Job vacancy #2023-06699

Post-Doctoral Research Visit F/M Analysis-suitable Parameterization Techniques for Isogeometric Analysis

Contract type: Fixed-term contract
Renewable contract: Yes
Level of qualifications required: PhD or equivalent
Function: Post-Doctoral Research Visit
Level of experience: Up to 3 years

About the research centre or Inria department

Inria is a national research institute dedicated to digital sciences that promotes scientific excellence and transfer. Inria employs 2,400 collaborators organised in research project teams, usually in collaboration with its academic partners.
This agility allows its scientists, from the best universities in the world, to meet the challenges of computer science and mathematics, either through multidisciplinarity or with industrial partners.
A precursor to the creation of Deep Tech companies, Inria has also supported the creation of more than 150 start-ups from its research teams. Inria effectively faces the challenges of the digital transformation of science, society and the economy.

Context

IsoGeometric Analysis (IGA) offers a powerful framework for the numerical analysis of complex geometric structures, but it comes with significant challenges, particularly in domain parameterization. The quality of parameterization significantly influences downstream simulations and other processes. In the IGA-based pipeline, the efficiency of constructing analysis-suitable parameterization is crucial and seen as a bottleneck.
This is especially true in the context of 3D geometries.

Assignment

This research position aims to develop robust and computationally efficient domain parameterization techniques to address analysis-suitable parameterization challenges in the context of IGA.

Main activities

Apply precomputation techniques along with look-up tables and tensor-product methods to accelerate the parameterization process.
Explore and develop approaches with computational efficiency as a priority, making them highly applicable in real-world scenarios.
Aim to maintain numerical accuracy within acceptable limits, which is often a challenging trade-off.
The findings and methods developed will be integrated into the software library Geometry + Simulation Modules.

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
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Contribution to mutual insurance (subject to conditions)

Remuneration
Gross Salary: 2788 € per month

General Information

- Theme/Domain: Algorithmics, Computer Algebra and Cryptology
- Scientific computing (BAP E)
- Town/city: Sophia Antipolis
- Inria Center: Centre Inria d'Université Côte d'Azur
- Starting date: 2024-01-01
- Duration of contract: 1 year
- Deadline to apply: 2023-11-05

Contacts

- Inria Team: AROMATH
- Recruiter: Mantzaflaris Angelos / angelos.mantzaflaris@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.

The keys to success

Expertise in isogeometric analysis.

Familiarity with object-oriented programming in C++

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.