Offer #2022-04919

Post-Doctoral Research Visit F/M Efficient algorithms in non-linear algebra and geometry

Contract type : Fixed-term contract

Level of qualifications required : PhD or equivalent

Fonction : Post-Doctoral Research Visit

Context

- The selected candidate will do her/his research at the OURAGAN team which is a joint team of Inria Paris and IMJ-PRG Sorbonne Université. She/he will be located at Sorbonne Université.
- The position is funded by the ANR JCJC program GALOP (Games through the lens of ALgebra and OPtimization)

Assignment

Traditional techniques in algorithms, combinatorics, and discrete mathematics usually treat/compute with linear objects and quantities. In recent years, there have been efforts to extend the range of our techniques using tools from computational algebra and high dimensional geometry to handle nonlinear objects. The main challenge is to provide solid mathematical and algorithmic foundations, and, if possible, efficient implementations for computations with curved objects.

Our goal it to develop algorithms and implementations for solving (and analyzing) polynomials systems of equations, by exploiting the structure and the geometry of the input equations. We also aim at efficient algorithms for basic geometric operations with curves and surfaces.

Main activities

The successful candidate will work on the following topics:
- Novel algorithms (exact and symbolic-numeric) for solving polynomial systems, that expbit the structure, for example multi-homogeneity, sparsity, symmetry, properties of determinantalvarieties.
- Algorithms for geometric operations with curves and surfaces (in 3D).

Interested candidates should contact Elias Tsigaridas (elias.tsigaridas@inria.fr) for additional information.

Skills

Candidates should have a PhD in mathematics,computer science or a related area; expertise in computational algebra and/or geometry is highly desirable.

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

General Information

- **Theme/Domain :** Algorithmics, Computer Algebra and Cryptology Scientific computing (BAP E)
- **Town/city :** Paris
- **Inria Center :** Centre Inria de Paris
- **Starting date :** 2022-09-01
- **Duration of contract :** 12 months

- **Deadline to apply :** 2022-07-31

Contacts

- **Inria Team :** OURAGAN
- **Recruiter :**
  Tsigaridas Elias / Elias.Tsigaridas@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.