

## [266\\_24\\_CS\\_CAOS\\_R2](#)

### **Recruitment App Link**

<https://webapps.bsc.es/recruitment/job/3220>

### **Website Node ID**

63352

### **Job Reference**

266\_24\_CS\_CAOS\_R2

### **Position**

PostDoc Researcher - EdgeAI-Trust Project (R2)

### **Closing Date**

Friday, 31 May, 2024

**Reference:** 266\_24\_CS\_CAOS\_R2

**Job title:** PostDoc Researcher - EdgeAI-Trust Project (R2)

### **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.

Look at the BSC experience:

[BSC-CNS YouTube Channel](#)

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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.

## **Context And Mission**

We invite applications for a postdoctoral researcher to contribute to the EdgeAI-Trust project. EdgeAI-Trust aims to develop and implement decentralized Edge AI technologies to address key challenges facing Europe's industrial and societal sectors, such as energy efficiency, system complexity, and sustainability. By developing trustworthy domain independent collaborative AI architectures and the HW/SW edge AI technologies, the project will promote large-scale edge AI solutions that able upgradeability, reliability, safety, security, and interoperability, with a focus on explainability and robustness. This will increase trustworthiness, reliability, safety, security, and societal acceptance of AI in a dynamic zero-trust environment. The EdgeAI-trust will develop toolchains with standardized interfaces for optimizing and validating edge AI solutions in heterogeneous computing systems, measuring ODD coverage of training data, and complementing edge AI training data. EdgeAI-trust will also establish sustainable impact by building open edge AI platforms and ecosystems, with a focus on standardization, supply chain integrity, environmental impact, and benchmarking frameworks, and support for open-source solutions.

## **Key Duties**

- As a member of the team, your role as a postdoctoral researcher will be to lead BSC activities in the Edge-AI project, which include the following.
- 1. Contribute to the development AI-driven hardware and software Operational Design Domain (ODD) awareness solutions that enable robust, safe and trustable operations at the edge (ODD is a key success factor for safe and reliable operation at the edge, regardless of the domain).
- 2. Contribute to the definition of requirements of an AI-based in-vehicle distributed single-camera object detection system and an AI-based in-vehicle distributed predictive maintenance system.
- 3. Devise appropriate AI architectures leveraging AI features such as explainability, interpretability, traceability, and leveraging AI ensembles to match safety requirements in line with standards such as ISO 26262, IEC 61508, ISO KDT-IA-FT3, ISO 5469, and ISO/AWI PAS 8800, among others. Those architectures will aim to make failure risk residual by construction whenever possible, and with appropriate observability and controllability means, as well as safety measures support so that safety cases can be built atop.
- 4. Contribute to the exploration of AI acceleration solutions at hardware level with emphasis on safety-related design aspects of those accelerators such as efficient realization of diversity and ensembles. Accelerators will be deployed on an FPGA-based RISC-V platform and integrated in TEB's modular platform along with a COTS performance module for efficient orchestration.
- 5. Contribute to overall aspects relating to safety cases and influencing the overall design, control and data flow, and adherence to specific properties (e.g., whether diverse redundant components exhibit sufficient independence).

## **Requirements**

- Education
  - BSc in Computer Science.
  - Master in advanced computing
  - PhD (completed or its last stages) in the safety of AI software in critical embedded domains like automotive.

- Essential Knowledge and Professional Experience
  - Recognized expertise AI software for critical domains
  - Previous knowledge on high-performance hardware for critical embedded systems
- Additional Knowledge and Professional Experience
  - Previous knowledge in middlewares for real-time systems (ROS2, CyberRT, ...)
  - Proficiency in English
- Competences
  - Ability to conduct independent research, develop innovative solutions, and take initiative
  - Strong analytical and problem-solving skills
  - Collaborative mindset and the capacity to work effectively in interdisciplinary teams
  - Excellent verbal and written communication skills

## 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: asap

## 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](#)

Barcelona Supercomputing Center - Centro Nacional de Supercomputación

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