Applications are invited for a PhD Student or Research Engineer positions in High Performance Computing (HPC) architectures at the Barcelona Supercomputing Center (BSC-CNS). We are offering positions for a period of 3 years (with possibility of extension) in the context of the IBM-BSC Deep Learning Center project.

The specific project focuses on exploiting the newest IBM HPC architectures for the acceleration of precision medicine workloads. In particular, we will analyze representative precision medicine benchmarks,
with special emphasis on the new algorithms for genome sequencing techniques with long reads. Then, we will characterize the performance of these workloads on the latest IBM HPC systems, which combine IBM POWER9 processors and FPGA accelerators. Finally, based on the identified performance characteristics and bottlenecks, we will design a hardware accelerator that will exploit the FPGAs to boost the performance of precision medicine applications.

This project involves research in microarchitecture, bioinformatics, high-performance computing, and performance analysis. For a complete list of publications of the project please visit the following webpage: http://www.bsc.es/ibm-bsc/publications/. Regular meetings with IBM researchers will be organized (both on the phone and on site), with the possibility of interning at IBM during the duration of the PhD.

**Key Duties**

- Attend to regular meetings with IBM researchers, meet the internal deadlines of the project, and publish in international conferences the most relevant outcomes of the project.

**Requirements**

- **Education**
  - Bachelor or M.Sc. in Computer Science (or expected to graduate in the current year).

- **Essential Knowledge and Professional Experience**
  - Computer Architecture: microarchitecture, accelerators, heterogeneous architectures
  - Operating Systems: Linux, scripting
  - Performance analysis and tuning of parallel applications
  - Programming: C/C++, VHDL/Verilog, Assembler, High-level synthesis, OpenCL, python, etc.

- **Competences**
  - Ability to take initiative, prioritize and work under set deadlines pressure
  - Ability to work independently and in a team
  - Capacity to interact and build strong relations with other research groups
  - Excellent written and verbal communication skills in English

**Conditions**

- The position will be located at BSC within the Computer Sciences Department
- We offer a full-time contract, a good working environment, a highly stimulating environment with state-of-the-art infrastructure, flexible hours, extensive training plan, tickets restaurant, private health insurance, fully support to the relocation procedures
- Duration: Temporary
- Salary: we offer a competitive salary commensurate with the qualifications and experience of the candidate and according to the cost of living in Barcelona
- Starting date: Immediate
Applications Procedure

All applications must include:

- A motivation letter with a statement of interest, including two contacts for further references - **COMPULSORY** - Applications without this document will not be considered
- A full CV including contact details

Deadline

The vacancy will remain open until suitable candidate has been hired. Applications will be regularly reviewed and potential candidates will be contacted.

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