31_CS_WDC_R0

Job Reference

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Position

Student for CONTAINERS ON HPC environments R0

Data de tancament

Dimecres, 28 Febrer, 2018

About BSC

BSC-CNS (Barcelona Supercomputing Center – Centro Nacional de Supercomputación) is the National Supercomputing Facility in Spain and manages MareNostrum, one of the most powerful supercomputers in Europe. The mission of BSC-CNS is to investigate, develop and manage information technology in order to facilitate scientific progress. With this aim, special dedication has been taken to areas such as Computer Sciences, Life Sciences, Earth Sciences and Computational Applications in Science and Engineering.

Look at the BSC experience:

BSC-CNS YouTube Channel

BSC-CNS Corporate Video

Let's stay connected with BSC Folks!

Context and Mission of the role
The Computer Science Department at the Barcelona Supercomputing Center is involved in different research projects with respect to Dynamic Load Balancing research topic. BSC has an early research product named Dynamic Load Balancing that includes capacities to shift resources between parallel applications to reduce the imbalance and achieve a better performance. In particular, the **HPC EUROPA 3 PROJECT** will investigate how to apply **CONTAINER TECHNOLOGIES TO SUPERCOMPUTERS**, mixing it with achieving **LOAD BALANCING** between the containers in a node. The applications that we expect to run in this environment will be using the MPI programming model between nodes, OpenMP or OmpSs inside a node, or a mixture of both of them in the two levels at the same time. In this context, we are looking for a candidate interested in these research topics, with a strong relationship to the HPC Europa 3 project, but also to be part of the Dynamic Load Balancing library research team.

**Responsibilities**

- Performance analysis and improvement of parallel applications (MPI+OpenMP)
- Development of new features for the Dynamic Load Balancing library
- Integration of Container and Dynamic Load Balancing technologies for HPC
- Discussions of technical solutions with other European research institutes
- Dissemination of research results
- The candidate will be integrated in a research team from the Parallel Programming Models research group
- Undergraduate students may apply (part time), as well as candidates willing to course a Master degree, or to enroll for a PhD degree.

**Requirements**

- **Education**
  
  Studying Computer Science (or a similar topic), graduated, or with a Master degree.

- **Knowledge and professional experience**
  
  - Knowledge of and will to learn about high performance computing architectures and technologies to implement efficient and dynamic applications or improve existing ones
  - Excellent programming skills in C/C++. Fortran will be valuable
  - Knowledge of and will to learn about MPI and OpenMP/OmpSs programming models
  - Knowledge of and will to learn Paraver/Extrae and other performance analysis tools
  - Good oral and writing skills in English are essential for the communication with other research centers around Europe

**Competences**

In order to be successful in this role the candidate should have:

- Critical and creative thinking skills
- Ability to take initiative, prioritize and work under set deadlines and pressure
- Ability to work independently and in a team
- Good written and verbal communication skills
Capacity to interact and build strong relations with a diverse members/stakeholder/staff base

**Conditions**

- A three years contract related to the HPC Europa 3 project (either full time or part time)
- A competitive salary will be provided, matched to the cost of living in Barcelona, depending on the value of the candidate (degree and experience)

**Applications Procedure**

All applications must be done through the BSC website:

https://www.bsc.es/join-us/fellowships

Including:

1. Motivation letter and a statement of interest.
2. A full CV including contact details.

**Diversity and Equal Opportunity Employment**

BSC-CNS is an equal opportunity employer committed to diversity and inclusion. We are pleased to consider all qualified applicants for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability or any other basis protected by applicable state or local law.

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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