HOSTING OFFER

Artificial Intelligence Researcher in Hybrid Digital Twins and Intelligent Systems.

Supervisor profile

Name and Position: Dr. Daniel Flores-Martin.
Department / Faculty: Foundation for Advanced Computing and Technologies of Extremadura (COMPUTAEX). Extremadura Supercomputing Center.

About me:
Daniel Flores-Martin received his Ph.D. degree in Computer Science at the University of Extremadura (UEx), Spain, in 2023 (international mention). At this University, Flores-Martin graduated in Computer Engineering in Information Technologies in 2017, where he obtained the award for the academic record of his promotion. In addition, in 2019 he completed his Master's Degree in Computer Engineering and Master's Degree in ICT Management, where in both cases he also obtained awards for the best academic record of the promotion. Belonging to the Quercus Software Engineering Group and in the SPILab laboratory, he developed his Ph.D. in the Cloud Computing research line, through the funding of a contract for University Teacher Training (FPU). Currently, Flores-Martin is a member of the Centro Extremeño de Investigación iNnovación Tecnológica y Supercomputación (CénitS) group, affiliated to the COMPUTAEX Foundation. In this group, he performs system administration and supercomputing functions, as well as project analyst. His main research areas include Internet of Things, Context-Awareness, Machine Learning, Mobile Computing, Artificial Intelligence and High-Performance Computing. He is a co-author of numerous peer-reviewed papers in international journals, conferences, and workshops. He has also participated in numerous national and international research projects and has completed two international research stays.

Research interests and expertise:
COMPUTAEX has actively supported more than 250 research projects in collaboration with public research centers and private companies, contributing to the development of several doctoral theses. Currently, it is firmly committed to consolidating its role as a regional leader in artificial intelligence. To this end, the Foundation has established its own AI research team focused on training, experimentation, and participation in scientific publications and applied projects in areas such as machine learning, deep learning, natural language processing, and edge AI. Among its key initiatives is the PULSE platform, aimed at optimizing energy efficiency in data centers through predictive models and digital twins. Other notable projects include collaborations on Federated Learning for privacy-preserving AI, the development of intelligent systems for public administration, and AI-assisted healthcare applications. COMPUTAEX also plays an active role in dissemination and training, having organized workshops, seminars, and AI courses in partnership with the University of Extremadura and other academic institutions. It further collaborates with leading companies in the field to promote responsible and high-impact uses of AI across sectors.

What we offer (Research support)

Research facilities:
The candidate will be hosted at the Extremadura Supercomputing Center, located in Caceres (a World Heritage City), which operates an infrastructure consisting of several supercomputers recognized as a unique asset in the Spanish research system. The center provides services to the research systems of both the region and the country as part of the Spanish Supercomputing Network. COMPUTAEX is a foundation fully committed to research and knowledge development. It employs a team of researchers who work in various fields of technology, such as HPC, parallelization and optimization, quantum computing, artificial intelligence, cybersecurity, and HPC code efficiency, as well as in various application areas, such as cosmology, pharmacogenomics and

personalized medicine, energy efficiency, and precision agriculture. Candidates are welcome to join any of the research projects developed, as well as to propose and develop their own ideas.

Networking possibilities & external relations:
COMPUTAEX is part of the Spanish Supercomputing Network (RES), which is a Singular Scientific and Technical Infrastructure (ICTS) distributed throughout Spain, consisting of the interconnection of 14 nodes with the aim of offering supercomputing, data management, and artificial intelligence resources and services to the scientific community. The institution has multiple collaborations with researchers from international centres in different fields of science and technology. The Foundation also has a Research Group included in the SECTI (Extremadura Science, Technology, and Innovation System) formed by the set of public and private entities focused on R&D&I activities.

Project idea / fellow position (scientific requirements, topic, discipline)

The primary objective of this research project is to explore, develop, and lead advanced software solutions focused on artificial intelligence, data analytics, and predictive modeling at the COMPUTAEX Foundation. The research line is oriented toward identifying key variables from complex datasets, designing robust machine learning pipelines, and deploying scalable models that can operate efficiently in both centralized and edge computing environments. This includes tasks such as data preprocessing, feature engineering, model training and validation, and explainable AI to ensure transparency and trust in decision-making processes. Special emphasis will be placed on applied AI for critical domains such as energy optimization in data centers, healthcare diagnostics, and industrial automation. The researcher who joins the center will play a leading role in this line of work, supported by a multidisciplinary team of engineers and scientists. Flexibility in the research direction will be encouraged to integrate state-of-the-art techniques, including federated learning, neural architecture search, and reinforcement learning. The project also offers access to high-performance computing infrastructure through the LUSITANIA supercomputer, curated real-world datasets, and collaboration opportunities with leading academic institutions and technology companies. Through this initiative, the researcher will contribute to advancing trustworthy and impactful AI, aligning technological innovation with real societal and environmental challenges.

What we expect from you (requirements, preferences):

Our preference would be to participate in a **European Fellowship** application.

Furthermore, you should:

- Have a PhD degree at the time of the deadline for applications.
- At the call deadline, you must not have more than 8 years full-time equivalent experience in research, measured from the date of award of the doctoral degree
- Have not been in Spain for more than 12 months in the 3 years before the call deadline.
- Your profile should comply with the requirements identified in the call. Please, visit the call text and read requirements carefully.

Documents to be submitted and deadline

Applicants should submit his/her CV and a letter of motivation latest until… with subject …