Job Reference

568_23_CS_CAOS_RE2

Position

Research Engineer - Real-time MPSoC modelling and analysis (RE2)

Data de tancament

Diumenge, 31 Desembre, 2023

Reference: 568_23_CS_CAOS_RE2

Job title: Research Engineer - Real-time MPSoC modelling and analysis (RE2)

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 900 staff from 55 countries.

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.

Look at the BSC experience:

BSC-CNS YouTube Channel

Let's stay connected with BSC Folks!

Context And Mission

Applications are invited for an Engineer position in the research lines of the Computer Architecture Operating System Department (www.bsc.es/caos) at Barcelona Supercomputing Center (BSC-CNS).

We are offering an Engineer position for a period of 1 year (with the possibility of extension) in the context of several industrial and research projects in collaboration with some of the main tools, components and OEM industries in the automotive, avionics and space domains.
As part of those projects, a number of ARM, NVIDIA, Zynq and Infineon boards, among others, need to be set up and interfaced through debug interfaces and/or low level software to monitor the execution of programs, either with or without an OS layer (i.e. Linux, RTEMS, and other embedded/real-time OSes). The engineer will be also in charge of porting applications from the critical real-time systems domains (namely automotive, avionics and space) for their evaluation on top of the identified target platforms, as a necessary step to provide industry with information on how to use those platforms reliably for the execution of their most critical software, such as that responsible of navigation in planes/satellites, and autonomous driving in cars. The position also carries working with representative architectural simulators (e.g. gem5) to model specific aspects of the MPSoCs under analysis.

This work will be carried out within a large and diverse group with experience in the domain and skilled on those tasks, thus assisting the candidate in the ramp up phase of his work at BSC. Francisco J. Cazorla is the group leader. For a complete list of publications of the group leader, please visit: http://people.ac.upc.edu/fcazorla/.

### Key Duties

- Develop techniques on representative simulators like gem5 to model specific aspects of the studied MPSoCs.
- Document the porting and profiling processes to enable other group members to port and evaluate further applications.
- Work with relevant performance simulators
- Set up the newest boards relevant for the automotive, avionics and space domains, with processors from the main chip vendors (e.g. ARM, Infineon, Zynq, NVIDIA), installing appropriate Operating Systems and testing debug and monitoring features.
- Port applications from the aforementioned domains to those boards and profile them with the existing debug and monitoring features.
- Performance Analysis of applications running on boards and simulators

### Requirements

- **Education**
  - MSc in Computer Science (or expected to graduate in the current course). Comparable skills obtained from work experience can also be accepted.

- **Essential Knowledge and Professional Experience**
  - Computer Architecture: general processor/cache architecture, memory hierarchy, familiar with assembly code.
  - Systems: Linux, RTEMS or other embedded/real-time OS.
  - Some performance Analysis of small kernels as well as parallel applications.
  - Programming: C/C++, Assembler, Open MP/MPI, CUDA, scripting (shell, TCL, python, etc.), etc.
  - Previous experience with processor architecture simulators

- **Competences**
  - Ability to take initiative, prioritise and work under set deadlines
  - Ability to work independently and in a team
  - Strong troubleshooting attitude
  - Capacity to interact and build strong relations with other research groups
  - Good verbal communication skills in English
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: 01/01/2024

Applications procedure and process

All applications must be made through BSC website and contain:

- A full CV in English including contact details
- A Cover Letter with a statement of interest in English, including two contacts for further references - Applications without this document will not be considered

In accordance with the OTM-R principles, a gender-balanced recruitment panel is formed for every vacancy at the beginning of the process. After reviewing the content of the applications, the panel will start the interviews, with at least one technical and one administrative interview. A profile questionnaire as well as a technical exercise may be required during the process.

The panel will make a final decision and all candidates who had contacts with them will receive a feedback with details on the acceptance or rejection of their profile.

At BSC we are seeking continuous improvement in our recruitment processes, for any suggestions or feedback/complaints about our Recruitment Processes, please contact recruitment [at] bsc [dot] es.

For more information 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