2018-01053 - Engineer Software development for design, simulation and control of soft robots (M/F)

Contract type : Public service fixed-term contract
Level of qualifications required : Graduate degree or equivalent
Fonction : Temporary scientific engineer
Level of experience : From 3 to 5 years

About the research centre or Inria department

The Inria Lille - Nord Europe Research Centre was founded in 2008 and employs a staff of 360, including 300 scientists working in sixteen research teams. Recognised for its outstanding contribution to the socio-economic development of the Nord - Pas-de-Calais Region, the Inria Lille - Nord Europe Research Centre undertakes research in the field of computer science in collaboration with a range of academic, institutional and industrial partners.

The strategy of the Centre is to develop an internationally renowned centre of excellence with a significant impact on the City of Lille and its surrounding area. It works to achieve this by pursuing a range of ambitious research projects in such fields of computer science as the intelligence of data and adaptive software systems. Building on the synergies between research and industry, Inria is a major contributor to skills and technology transfer in the field of computer science.

Assignment

Defrost team ([https://team.inria.fr/defrost/](https://team.inria.fr/defrost/)) focuses on the modeling, simulation and control of soft deformable robots ([https://en.wikipedia.org/wiki/Soft_robotics](https://en.wikipedia.org/wiki/Soft_robotics)). Our vision is that future robots don’t have to be «rigid» but made of complex deformable structures, composed of stiff and soft regions, close to organic materials that we can find in the nature. Soft robotics opens very attractive perspectives in terms of new applications, reduction of manufacturing costs, robustness, efficiency and security. It could result in great advances in robotics in the next years.

The researcher and software developer within the team are using the open source SOFA simulation framework ([https://www.sofa-framework.org](https://www.sofa-framework.org)) for which we have developed several plugins for soft robots.

Main activities

Within a team of three developers, the recruited experienced engineer will work on designing new 3D interactive software to design soft-robots. This new software will be on the top of our existing software stack. This stack, relying on SOFA for all numerical simulation aspects and 3D rendering aspects, is developed with the following technologies (C++, cmake, gtest, qt, quick, OpenGL, SOFA).

We expect the engineer to do the following tasks:

- Analysis of existing CAD tools,
- Helping the design of User Interactions and tool workflow,
- Taking part in the development of the soft-robots design software by making specific software components (resource manager, User Interface components and widgets),
- Assisting the integration within the tool of external software component needed by the team’s member (eg: Matlab, ICESL for 3D printing, ROS),
- More generally, take part in the general development of the different plugins made in the team through our coding sessions.

Skills

Background

- Master or engineer degrees in the fields of Computer Science, numerical simulation, or related fields
- Experiences large software development
- Experiences in User-Interface, robotics and/or physics-based simulation

Skills

Skills and curiosity required in the following domains:

- Highly skilled in C++ and Python programming
- Knowledge of mechanic modeling tool (CADs)
- Knowledge of Qt/QML
- Knowledge of software development practices (test framework, continuous integration, Git...)
- Knowledge of scientific tools/libraries, such as Matlab/SciPy/NumPy
- Capacity to write documentation in English

Benefits package

General Information

- Theme/Domain : Robotics and Smart environments
- Town/city : Villeneuve d’Ascq
- Inria Center : CRI Lille - Nord Europe
- Starting date : 2018-12-01
- Duration of contract : 2 years
- Deadline to apply : 2018-12-31

Contacts

- Inria Team : DEFROST
- Recruiter : Zheng Gang / gang.zheng@inria.fr

About Inria

Inria, the French national research institute for the digital sciences, promotes scientific excellence and technology transfer to maximise its impact. It employs 2,400 people. Its 200 agile project teams, generally with academic partners, involve more than 3,000 scientists in meeting the challenges of computer science and mathematics, often at the interface of other disciplines. Inria works with many companies and has assisted in the creation of over 160 startups. It strives to meet the challenges of the digital transformation of science, society and the economy.

Conditions for application

Complete files will be process in priority (CV+Cover letter)

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 manager 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.
- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave

**Remuneration**
Compensation between € 30,000 and € 35,000 gross salary per year depending on the profile.