2023-06635 - Research Engineer: Packaging and Continuous Integration for Supercomputers (Grenoble/Bordeaux/Saclay)

Type de contrat: CDD
Contrat renouvelable : Oui
Niveau de diplôme exigé : Master's degree, Engineer's degree or PhD in computer science
Fonction : Ingénieur scientifique contractuel
Niveau d'expérience souhaité : Jeune diplômé

A propos du centre ou de la direction fonctionnelle

The Centre Inria de l'Université Grenoble groups together almost 600 people in 22 research teams and 7 research support departments.

Our packaging strategy is centered on the open source tools (Guix, Nix, Spack). We will participate in the deployment and testing of supercomputing libraries for supercomputers. You will contribute to the design and implementation of the packaging and testing strategy. Commonly used solutions show their limits in front of the complexity of supercomputers and applications, as well as the need for reproducibility and testing strategy. Our role in NumPex is to design and implement an innovative packaging, deployment and testing of supercomputing libraries for supercomputers.

We have 3 open positions to complement our team of senior researchers and engineers.

Our team is distributed and so we have the flexibility to offer candidates different possible localisations:
- Datamove team (https://team.inria.fr/datamove/) located near Grenoble, in the French Alps;
- SED team (https://sed-bso.gitlabpages.inria.fr/), located near Bordeaux, close to the Atlantic Ocean;
- Idiris or Maison de la Simulation teams (http://www.idiris.fr or https://mdls.fr/), located in Saclay, close to Paris.

Duration: 3 years with possible extension for 2 years.

Hiring dates are flexible with a possible start from November 2023 (modulo mandatory administrative deadlines). We will process applications as they arise.

The CNRS is the employer for this position.

Other benefits (may slightly change depending on the hosting lab):
- 44 days of annual leave
- Possibility of teleworking up to 2 or 3 days a week
- Partial coverage of complementary health costs.
- Partial reimbursement of public transport costs

This work is part of the NumPex project (http://www.numpex.fr) endowed with more than 40 million euros over 6 years from 2023, to build a software stack for Exascale supercomputers related to the arrival in Europe of the first Exascale machines, with one planned in France for 2025. These machines will be among the most powerful in the world (https://top500.org/), used for traditional scientific applications and increasingly also for artificial intelligence.

Our role in NumPex is to design and implement an innovative packaging, deployment and testing strategy. Commonly used solutions show their limits in front of the complexity of supercomputers and applications, as well as the need for reproducibility for open science. Our goal is to build a solution based on a new generation of promising packaging tools: Guix, Nix, Spack.

Mission confiée

You will contribute to the design and implementation of the packaging and continuous integration strategy. You will participate in the deployment and testing of the infrastructure. You will also participate to user support and to training activity around all these aspects.

Our packaging strategy is centered on the open source tools Guix (https://hpc.guix.info/), Nix (https://nixos.org/) and Spack (https://spack.io/). In direct contact with the development teams of these tools, with the supercomputer administration teams, and with our foreign counterparts (European, Japanese, American, etc.), you will participate in:
1. the design of the packaging strategy of the NumPex project,
2. the effort of packaging these libraries with the proposed tools,
3. the effort of packaging these libraries with the proposed tools,
3. the design of a package test and validation solution taking into account the specificities of supercomputers.
4. the development of a solution allowing non-administrator users to deploy NumPEx libraries on supercomputers.
5. training around all of these aspects for researchers and engineers, whether they are library designers or users.

Compétences
Master's degree, Engineer's degree or PhD, beginner or confirmed (salary adjusted according to experience) in computer science.

The essential expected skills are:
1. Good practice of Unix/Linux, system and system administration
2. Good programming experience (C/C++, Python)
3. Experience with software compilation and installation chains, version management tools, testing and continuous integration (CMake, Git, GitHub, GitLab, etc.).
4. The work being performed in an international context, a good practice of technical English (written and oral) is expected (proficiency in French is not compulsory), as is a taste for team work.

Any additional skill related to package managers (Guix, Nix, Spark, apt, rpm, ...), containers (Singularity/AppImage, Docker, ...) or open source development are a plus.

An initial training time will be provided to complement the missing skills.

You will integrate an academic research environment which will give you, throughout your contract, the opportunity to complete your training on cutting-edge technologies.

To apply, please send, in addition to the classic elements, any information that could help us assess your skills, such as a recent internship or thesis report, your github account or links to software developments in which you participate, as well as some references from people we can contact to certify your qualities.

Avantages
- 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 (after 6 months of employment) 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 under conditions

Rémunération
From 2,692 € (depending on experience and qualifications).