Permanent researcher position

System software for in situ HPC/AI coupling

Maison de la Simulation (https://mdls.fr) recruits a permanent CEA researcher (*ingénieur chercheur permanent*) to reinforce its "Science of Computing" (SoC) team.

In order to apply, please send a resume, cover letter, references and support letters to info@maisondelasimulation.fr. You can use the same email address for requests of information about the position. Applications will be evaluated from May the 15th 2023 and until the position is filled.

Context

Maison de la Simulation (https://mdls.fr) is a joint research and engineering laboratory of CEA, CNRS, Université Paris-Saclay and Université de Versailles Saint-Quentin-en-Yvelines localized on the plateau de Saclay campus next to Paris. It specializes in high-performance computing. The "Science of Computing" team conducts research, builds expertise and engineers tools in domains underlying HPC: computer science and applied mathematics.

The team co-leads the 5-years French ExaDoST project, part of NumPEx, that will design the software stack for data handling on the upcoming French and potentially European Exascale super-computers.

Mission

During the first five years, the selected candidate will contribute to the ExaDoST project. They will conduct research and design tools for data handling at Exascale, working both on the user facing API and on system software for in situ HPC/AI coupling. They will work in close collaboration with the other members of the project to design a modular software stack that should be used on the upcoming French Exascale supercomputer as well as more globally on French, European, and worldwide supercomputers.

To achieve these goals, the candidate will take part in the recruitment and management of the group of temporary engineer and young researchers dedicated to this project. They will leverage the expertise and tools already developed in the team, including the PDI and Deisa libraries.

As time evolves, the selected candidate will develop their own research and projects in the domains of the team. At the conclusion of ExaDost, they will have a large latitude to direct their research toward the directions they feel would serve the team and laboratory best.

Main activities

The candidate will:

- conduct their research in the domain of runtime and system software for in situ analytics and HPC/AI coupling,
- take part in the design and implementation of libraries and tools that make the results of this research available to users of HPC in production,
- take part in the NumPEx project, and related activities of management and reporting,
- participate to the management of temporary engineers and young researchers.

Skills and competencies

The successful candidate will hold a PhD thesis in computer science or in another field with a strong experience in computer science. They should master the following skills and competencies:

- good knowledge of HPC parallel architectures, operating systems, and application programming,
- knowledge of the design of existing system tools and libraries for HPC data handling (IO, in situ processing, coupling, checkpoint writing, etc.),
- good programming skills in C++, and associated developments tools (Cmake, git, etc.),
- good programming skills in python, and associated ecosystem,
- autonomy, interest for team-work in an international context, leadership.

Salary and advantages

CEA "ingénieur-chercheur" positions offer a very competitive salary in French research ecosystem, indexed on diplomas and experience.

In addition, the selected candidate will benefit from many advantages:

- possibility to leverage in existing collaborations of MdlS in Europe, US and Japan as well as international conferences with support for travel,
- up to 3 days of remote work per week,
- reimbursement of public transport costs (75%) and subsidized catering service,
- included pension plan and health coverage (French social security plus CEA-specific insurance),
- 9 full weeks of holidays per year.