ERC-funded post-doc position

Engineer in scientific computing
finite elements, optimization, physics/biology

Job application portal: https://bit.ly/2Xs7XlR **Deadline: February 1st 2021**

Place: Collège de France
Center for Interdisciplinary Research in Biology
11, place Marcelin Berthelot, 75005 Paris

Team: *Multiscale Physics of Morphogenesis* www.turlierlab.com

Supervision: Hervé Turlier, team leader herve.turlier@college-de-france.fr
Phone: +33.1.44.27.14.10

Duration: 24 months, starting March 2021 - renewable

Salary: between € 2,000 and € 2,500 net monthly depending on experience

Activities: The ERC research project DeepEmbryo, led by Hervé Turlier, has a strong computational aspect, which requires the support of a research engineer expert of scientific computing with strong experience in computer graphics, finite element modeling and numerical optimization. The engineer will be enrolled to develop and implement computer graphics algorithms, finite element models and optimization methods to model the mechanics and dynamics of cell in an embryo, in tight collaboration with the members of the team "Multiscale Physics of Morphogenesis" led by Hervé Turlier. She/he will maintain softwares developed in the team and will develop dedicated graphical user interfaces. She/he will assist the team leader in the training of newcomers to the softwares used in the team and will have the opportunity to co-supervise students.

Missions: The recruited engineer will be responsible for:
- developing new computer graphics C++ algorithms in 2D and 3D (non manifold triangular meshes)
- implementing finite element models in C++
- developing new numerical optimization algorithms in C ++.
- developing graphical user interfaces (GUI) for software developed within the team and Python interfaces of C ++ codes.
- assisting new members of the team in getting started with softwares and good IT practices (git, use of the cluster, etc...)
- participating in the training of team members in programming and algorithmics
- ensuring the management of the team's IT cluster, including CPU, GPU and storage servers (software updates, libraries, permissions management)
- updating regularly the website of the new numerical platform
- participating in the scientific life of the team

Expected profile: The candidate should have an engineering degree or hold a PhD in computer science, applied mathematics or mechanics.
Required Skills :
- expertise in object-oriented C++ programming (+ Python)
- solid knowledge in computer graphics (triangular meshes, adaptative re-meshing)
- solid knowledge of optimization methods and C++ linear algebra libraries
- solid knowledge of parallelization libraries (OpenMP, CUDA)
- availability, responsiveness and autonomy
- organization and rigor in daily work
- communication and pedagogy skills
- developed sense of teamwork and proficiency in English

Working environment: The successful candidate will be welcomed into the interdisciplinary team "Multiscale physics of morphogenesis" led by Hervé Turlier which will count around 8 to 10 people by

2021 (www.turlierlab.com). The team is located in the Center for Interdisciplinary Research in Biology at Collège de France, a CNRS / INSERM / Collège de France laboratory in the heart of the Latin Quarter in Paris. Integrated within the PSL University, and close to other major institutions such as the Ecole Normale Supérieure and the Institut Curie, the Collège de France constitutes a unique and exceptional scientific environment in the world.
The successful candidate will have access
- at an individual workstation in renovated premises
- a powerful desktop or laptop computer
- a high performance computing cluster (CPU and GPU).
If she/he wishes, the engineer will be assisted to apply for public competitions to obtain a permanent position.

Application procedure: The candidate will have to send a CV, a letter of motivation for this position and at least one recommendation letter via the CNRS job portal https://emploi.cnrs.fr
Incomplete application may not be considered.
This position is part of the 5-year ERC project DeepEmbryo.
The 24 months contract may be renewed once.