415_22_CS_CAOS_R4

Job Reference

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Position

Leading Researcher - Embedded Systems (R4)

Data de tancament

Dilluns, 31 Octubre, 2022
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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, 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 770 staff from 55 countries.

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

Context And Mission

The Computer Architecture and Operating System group at the Barcelona Supercomputing Center aims at carrying out research on programming models for critical embedded systems in charge of controlling fundamental parts of cars, airplanes and satellites. Our work is mainly done in the context of bilateral projects with several processor companies as well as several European-funded projects. For a complete list of publications of the group in the last years, please visit: www.bsc.es/caos

This position will be contributing in the METASAT Horizon Europe project which is coordinated by BSC. METASAT will develop open source, model based engineering solutions for the space domain, targeting advanced hardware features such as Graphics Processing Units (GPUs) and AI accelerators as well as advanced software methods such as hypervisor technologies and safety critical APIs. The work will be performed in collaboration with leading research and industrial partners in the aerospace domain.
The senior research engineer is expected to have a leadership role within the project, working closely with the project coordinator and the project manager. In addition to managing and leading the project’s research oriented technical and development activities, the candidate is expected to contribute in deliverable and research paper writing, project reviews and meetings, as well as to contribute in the writing of new research proposals. The technical and research work performed in the project can lead to a PhD degree with partial funding of tuition fees, in case the candidate is interested in this option.

**Key Duties**

- Lead the research of the CAOS group on GPUs for critical systems
- Manage and lead METASAT’s project
- Project deliverable and report writing
- Leading project reviews
- Writing of research papers
- Contribution in the writing of new research and industrial project proposals, as well as managing new research or industrial projects
- Define and establish new research areas for the group
- Attend project meetings and supervise the performed developments
- Advise PhD/Master Theses on hardware and software solutions for probabilistic timing analysis and GPUs for safety critical systems, as well as new research areas
- Manage engineering team for new developments

**Requirements**

- **Education**
  - PhD in Computer Science or related discipline (PhD in Computer Architecture is preferred)
  - Demonstrated experience with GPU programming languages, ideally through a Master thesis or other long-term project
  - Demonstrated experience with safety critical software in aerospace, automotive, avionics or similar domain
  - Prior experience in large international projects, ideally in European Projects (FP6, FP7, H2020 or Horizon Europe)
  - Prior project management and process development management experience
  - Demonstrated programming skills through contributions to open source projects or open source releases of own projects are appreciated

- **Essential Knowledge and Professional Experience**
Deep knowledge in Computer Architecture, Compilers and Operating Systems.
Deep knowledge in Real-Time Systems.
Deep knowledge in Probabilistic Timing Analysis (Static or Measurement-based).
Experience with multicore, manycore and massively parallel architectures.
Experience with real systems/boards.
Strong publication record.
10+ years of research experience.
Supervision of a least one graduated PhD student.
Experience in leading efforts in European projects.
Experience in supervision of Master/PhD students.
Experience in project management, including technical proposal writing and deliverable generation.
Experience working in a research environment, including writing academic papers, and working with PhD students.
Experience working in a leadership position, managing Postdocs/students/engineers.
Publications in renowned conferences as a senior author.
Experience with industrial code and practices in the real-time systems domain.
Experience working on low level software and assembly language for Sparc, PowerPC, ARM and Tricore AURIX.
Experience in C/C++.
Experience with GPU programming languages (CUDA, OpenCL, Vulkan or other)
Experience with safety critical programming standards (MISRA C/C++, OpenGL SC 1.0.1/2.0, Vulkan SC or other)
Knowledge of the GCC and LLVM toolchains for Sparc and PowerPC.
Experience with LLVM/clang development or other compilers.
Experience with runtime systems.
Experience with developing solutions for software or hardware randomisation.
Experience with hardware simulators.
Experience working with performance monitoring counters on embedded systems.
Experience working with the “Rapita Verification Suite” timing verification software.
Experience working with real-time operating systems, such as PikeOS, RTEMS or ERIKA.
LaTeX

Additional Knowledge and Professional Experience

A minimum of 10 years of work experience in EU projects and/or management
Participation/Leadership in international technical committees for renowned conferences or scientific journals
Participation in international standardization committees
University Teaching Experience
Awards and Distinctions

Competences

Problem-solving, pro-active, result-oriented work attitude
Ability to perform work both individually as well as in a team
Good communication skills including a good command of the English language (written and spoken)
Daily communication with international project partners
Ability to juggle multiple priorities with efficiency and work in a fast-paced, dynamic, deadline-oriented environment
Willingness to travel
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: Open-ended contract due to technical and scientific activities linked to the project and budget duration
- 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: 01/11/2022

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 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