



Offer #2022-04724

Development Engineer @ Grenoble: High Performance Computing and Deep Learning

Contract type : Fixed-term contract

Renewable contract : Yes

Level of qualifications required : Graduate degree or equivalent

Fonction : Temporary scientific engineer

Level of experience : Recently graduated

About the research centre or Inria department

The Inria Grenoble - Rhône-Alpes research center groups together almost 600 people in 22 research teams and 7 research support departments.

Staff is present on three campuses in Grenoble, in close collaboration with other research and higher education institutions (Université Grenoble Alpes, CNRS, CEA, INRAE, ...), but also with key economic players in the area.

Inria Grenoble - Rhône-Alpes is active in the fields of high-performance computing, verification and embedded systems, modeling of the environment at multiple levels, and data science and artificial intelligence. The center is a top-level scientific institute with an extensive network of international collaborations in Europe and the rest of the world.

Context

The candidate will join the [DataMove](#) INRIA team located on the campus of the Univ. Grenoble Alpes near Grenoble. The DataMove team is a friendly and stimulating group with a strong international visibility, gathering Professors, Researchers, PhD and Master students all pursuing research on High Performance Computing.

This work is part of a joint collaboration with international industrial and academic partners. This work experience will bring you skills related to high performance computing and deep learning that are in high demand.

Hiring date is flexible, starting as early as June 2022. Initial contract goes up to June 2023 with extension possibilities.

The city of Grenoble is surrounded by the Alps mountains, offering a high quality of life and where you can experience all kinds of mountain related outdoors activities and more.

Main activities

Our team develops Melissa (<https://gitlab.inria.fr/melissa>), a framework running on supercomputers for managing an ensemble of simulations (several executions of the same simulation code) with an on-line processing of the data produced by these simulations.

Melissa has been used for sensibility analysis (statistics), data assimilation (steering of the ensemble from observation data) or training deep surrogates (deep neural network).

Melissa has run on several supercomputers like Jean-Zay (Fr), Juwels (De), MareNostrum (Sp), and recently Fugaku (Jp), the fastest supercomputer in the world (<https://top500.org/lists/top500/list/2021/11/>).

Melissa is a sophisticated code that supports fault-tolerance, elastic executions (can change the number of core used at runtime), dynamics load balancing. Melissa supports different simulation codes and different data processing libraries like PDAF for data assimilation or PyTorch and TensorFlow for deep neural network training.

Melissa is mainly based on Python with C/C++ and sometimes Fortran used in third party simulation or data processing libraries. Melissa development process with issue tracking, continuous integration, testing on virtual supercomputers made of containers, HPC specific packaging (Spack),...

We are looking for a candidate that will join the Melissa team for:

1. Consolidating and extending Melissa, addressing issues like high performance messaging, support of new data processing libraries, performance optimization, Python eco-system integration, new feature development.
2. Run experiments on a variety of supercomputers like Jean-Zay at Idris or Juwels at Julich, as well as smaller ones for prototyping.

Through this work the candidate will gain strong expertise in high performance computing, high performance data analysis and deep learning. She/he will integrate a dynamics research team and have the opportunity to work at an international level with other Melissa contributors and users.

References :

- Melissa git repos: <https://gitlab.inria.fr/melissa>
- Paper Melissa & sensibility analysis: <https://hal.inria.fr/hal-01607479v1>
- Paper Melissa & data assimilation: <https://hal.archives-ouvertes.fr/LIG/hal-03017033v2>

Skills

We welcome candidates with a master (or equivalent title) in computer science with some experience with parallel programming, distributed systems and deep learning.

No previous work experience required as long as you are motivated and ready to train yourself to complement your skills. Income will be adjusted to your experience.

Expected technical skills include Linux, Python and some C/C++ programming practice, a good mastering of development processes (git, continuous integration, containers, etc.).

A reasonable level of English is required. French is not mandatory and INRIA will provide French classes if needed.

To apply submit you CV, references, recent marks, and if available your last Internship/Master Thesis manuscript. With your application provide any element (github account, code snippets, etc.) that could help us assess you skills beyond your academic record, as well as a few references of persons we can contact to get some feedback on your qualities.

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

From 2 562 euros gross salary /month before income taxes depending on work experience and degrees

General Information

- **Theme/Domain** : Distributed and High Performance Computing
Scientific computing (BAP E)
- **Town/city** : Montbonnot
- **Inria Center** : [Centre Inria de l'Université Grenoble Alpes](#)
- **Starting date** : 2022-08-01
- **Duration of contract** : 12 months
- **Deadline to apply** : 2022-07-17

Contacts

- **Inria Team** : [DATAMOVE](#)
- **Recruiter** :
Raffin Bruno / bruno.raffin@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

Depending on the evolution of the health crisis linked to the Covid 19, it will be possible to work remotely depending on Inria rules.

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.