Offre n°2025-08711

Robotics Engineer Position H/F within the framework of the Courrier project

Le descriptif de l'offre ci-dessous est en Anglais

Type de contrat : CDD

Niveau de diplôme exigé : Bac + 5 ou équivalent

Fonction : Ingénieur scientifique contractuel

Niveau d'expérience souhaité : De 3 à 5 ans

A propos du centre ou de la direction fonctionnelle

The Inria center at the University of Bordeaux is one of the nine Inria centers in France and has about twenty research teams.. The Inria centre is a major and recognized player in the field of digital sciences. It is at the heart of a rich R&D and innovation ecosystem: highly innovative SMEs, large industrial groups, competitiveness clusters, research and higher education players, laboratories of excellence, technological research institute...

Contexte et atouts du poste

The Auctus team (https://auctus-team.gitlabpages.inria.fr/) at Inria Bordeaux is recruiting a research engineer for two years within the framework of the Courrier project. This project aims at exploring the role of intentions expressed by the robot in human-robot cooperation.

Indeed, despite considerable scientific progress in the field of collaborative robotics, the application of this knowledge to industry remains extremely limited. However, the technological changes taking place in the field of collaborative robotics could profoundly alter the interaction between humans and machines. For collaborative robotics to really reach this level of maturity and provide assistance to qualified

human operators, a number of research questions need to be addressed. One of these issues is the readability of the robotic system by the user, which is the focus of this project. We draw on the theoretical framework of joint action (i.e. action requiring coordination with another human agent). It is now accepted that the production of joint action relies on the exchange of information between partners; in particular, on the ability to infer the intentions of others. Thus, many authors emphasize that sharing agents' intentions, both before and during the action, is an essential element of cooperation. We therefore hypothesize that the readability of robotic system intentions is a key factor in their predictability and, by extension, in the human operator's ability to interact efficiently (i.e. achieve an acceptable level of performance while minimizing cognitive cost) with highly automated robotic systems. The aim of the project is to explore 1/ the link between the readability of the intentions of the robotic system and its predictability, 2/ the impact of this predictability on the performance and cognitive cost of carrying out a common task, 3/ how the level of predictability of the system evolves with learning, and 4/ what generic framework for formulating robotic control can allow the rich expression of modalities for communicating intention.

Mission confiée

The research engineer recruited within the framework of this project will integrate the Auctus team at Inria (Talence, Campus de l'Université de Bordeaux) to develop the experimental implementation of the protocols proposed in the project to validate the hypotheses related to the predictability of the robot's intentions. This implementation will be carried out using a serial manipulator arm, enabling the deployment of the constrained optimization based control architecture (https://gitlab.inria.fr/auctus-team/components/control/qontrol). This implementation, along with that of the various sensors required, on the one hand, for measuring relevant metrics for the project, will be conducted through the ROS middleware and associated simulation tools. These simulation tools will allow for the preliminary validation of the experimental approach as well as the validation of certain initial scientific results. Furthermore, simplified simulators will be developed to validate certain hypotheses that do not require a physically realistic simulation of the robot.

The Auctus team is approximately composed of 15 people whose core expertise ranges from robotics to cognitive sciences including biomechanics and numerical constrained optimization. The recruited person will have the opportunity to benefit from exchanges with these people but will also be working closely with:

- Vincent Padois, PI of the Extender project for the Auctus team with a core scientific expertise in robot control, especially in the collaborative context;
- Lucas Joseph, research engineer at Inria strongly involved in the research projets of the Auctus team both in terms on the development of control software libraries and in terms of setting-up and running experimental developments.

Several collaboratives robots (Franka Panda, Kuka IIWA and more coming) as well several sensors (Optitrack, 2D laser sensor, 6 axis FT sensors, Gelsight tactile sensor,...) and experimental facilities will be accessible to the hired person.

Principales activités

The main activities of the hired person will be:

- Robotics control architecture developments
- Software Developments
- Technology watch
- Scientific and technical reporting and documentation
- Technical meetings with partners
- Experimental robotics activities

Compétences

Technical skills and knowledge:

- Modelling and control of robotic systems
- Control theory and signal processing
- Linear algebra and numerical optimization
- Python and C++ programming
- ROS middleware and associated tools (Rviz, MoveIt!, etc.)
- Linux and RTOS
- Code versioning and continuous integration (git)

Avantages

- Subsidized meals
- Partial reimbursement of public transport costs
- 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

Rémunération

The gross monthly salary will be between 2692€ and 3085€, depending on your qualifications and professional experience (before social security contributions ans monthly witholding tax).

Informations générales

- **Thème/Domaine :** Robotique et environnements intelligents
  Instrumentation et expérimentation (BAP C)
- **Ville :** Talence
- **Centre Inria :** Centre Inria de l'université de Bordeaux
- **Date de prise de fonction souhaitée :** 2025-05-01
- **Durée de contrat :** 2 ans
- **Date limite pour postuler :** 2025-04-30

Contacts

- **Équipe Inria :** AUCTUS
- **Recruteur :**
  Padois Vincent / vincent.padois@inria.fr

A propos d'Inria

Inria est l'institut national de recherche dédié aux sciences et technologies du numérique. Il emploie 2600 personnes. Ses 215 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3900 scientifiques pour relever les défis du numérique, souvent à l'interface d'autres disciplines. L'institut fait appel à de nombreux talents dans plus d'une quarantaine de métiers différents. 900 personnels d'appui à la recherche et à l'innovation contribuent à faire émerger et grandir des projets scientifiques ou entrepreneuriaux qui impactent le monde. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 200 start-up. L'institut s'e?orce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

L'essentiel pour réussir

Required soft skills:

- Rigour and intellectual honesty
- Curiosity and desire to learn
- Analytical mindset and abstraction skills
- Practical mindset and ability to develop robust and reliable solutions
- Autonomy and organizational skills

- Team spirit and ability to report progress

Attention: Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.

Consignes pour postuler

If you are interested by this job, please could you apply on website jobs.inria with the following documents :

- cv
- cover letter
- recommendation letters

Sécurité défense :
Ce poste est susceptible d'être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L'autorisation d'accès à une zone est délivrée par le chef d'établissement, après avis ministériel favorable, tel que défini dans l'arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l'annulation du recrutement.

Politique de recrutement :
Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.