950_24_CS_CAPP_RE2

Job Reference

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Position

Research Engineer on agile simulation/SDV - DARE (RE1-2)

Data de tancament

Diumenge, 16 Febrer, 2025
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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, was a founding and hosting member of the former European HPC infrastructure PRACE (Partnership for Advanced Computing in Europe), and is now hosting entity for EuroHPC JU, the Joint Undertaking that leads large-scale investments and HPC provision in Europe. 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 1000 staff from 60 countries.

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

We are particularly interested for this role in the strengths and lived experiences of women and underrepresented groups to help us avoid perpetuating biases and oversights in science and IT research. In instances of equal merit, the incorporation of the under-represented sex will be favoured.

We promote Equity, Diversity and Inclusion, fostering an environment where each and every one of us is appreciated for who we are, regardless of our differences.

If you consider that you do not meet all the requirements, we encourage you to continue applying for the job offer. We value diversity of experiences and skills, and you could bring unique perspectives to our team.

Context And Mission

DARE European Supercomputing Project.

DARE project (Digital Autonomy with RISC-V in Europe), is a strategic project for BSC whose aim is to address Europe's deficit in digital autonomy for High-Performance Computing and AI, by creating truly European products for the next generation of EU supercomputers for research and industry.

This position involves designing and implementing an advanced agile simulation framework that combines high performance with maximum accuracy for simulating large-scale benchmarks and programs. The framework will integrate QEMU and gem5 tools into a synergistic system, enabling switching between the two. The primary goals include (i) accelerating operating system and software development workflows and (ii) capturing detailed execution statistics for specific regions of interest within evaluated benchmarks. This role requires expertise in simulation technologies, software engineering, and performance optimization.

Key Duties

- Hardware modeling and performance evaluation using simulation tools with High Performance Computing requirements as part of a team.
- Design and developed an unified simulation framework combining QEMU and gem5.
- Hardware characterization using different profiling tools.
- Learn and develop different verification techniques for simulated environments.
  Publish the results obtained during the development of the work in international conferences.
- Coordinate with a local team at BSC and an international team from different European institutions.

Requirements

- Education
  - Grade or Master degree in Electronics, Circuits, Systems, Computer Sciences, Telecommunications or Automation.

- Essential Knowledge and Professional Experience
  - Practical experience modeling digital hardware using different simulation tools (e.g., snipersim, gem5, zsim, among others).
  - Practical experience using and extending the QEMU emulation tool.
  - Familiarity with basics on digital processor or microcontroller designs, either as part of his/her studies or work experience.
    Experience with the RISCV ISA

- Additional Knowledge and Professional Experience
  - Knowledge on processor microarchitecture (e.g. RISC-V, Arm, Infineon, Intel, or AMD processors among others) is welcome.
  - Knowledge on electronics is welcome.
  - Experience with snipersim and verilator.

- Competences

- Problem-solving, pro-active, result-oriented work attitude.
- Good communication skills including a good command of the English language (written and spoken).

Conditions

- The position will be located at BSC within the Computer Sciences Department
- We offer a full-time contract (37.5h/week), a good working environment, a highly stimulating environment with state-of-the-art infrastructure, flexible working hours, extensive training plan, restaurant tickets, private health insurance, support to the relocation procedures
- Duration: Open-ended contract due to technical and scientific activities linked to the project and budget duration
- Holidays: 23 paid vacation days plus 24th and 31st of December per our collective agreement
- 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: January 1st, 2025

Applications procedure and process

All applications must be submitted via the BSC website and contain:

- A full CV in English, including contact details.
- A cover/motivation letter with a statement of interest in English, clearly specifying for which specific area and topics the applicant wishes to be considered. Additionally, two references for further contacts must be included. Applications without this document will not be considered.

Development of the recruitment process

The selection will be carried out through a competitive examination system ("Concurso-Oposición"). The recruitment process consists of two phases:

1. **Curriculum Analysis:** Evaluation of previous experience and/or scientific history, degree, training, and other professional information relevant to the position. - ***40 points***
2. **Interview phase:** The highest-rated candidates at the curriculum level will be invited to the interview phase, conducted by the corresponding department and Human Resources. In this phase, technical competencies, knowledge, skills, and professional experience related to the position, as well as the required personal competencies, will be evaluated. - ***60 points.*** *A minimum of 30 points out of 60 must be obtained to be eligible for the position.*

The recruitment panel will be composed of at least three people, ensuring at least 25% representation of women.

In accordance with OTM-R principles, a gender-balanced recruitment panel is formed for each vacancy at the beginning of the process. After reviewing the content of the applications, the panel will begin the interviews, with at least one technical and one administrative interview. At a minimum, a personality questionnaire as well as a technical exercise will be conducted during the process.

The panel will make a final decision, and all individuals who participated in the interview phase will receive feedback with details on the acceptance or rejection of their profile.

At BSC, we seek continuous improvement in our recruitment processes. For any suggestions or comments/complaints about our recruitment processes, please contact recruitment [at] bsc [dot] es.

For more information, please follow this link.

Deadline

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

OTM-R principles for selection processes

BSC-CNS is committed to the principles of the Code of Conduct for the Recruitment of Researchers of the European Commission and the Open, Transparent and Merit-based Recruitment principles (OTM-R). This is applied for any potential candidate in all our processes, for example by creating gender-balanced recruitment panels and recognizing career breaks etc.
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.
For more information follow this link

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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