



**Offer #2022-05352**

## **Open Research & Development Engineer position available at Inria GRA on Advanced Perception and Control for Autonomous Vehicles**

**Contract type :** 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**

The Inria Grenoble - Rhône-Alpes research center groups together almost 600 people in 22 research teams and 7 research support departments.

Staff is present on three campuses in Grenoble, in close collaboration with other research and higher education institutions (Université Grenoble Alpes, CNRS, CEA, INRAE, ...), but also with key economic players in the area.

Inria Grenoble - Rhône-Alpes is active in the fields of high-performance computing, verification and embedded systems, modeling of the environment at multiple levels, and data science and artificial intelligence. The center is a top-level scientific institute with an extensive network of international collaborations in Europe and the rest of the world.

### **Context**

The Inria research team Chroma is involved in several academic and industrial projects in the field of Autonomous Vehicles. The proposed R&D work has to be performed in the scope of a multi-annual project of the French IRT Naoelec, in cooperation with the CEA and several industrial companies such as Renault or Toyota. The main objective is to develop, to experimentally validate and to demonstrate the capabilities of an Embedded Perception and Decision-making system in the context of Mobile Robotics and Autonomous Vehicles applications. Several well published and patented results have already been obtained in the scope of this project. Exploitation licenses of the current version of the software CMCDOT have already been sold to industrial companies, see illustration video at [mediahal-01963296v1](https://www.mediahal-01963296v1)

### **Assignment**

A one year (renewable to pluriannual) Research & Development Engineer position is available at Inria Grenoble Rhône-Alpes, in the scope of the above-mentioned project. The current objective of the project is to further develop and expand our embedded perception and navigation system for autonomous mobile vehicles, with an emphasis on real world experiments performed using an automated Renault Zoé vehicle and some other industrial mobile robots. Different evolutions are to be developed, such as new capabilities for reasoning at the semantic level, by combining the current Dynamic Occupancy Grid approaches with Deep Learning approaches, or hardware-specific adaptations for new embedded device architecture.

The recruited engineer will work within a team of 4 engineers already working on the project, with occasional interactions with some PhD students, other engineers and researchers of the Chroma team. He will have to complete the current skills of the team, by bringing complementary skills in one of the following fields: perception, control, on-line trajectory planning for safe navigation in dynamic environments, learning semantic information using deep learning approaches or parallel computing development (GPU, FPGA).

Most implementations and the experimentations will be performed using the ROS framework, Nvidia GPUs and the experimental platform of the IRT naoelec (which includes an automated Renault Zoé vehicle). The recruited engineer will also contribute to the improvement of the experimental platform, and he will participate to some scientific publications, industrial conferences or various demonstrations.

### **Main activities**

According to the profile, the activities of the recruited engineer will consist on some of the following :

- Develop perception software on embedded parallel architectures (Nvidia Jetson, FPGA).
- Develop experimental platforms, test and integrate new sensors.
- Propose and develop new semantic detection methods, and their integration in the current framework.
- Write documentation, reports, and participate in scientific paper writing.
- Run tests using simulation tools and experimental platforms.
- Participate in presentations and demonstrations with the automated vehicle in industrial or research events.

## Skills

- Engineer with R&D experience or PhD in Computer Science, Robotics or closely related fields.
- Good theoretical and practical background *in one of the following domains*: Robotics, Multi-sensors Perception, Scene Understanding, Parallel computing, Deep Learning and/or Decision-making for safe navigation.
- Good skills in C/C++.

The following qualifications would be an advantage:

- Experience using the Robotics library ROS
- Familiarity with CUDA and Boost libraries, or FPGAs
- Good skills in Linux, system management, python.
- Theoretical knowledge of Bayesian models
- Experience on Deep Learning
- Ability to work as a teammate with other researchers
- Reasonable French and English skills (written and spoken)

## 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

## Remuneration

- From 2,652 € (depending on experience and qualifications).

## General Information

- **Theme/Domain** : Robotics and Smart environments  
Software Experimental platforms (BAP E)
- **Town/city** : Montbonnot
- **Inria Center** : [Centre Inria de l'Université Grenoble Alpes](#)
- **Starting date** : 2023-05-01
- **Duration of contract** : 1 year
- **Deadline to apply** : 2023-01-16

## Contacts

- **Inria Team** : [CHROMA](#)
- **Recruiter** :  
Rummelhard Lukas / [lukas.rummelhard@inria.fr](mailto:lukas.rummelhard@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.

**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.