



Offer #2023-06996

Post-Doctoral Research Visit F/M Isogeometric analysis for complex shapes

Contract type : Fixed-term contract

Renewable contract : Yes

Level of qualifications required : PhD or equivalent

Fonction : Post-Doctoral Research Visit

Level of experience : Up to 3 years

About the research centre or Inria department

The Inria centre at Université Côte d'Azur includes 37 research teams and 8 support services. The centre's staff (about 500 people) is made up of scientists of different nationalities, engineers, technicians and administrative staff. The teams are mainly located on the university campuses of Sophia Antipolis and Nice as well as Montpellier, in close collaboration with research and higher education laboratories and establishments (Université Côte d'Azur, CNRS, INRAE, INSERM ...), but also with the regional economic players.

With a presence in the fields of computational neuroscience and biology, data science and modeling, software engineering and certification, as well as collaborative robotics, the Inria Centre at Université Côte d'Azur is a major player in terms of scientific excellence through its results and collaborations at both European and international levels.

Context

IsoGeometric Analysis (IGA) offers a powerful framework for the numerical analysis of complex geometric structures, but it comes with significant challenges, particularly in the development of analysis-suitable shape representations. This position aims at the development of novel spline constructions for isogeometric analysis in two and three dimensions. The candidate will work on the definition and implementation of geometrically continuous splines over unstructured meshes. The goal is to obtain accurate description of complex shapes and smooth representations that are suitable for both modeling and analysis.

The universal models shall be applied to modeling and model reconstruction as well as in the numerical resolution of partial differential equations.

Assignment

This research position aims to develop robust and computationally efficient spline representation and domain parameterization techniques to address the need for analysis-suitable shape descriptions in the context of isogeometric analysis.

Main activities

Develop and implement geometrically continuous spline techniques in two and three dimensions and use them for the description of shapes with general topology.

Explore and develop approaches with computational efficiency as a priority, making them highly applicable in real-world scenarios.

Explore isogeometric methods on the new constructions, assess the smoothness from the geometric side and numerical accuracy from the analysis side.

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** : 2024-09-01
- **Duration of contract** : 12 months
- **Deadline to apply** : 2024-05-31

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.