Design experimental platforms
- Write documentation

Complementary activities:

- Write the reports
- Write meeting minutes
- Test, modify until validated

Skills

Technical skills and level required:

The candidate should preferably have obtained a PhD in Robotics or an engineering degree. The candidate must have a solid foundation in software development (Matlab, C/C++, Python, Git, OpenCL, CMAKE, ROS1, ROS2, ...). Knowledge of programming machine learning methods (learning and inference) and GPU programming will be highly appreciated.

Languages: a good level in English read/written/spoken is expected.

Interpersonal skills: The candidate will be in contact with the members of the team and will have to integrate into the ACENTAURI engineering team. He must have the appropriate relational qualities.

Additional skills appreciated:

The B permit and the drone remote control permit are a plus, if necessary these permits will have to be passed within the first three months of the contract.

He/she must also be highly motivated for multidisciplinary studies and all aspects of R\&D ranging from fundamental to experimental work.

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
- Supplementary social protection

Remuneration

From 2724 euros gross monthly (according to degree and experience)

General Information

- **Theme/Domain :** Robotics and Smart environments

- Instrumentation et expérimentation (BAP C)
- **Town/city** : Sophia Antipolis
- **Inria Center** : [Centre Inria d'Université Côte d'Azur](#)
- **Starting date** : 2022-11-01
- **Duration of contract** : 2 years
- **Deadline to apply** : 2022-10-03

Contacts

- **Inria Team** : [ACENTAURI](#)
- **Recruiter** :
Martinet Philippe / philippe.martinet@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

Portrait in broad strokes of the expected collaborator:

- tastes and appetites for technology
 - excellence in robotics
 - great working capacity
 - persevering and communicating
 - enthusiastic
 - team work
 - good organization and rigor in the work
 - knowledge and know-how in programming and debugging
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- Feeling at ease in a dynamic scientific environment, enjoying learning and listening are essential qualities to succeed in this mission.
 - Passionate about innovation, with expertise in robotics development and a great capacity for conviction.
- A thesis in the robotic field is a real asset.

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.