2022-05622 - PhD Position F/M Integrated localization and mapping for autonomous vehicles

Contract type : Fixed-term contract
Level of qualifications required : Graduate degree or equivalent
Fonction : PhD Position

Context

This position is part of a close partnership between the Valeo group and Inria (National Institute for Research in Computer Science and Automation), but also as part of a national collaborative research project of the relaunch plan of the automobile in which the RITS team of Inria and the DAR department of Valeo are partners.
The objective is to conduct research and contribute to the development of localization and mapping algorithms dedicated to autonomous vehicle with high integrity, for the transport of people or goods and operating in highway and urban environments. These modules will be validated on real instrumented prototypes belonging to the project partners.
Research and development work is expected as well as scientific integration, demonstration and dissemination.
Regular travels are planned for this position to participate in meetings, events and conferences for scientific dissemination. Travel expenses will be covered within the limits of the scale in force.

Assignment

Missions:
In collaboration with his colleagues in the Inria-Valeo team, the recruited person will be required to carry out scientific research work and carry out algorithmic developments that can be implemented in real instrumented autonomous mobile platforms.
For a better understanding of the proposed research context, visit the sites:
- from the RITS team at: https://team.inria.fr/rits/
- an example of a concrete realization: https://www.valeo.com/fr/valeo-drive4u-la-premiere-voiture-autonome-a-arpenter-les-rues-de-paris/
Collaboration:
The PhD candidate will work directly with his supervisors and the researchers and engineers from the Valeo and Inria teams. She(he) will benefit from the scientific framework available at Inria and from the industrial and innovation framework of Valeo. He will interact with the other partners of the project for which he is recruited and he will participate in various scientific events, national and international.
Responsibilities:
The person recruited is responsible for carrying out research and development in the field of mobile vehicle localization and environment mapping using on-board sensors. (S)he will contribute to the promotion of research work by publishing the work in conferences, journals and scientific journals but also by contributing to patents. (S)he will support his colleagues in demonstration and dissemination activities. Finally, (s)he will contribute to the drafting of reports, articles and documentation for scientific and reporting purposes. Finally, (s)he will be required to work on the Valeo (Créteil) and Inria (Paris and Rocquencourt) sites.

Main activities

Main activities:

- Research: research in sensor-based localization and integrated mapping solutions
- Development of algorithms and interfaces corresponding to the solutions found
- Integration on experimental platforms
- Writing of the documentation of algorithms, reports, deliverables and scientific articles
- Supervision of trainnes in his(her)field of research

Additional activities:

- Present the progress of the work to colleagues, partners and other audiences
- Represent the team to public or international bodies
- Help in demonstraions and showcases in the framework of collaborative projects

Skills

The candidate having to master at least one programming language (C, C ++, Python, etc.).

Knowledge of a development environment (ROS, RTMAPS, etc.) is a facilitating advantage,

Knowledge or mastery in handling digital maps is a plus (OSM, HERE...).

The candidate must be fluent in **English** at least as a scientific exchange language; French is a very significant asset.

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
- 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

General Information

- **Theme/Domain :** Robotics and Smart environments
  Scientific computing (BAP E)
- **Town/city :** Paris
- **Inria Center :** Centre Inria de Paris
- **Starting date :** 2023-03-01
- **Duration of contract :** 3 years, 1 month
- **Deadline to apply :** 2023-03-31

Contacts

- **Inria Team :** RITS
- **PhD Supervisor :**
  Nashashibi Fawzi / Fawzi.Nashashibi@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

The candidate must have a taste for theoretical and applied research and the willingness and ability to publish their work in English.
He must have the necessary programming skills and a taste for experimental validation.
Autonomous, they must feel at ease in a dynamic "international" scientific environment and favor teamwork.
We are looking for a profile with possible knowledge in the field of 2D/3D localization of a mobile robot or a vehicle in a dynamic environment. Knowledge of SLAM techniques is highly appreciated.

Otherwise, knowledge of related or useful fields is welcome; for example :
- Perception / computer vision
- Signal processing
- Data fusion, multi-sensor fusion
- Digital filtering
- AI
- Mapping

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.

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.