PhD Position on Affective Computing for People-Centric IoT *(@UPM)*

KEYWORDS: Affective Computing; Physiological Signal Processing; Machine Learning; Internet of Things.

In the Centre of Industrial Electronics (CEI) at Universidad Politécnica de Madrid (UPM), we are looking for a highly motivated and talented PhD student in the field of Affective Computing. The proposed PhD research project is focused on the following topics:

- Physiological Signal Processing
- Affective Computing
- People-Centric Internet of Things
- Embedded Machine Learning

The PhD candidate will be part of a highly international and enthusiastic team. This three-year position will be funded within the scope of the projects TALENT-HIPSTER (High Performance Systems and Technologies for E-Health and Fish Farming) and COGNITION (COGNitive IoT technologies for a People-Centric Secure DIgital TransitiON), both funded by the Spanish Ministry of Science and Innovation. The 3-year PhD contract includes health insurance coverage and a gross salary of 21000 € in 12 monthly pays. Expenses for attending conferences, summer schools and workshops will be also covered.

BASIC QUALIFICATIONS: Master's degree in Electrical / Electronics / Computer Engineering, Computer Science, Physics or similar. Previous research activities in the fields of interest will be highly appreciated.

PREFERRED SKILLS: Very good knowledge of Programming in C/C++ and/or Python; Signal and Image Processing; experience with Machine Learning and/or Affective Computing is also valuable. A high level of English is required, Spanish is optional.

POSITION AVAILABLE: The selection procedure will open in October 2022 and will be maintained opened until the position is covered. The starting date is flexible, but preferred ASAP.

INFORMATION: If you are interested in this position and want to have more details about it, please contact *Dr. Andrés Otero* (joseandres.otero@upm.es), including the reference *[PhD_Affective]* in the subject of your email. For the formal application, the following documents will be required:

- CV
- Academic transcript of courses followed, and grades obtained provided by your institution.
- Brief letter describing your motivation and previous experience.

PhD Position on Neuroevolutionary Algorithms and Neuromorphic Architectures
(@UPM)

KEYWORDS: Evolutionary Computation / Lifelong Learning / Neuromorphic Computing / Neuroevolution / Reinforcement Learning

In the Centre of Industrial Electronics (CEI) at Universidad Politécnica de Madrid (UPM), we are looking for a highly motivated and talented PhD student in the field of neuroevolutionary computation. As part of the position, the PhD candidate will be involved in research activities related with the following topics:

- Lifelong learning and online adaptation capabilities at the edge.
- Design and implementation of an FPGA-based neuromorphic accelerators.
- Evolutionary algorithms for the continuous adaptation of neuromorphic computing architectures at the edge.

The PhD candidate will be part of a highly international and enthusiastic team. This three-year position will be funded within the scope of the European project *AI-Q-Ready* (*Artificial Intelligence using Quantum measured Information for real-time distributed systems at the edge*) that will be funded by the European Commission. The 3-year PhD contract includes health insurance coverage and a gross salary of 21000 € in 12 monthly pays. Expenses for attending conferences, summer schools and workshops are also covered.

BASIC QUALIFICATIONS: Master's degree in Electrical / Electronics / Computer Engineering, Computer Science, Physics; or similar. Previous research activities in the fields of interest will be highly appreciated.

PREFERRED SKILLS: Very good knowledge of digital hardware design and VHDL; High-level synthesis tools for FPGAs; design of Artificial Intelligence systems; C/C++ programming. Experience with Reinforcement Learning and/or Evolutionary Algorithms is also valuable. A high level of English is also necessary for this position. Spanish is optional.

POSITION AVAILABLE: The selection procedure will open in October 2022 and will be maintained opened until the position is covered. The starting date is flexible, but preferred ASAP.

INFORMATION: If you are interested in this position and want to have more details about it, please contact *Dr. Andrés Otero* (joseandres.otero@upm.es), including the reference *[PhD_Neuroevolution]* in the subject of your email. For the formal application, the following documents will be required:

- CV
- Academic transcript of courses followed, and grades obtained provided by your institution.
- Brief letter describing your motivation and previous experience.

PhD/PostDoc positions on Reconfigurable Domain-Specific Processor Architectures *(@UPM)*

KEYWORDS*:* RISC-V / Domain-Specific Computing / Hardware Acceleration / Post-Quantum Cryptography / Internet-of-Things

In the Centre of Industrial Electronics (CEI) at Universidad Politécnica de Madrid (UPM), we are looking for a highly motivated and talented PhD student or *PostDoc* researcher in the field of domain-specific adaptive processing systems based on the RISC-V ISA. As part of the position, the candidate will be involved in activities related with the following topics:

- RISC-V ISA extensions and hardware accelerators for both ML-specific and security-oriented operations.
- Dynamic Reconfiguration mechanisms to load ISA extensions on demand.
- Security mechanisms (both classical and post-quantum) to protect the processor.

The selected candidate will be part of a highly international and enthusiastic team. These positions will be funded within the scope of the project COGNITION (COGNitive IoT technologies for a People-Centric Secure Digital TransitiON) funded by the Spanish Ministry of Science and Innovation. The 3-year PhD contract includes health insurance coverage and a gross salary of 21000 € in 12 monthly pays. In the case of *PostDoc* candidates, salary will be equivalent to the Spanish professorship positions "*Ayudante Doctor*" or "*Contratado Doctor*", depending on the previous experience of the candidate. Expenses for attending conferences, summer schools and workshops will be also covered.

BASIC QUALIFICATIONS: Master's degree in Electrical /Electronics / Computer Engineering, Computer Science, Physics; or similar. Previous research activities in the fields of interest will be highly appreciated.

PREFERRED SKILLS: Very good knowledge of digital hardware design and VHDL; High-level synthesis tools for FPGAs; C/C++ programming for embedded systems. Experience with RISC-V processors and cryptographic solutions is also valuable. A high level of English is required, Spanish is optional.

POSITION AVAILABLE: The selection procedure will open in October 2022 and will be maintained opened until the position is covered. The starting date is flexible, but preferred ASAP.

INFORMATION: If you are interested in this position and want to have more details about it, please contact *Dr. Alfonso Rodriguez* (alfonso.rodriguezm@upm.es), including the reference *[PhD_RISCV]* in the subject of your mail. For the application, the following documents will be required:

- CV
- Academic transcript of courses followed, and grades obtained provided by your institution.
- Brief letter describing your motivation and previous experience.

PhD/Postdoc positions on RISC-V based System-on-a-Chip *(@UPM)*

KEYWORDS*:* RISC-V / Domain-Specific computing / Reconfigurable Computing / Hardware Acceleration / ASIC Design

In the Centre of Industrial Electronics (CEI) at Universidad Politécnica de Madrid (UPM), we are looking for a highly motivated and talented PhD student or *PostDoc* researcher in the field of reconfigurable SoCs based on RISC-V. As part of the position, the candidate will be involved in research activities related with the following topics:

- Reconfigurable SoCs based on RISC-V specifications.
- Domain-specific processing architectures on chip.
- Ultra-low power processing architectures and ASIC designs.
- Complex digital designs for reconfigurable/adaptive processor extensions.

The selected candidate will be part of a highly international and enthusiastic team. These positions will be funded within the scope of the project COGNITION (COGNitive IoT technologies for a People-Centric Secure Digital TransitiON) funded by the Spanish Ministry of Science and Innovation. The 3-year PhD contract includes health insurance coverage and a gross salary of 21000 € in 12 monthly pays. In the case of *PostDoc* candidates, salary will be equivalent to the Spanish professorship positions "*Ayudante Doctor*" or "*Contratado Doctor*", depending on the previous experience of the candidate. Expenses for attending conferences, summer schools and workshops will be also covered.

BASIC QUALIFICATIONS: Master's degree in Electrical /Electronics / Computer Engineering, Computer Science, Physics; or similar. Previous research activities in the fields of interest will be highly appreciated.

PREFERRED SKILLS: Very good knowledge of digital hardware design and VHDL; ASIC design flows and tools; Design of mixed software/hardware systems; C/C++ programming for embedded systems. Experience with RISC-V is also valuable. A high level of English is required, Spanish is optional.

POSITION AVAILABLE: The selection procedure will open in October 2022 and will be maintained opened until the position is covered. The starting date is flexible, but preferred ASAP.

INFORMATION: If you are interested in this position and want to have more details about it, please contact *Dr. Alfonso Rodriguez* (alfonso.rodriguezm@upm.es) and *Dr. Andrés Otero* (joseandres.otero@upm.es), including the reference *[PhD_SoC]* in the subject of your mail. For the formal application, the following documents will be required:

- CV
- Academic transcript of courses followed, and grades obtained provided by your institution.
- Brief letter describing your motivation and previous experience.

PhD Position on Edge-Cloud Orchestration and Collaborative Resource Management in Internet of Things *(@UPM)*

KEYWORDS: Computation offloading; Distributed Resource Management on the Edge; Opportunistic Networking; Internet of Things.

In the Centre of Industrial Electronics (CEI) at Universidad Politécnica de Madrid (UPM), we are looking for a highly motivated and talented PhD student in the field of Edge-Cloud Orchestration in IoT. The proposed PhD research project is focused on the following topics:

- Vertical and horizontal collaborative computation offloading
- Opportunistic networking on the edge of IoT
- Resource management in Wireless Sensor Networks
- Distributed optimization algorithms in embedded networked devices

The PhD candidate will be part of a highly international and enthusiastic team. This three-year position will be funded within the scope of the projects TALENT-HIPSTER (High Performance Systems and Technologies for E-Health and Fish Farming) and COGNITION (COGNitive IoT technologies for a People-Centric Secure DIgital TransitiON), both funded by the Spanish Ministry of Science and Innovation. The 3-year PhD scholarship includes health insurance coverage and a gross salary of 21000 € in 12 monthly pays. Expenses for attending conferences, summer schools and workshops will be also covered.

BASIC QUALIFICATIONS: Master's degree in Electrical / Electronics / Computer Engineering, Computer Science, Physics; or similar. Previous research activities in the fields of interest will be highly appreciated.

PREFERRED SKILLS: Very good knowledge of Programming in C and Python; embedded software programming for microcontrollers and hardware design; wireless sensor network technologies; experience with distributed optimization algorithms is also valuable. A high level of English is required, Spanish is optional.

POSITION AVAILABLE: The selection procedure will open in October 2022 and will be maintained opened until the position is covered. The starting date is flexible, but preferred ASAP.

INFORMATION: If you are interested in this position and want to have more details about it, please contact *Dr. Gabriel Mujica* (gabriel.mujica@upm.es), including the reference *[PhD_WSN]* in the subject of your email. For the formal application, the following documents will be required:

- CV
- Academic transcript of courses followed, and grades obtained provided by your institution.
- Brief letter describing your motivation and previous experience.