263_19_CS_GCS_RE12

Job Reference

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Position

Exascale Supercomputer Compiler Software Development Engineer (RE12)

Data de tancament

Divendres, 31 Gener, 2020
Reference: 263_19_CS_GCS_RE12
Job title: Exascale Supercomputer Compiler Software Development Engineer (RE12)

About BSC

The Barcelona Supercomputing Center - Centro Nacional de Supercomputación (BSC-CNS) is the leading supercomputing center in Spain. It houses MareNostrum, one of the most powerful supercomputers in Europe, and is a hosting member of the PRACE European distributed supercomputing infrastructure. The mission of BSC is to research, develop and manage information technologies in order to facilitate scientific progress. BSC combines HPC service provision and R&D into both computer and computational science (life, earth and engineering sciences) under one roof, and currently has over 600 staff from 49 countries.

Look at the BSC experience:
BSC-CNS YouTube Channel
Let's stay connected with BSC Folks!

Context And Mission

BSC is looking for talented and motivated professionals with expertise in compiler development targeting RISC-V-based ISA for a European HPC accelerator. The design is based on RISC-V architecture. This is a NEW project to build the software infrastructure and toolchain for an FPGA-based emulator for an energy-efficient Exascale system.

Key Duties
You will be a center of compiler expertise in the team designing, implementing, testing, reviewing, and documenting codes for a high-performance LLVM-based compiler for HPC applications for a RISC-V vector ISA and other accelerators.

You will deliver features using test-driven development, writing unit tests, and fast iterations.

You will contribute creative workflows and tools to be used by internal and external customers.

You will work closely with architecture team to provide timely input on ISA and various architectural design decisions.

Be a face of the team at external events on compiler related topics. Publish results in external media (conferences, journals, blogs, forums).

Requirements

- **Education**
  - Ph.D. in Computer Science, engineering degree or equivalent level of professional experience.

- **Essential Knowledge and Professional Experience**
  - 5+ years experience with Programming Languages such as C, C++, Java, Python, Fortran, etc.
  - 5+ years experience developing Clang/LLVM based compilers.
  - Strong Compiler theory and development.
  - Knowledge of intermediate representations, machine independent and machine dependent optimizations, SIMD relevant control flow and code placement optimizations, code generation, low-level and high-level IRs and architecture specific optimizations.
  - Knowledge of the structure and function of compiler internals.
  - Knowledge of instruction sets, especially RISC-V, and computer architectures: pipeline structure and hazards, cache and memory organization, etc.
  - Knowledge or experience in performance analysis, root cause analysis, and profiling tools.
  - Experience with working on a variety of embedded processors, SOC’s and micro-controllers, RISC-V a plus.
  - Experience in implementing known processes for unit and feature testing of software.
  - Strong scripting experience using scripting languages like Python, or Perl.
  - Agile development and open source development, deployment, and support, including GitHub or equivalent.
  - Proficient in Microsoft Office applications or equivalent.
  - Fluency in English is essential, Spanish is welcome.

- **Competences**
  - The candidate must be an effective communicator, multitask, and work well on collaborative designs.
  - Keeps abreast of technology trends.
  - Ability to think creatively.
  - Ability to work independently and make decisions.
  - Ability to take initiative, prioritize and work under set deadlines and pressure.
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 working hours, extensive training plan, tickets restaurant, private health insurance, fully support to the relocation procedures
- Duration: Temporary - 2 - 3 years renewable
- 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: ASAP

Applications Procedure

All applications must include:

- A Cover Letter with a statement of interest in English, including two contacts for further references - Applications without this document will not be considered
- A full CV in English 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.
This position is reserved for candidates who meet the requirements and have the legal status of disabled persons with a degree of disability equal to or greater than 33%. In case there are no applicants with disabilities that meet the requirements, the rest of the candidates without declared disability will be evaluated.