Offer #2025-09144

Post-Doctoral Research Visit F/M Hybrid - AI-enhanced - large-scale iterative methods for the solution of linear and nonlinear PDEs

Contract type : Fixed-term contract

Level of qualifications required : PhD or equivalent

Fonction : Post-Doctoral Research Visit

About the research centre or Inria department

The Inria center at the University of Bordeaux is one of the nine Inria centers in France and has about twenty research teams.. The Inria centre is a major and recognized player in the field of digital sciences. It is at the heart of a rich R&D and innovation ecosystem: highly innovative SMEs, large industrial groups, competitiveness clusters, research and higher education players, laboratories of excellence, technological research institute...

Context

The research work of the postdoc will be developed in the framework of a scientific collaboration between the ANITI chair HAILSED and the Concace joint Inria-Industry project between Airbus CR&T, Cerfacs.

The postdoc will participate to regular online and in person meetings as well as regular working sessions at N7-IRIT, ANITI and Cerfacs with possible visits to Inria Bordeaux and/or Airbus at Issy-les-Moulineaux.

Assignment

The person recruited will be in charge of conducting the research activities listed below in close collaboration with the other team members.

Main activities

Main activities :

- Conduct a thorough literature review of existing iterative algorithms and their AI-hybridized variants
- Design, implement, and validate novel hybrid methods
- Integrate the developed algorithms into existing HPC simulation frameworks
- Document research progress through detailed technical reports and prepare manuscripts for peer-reviewed publications
- Present and disseminate research outcomes within the scope of the ANITI and Concace projects, including participation in national and international scientific conferences

Additional activities :

- (If desired) teaching and co-advising interns

Skills

Working proficiency in English is required.

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
- Social security coverage

Remuneration

The monthly salary will be 2788€ (before social security contribution and witholding tax)

General Information

- **Theme/Domain :** Distributed and High Performance Computing
- **Town/city :** Toulouse
- **Inria Center :** Centre Inria de l'université de Bordeaux
- **Starting date :** 2025-10-01
- **Duration of contract :** 2 years
- **Deadline to apply :** 2025-08-31

Contacts

- **Inria Team :** CONCACE
- **Recruiter :**
  Giraud Luc / Luc.Giraud@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

The ideal candidate should have expertise in at least one of the following areas:

- Iterative methods for solving large-scale linear systems (e.g., stationary iterative schemes, Krylov subspace methods, multilevel and domain decomposition preconditioning)
- Machine learning and physics-informed surrogate modeling
- Hybrid AI-enhanced numerical methods
- Mixed precision iterative methods
- Scientific computing and numerical discretization techniques (FEM/FD)
- Experience with high-performance computing (HPC) and large-scale code development
- Programming proficiency in Python, including experience with machine learning libraries such as PyTorch, TensorFlow, or JAX

Teamwork, both locally and remotely, will be part of the daily routine of this job. The key qualities expected are:

- Intellectual curiosity and a strong interest in multidisciplinary scientific activities
- Enjoyment of working and engaging in a collaborative environment

> **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

If you are interested by this job, thanks to candidate by jobs.inria with the following documents :

- cv
- cover letter

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.