CALL FOR ONE RESEARCH GRANT UNDER THE WoW R&D PROJECT

Job: 1 (One) Research Fellowship for Masters/MSc.

Main research field: Engineering

Sub research field: Electrical and Computer Engineering, Informatics, Multimedia or related fields

Application period: December 6 to December 21, 2022

Job description:

The Institute of Systems and Robotics of the University of Coimbra (ISR-UC) opens a call for applications for one (1) Research Fellowship for Masters/MSc. in the scope of the Industrial R&D Project: WoW - Wireless biomonitoring stickers and smart bed architecture: towards Untethered Patients, financed by the European Fund for Regional Development, within the scope of the CENTRO-01-0247-FEDER-045931 call and by public funds from the Ministry of Science, Technology and Higher Education.

Project Description:

Electronic skin (e-skin) patches that adhere to the human epidermis and collect physiological and behavioral data, are potentially transformative in digital health through wireless patient monitoring. Such patches can be used to identify physiological and emotional responses through the collection of diverse multimodal data, which can be fed into AI classification algorithms to discover new digital biomarkers, i.e. correlations between the physiological data, and various health conditions.

WoW intends to move on to a next step, i.e. the application of this technology for patient care with the goal of hassle-free wireless patient monitoring, towards untethering the patients from the hospital bed, and from the hospital itself to foster domiciliary hospitalization. As such, WoW proposes a novel architecture centered on a series of biomonitoring stickers for patients, including fully untethered, simple and very low-cost printed stickers (0.5-20€ depending on the application) that collect a variety of vital signs such as ECG, heart rate, respiration rate, oxygen saturation and temperature, as well as inertial measurements (accelerometer and gyroscope). In this architecture, patient´s beds will have a central role. An ad-hoc smart IoT unit will be embedded in the beds, as part of an IoT infrastructure that connects to several biomonitoring stickers at one end to the Hospital Information System (HIS) on the other end, allowing health professionals to quickly assess patients' conditions in an easy and intuitive way.

Admission requirements: Master in Electrical and Computer Engineering, Informatics Eng., Multimedia or related fields, Proficiency in English. Knowledge on additive manufacturing, printed electronics, and soft and stretchable composites, and batteries will be considered an advantage.

Work Plan: The selected candidate will study materials and printing techniques for additive manufacturing of soft electronics.

Composition of the jury:

Prof. Mahmoud Tavakoli, Prof. David Portugal and Dr. Afsaneh LalSanati

Workplace: The workplace is located at the Institute of Systems and Robotics, Department of Electrical and Computer Engineering, Rua Sílvio Lima, University of Coimbra – Pólo II, 3030-290, Coimbra.

Duration of the scholarship: The scholarship will last for 6 months, renewable.

Monthly Remuneration: The amount of the grant is **€ 1.144,64 net,** according to the internal scholarship rules of ISR for scientific research, plus social security (Seguro Social Voluntário, first level contributions) and personal accidents insurance.

Selection Method: Curricular evaluation (100%). If the Jury deems it necessary, an interview may be held with the candidates placed in the first two positions according to the ordering resulting from the previous criteria. In this case, the final score will include the curricular evaluation (as described above), valued at 75%, and the interview, valued at 25%. If none of the candidates has the appropriate profile (overall assessment below 50%), the scholarship will not be awarded.

Selection criteria:

a) Curricular Evaluation

Criterion 1. Absolute merit of the candidate, considering his/her performance in the master's and bachelor/licentiate degree, or integrated master's degree (30%);

Criterion 2. Knowledge on areas related to additive manufacturing, printed electronics, and stretchable inks (50%);

Criterion 3: Knowledge on technical design and implementation of physical prototypes, using additive manufacturing (20%);

b) Interview (should it occur)

Criterion 1. Motivation to work on the project and enroll in a PhD (50%);

Criterion 2. Competence in the oral response to questions on the selection criteria subjects. Appropriate spoken English skills will be valued (50%).

Formalization of applications: Applications must be sent in pdf format to the following e-mail address lara@isr.uc.pt, with the subject: **WoW-MSc-Soft-Electronics-Fellowship-Dez2022**, with CC to mahmoud@isr.uc.pt.
The following documentation must be sent:

1. **Copy of the certificate (s) of academic qualifications**. Applicants with academic degrees obtained abroad are required to present a Certificate of Recognition in accordance with applicable law until the application deadline.
2. **Curriculum Vitae (CV)**. Should include the academic qualifications with the mean overall final classification in the courses, the Master dissertation title, and relevant experience in the selection criteria.
3. **Letter of presentation and application**. Should include the candidate's motivation to work on this field. Motivation to pursue a PhD and experience in Robotics and IoT should be explicitly mentioned.

4. **Non-degree course or Ph.D. enrollment proof**. If the candidate is not yet enrolled in a PhD or non-degree course in Portugal, he/she must provide a written document, declaring his/her commitment to enroll in a PhD or Non-Degree Course in case he/she is the selected candidate, until the date of signature of the scholarship contract.
5. **Recommendation Letter** (optional).

Deadline for formalizing the application: December 5 to December 16, 2022

Form of publicity / notification of the results: The results of the evaluation will be publicized, through a list ordered by the final grade obtained, with the candidates being notified by email. After the dissemination of the results through e-mail, the candidates must consider themselves, from the outset, notified to, if they wish, express themselves in a prior hearing within a maximum period of 10 working days after that date. At the end of this period, the selected candidate must consider himself summoned to start the scholarship.