



**Offer #2024-07366**

## **Scientific computing engineer: modeling and simulation of cardiac hemodynamics**

**Contract type :** Fixed-term contract

**Renewable contract :** Yes

**Level of qualifications required :** Graduate degree or equivalent

**Fonction :** Temporary scientific engineer

### **Assignment**

The objective of this research engineering position is to contribute to different modeling and pre-processing steps involved in the development of a computational tool for the 3D numerical simulation of blood flow in the four cardiac cavities. The main motivation of this work is driven by the simulation of pathological scenarios such as the Hypoplastic Left Heart Syndrome (HLHS) and by numerically assessing different surgical options. This work will be performed in the framework of the [MEDITWIN](#) project, which involves in particular a collaboration between COMMEDIA project-team and Dassault Systèmes.

### **Main activities**

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- Computational mesh generation and modification
- Physiological data processing (e.g., muscle fibers, cavities motion)
- Computer implementation (FELiScE software)
- Testing, validation and simulation

### **Skills**

**Experience and training required:**

- Bac+5 (Master 2, engineering school)
- Initial training from an engineering school or university in computer science or mathematics with more specific training concerning scientific computing (numerical simulation, computational meshes, finite elements, etc.), fluid mechanics and structural mechanics
- Significant experience in developing scientific computing codes
- Good knowledge of the software development cycle, development tools and methods

**Required skills:**

- Mastery of C++ and another compiled language: C, Fortran,...
- Good knowledge and skills in mathematical modeling, numerical simulation, mesh manipulation and post-processing
- Proficiency in version managers (e.g., git), documentation tools, automatic testing tools and continuous integration
- Good level of technical and scientific English, oral and written

**Valued skills:**

- Knowledge/experience in an R&D environment (public or private)
- PhD in applied mathematics (scientific computing)

### **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 (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
- Social security coverage

## General Information

- **Theme/Domain** : Modeling and Control for Life Sciences
- **Town/city** : Paris
- **Inria Center** : [Centre Inria de Paris](#)
- **Starting date** : 2024-05-01
- **Duration of contract** : 3 years
- **Deadline to apply** : 2024-05-01

## Contacts

- **Inria Team** : [COMMEDIA](#)
- **Recruiter** :  
Fernandez Varela Miguel Angel / [Miguel-Angel.Fernandez\\_Varela@inria.fr](mailto:Miguel-Angel.Fernandez_Varela@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.