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 (https://team.inria.fr/defrost/) focuses on the modeling, simulation and control of soft deformable robots (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 open 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) 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

- 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.

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**General Information**

- **Theme/Domain:** Robotics and Smart environments  
- **Software engineering (BAP E)**  
- **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 Institute for computer science and applied mathematics, promotes "scientific excellence for technology transfer and society". Graduates from the world’s top universities, Inria’s 2,700 employees rise to the challenges of digital sciences. With its open, agile model, Inria is able to explore original approaches with its partners in industry and academia and provide an efficient response to the multidisciplinary and application challenges of the digital transformation. Inria is the source of many innovations that add value and create jobs.

**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 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.