JOB ADVERTISEMENT

Hiring of 1 (one) Assistant Researcher in the Area of Computing for Embedded and Cyber-Physical Systems

INESC TEC – Institute for Systems and Computer Engineering, Technology and Science, a private research institution, is accepting applications to hire an **Assistant Researcher with an open-ended contract** to join the **Human-Centered Computing and Information Science** Center (HumanISE).

This notice complies with the FCT-Tenure Programme – First Edition, published within the scope of the *Aviso de Abertura de Concurso*, reference PRR no. 02/C06-i06/2024, with the objective of promoting the hiring of PhD candidates exclusively for permanent positions, integrating them in research careers. The object of this notice has the reference 2023.14760.TENURE.006 and was approved in said call.

The hiring process will comply with the Labour Code Law and other legislation applicable to individual employment contracts, as well as the internal rules of INESC TEC.

The FCT-Tenure Programme funding is applicable only to PhD holders who do not benefit from permanent or open-ended employment contracts and who have been - or are - on fixed-term contracts or grants, as PhD holders, at an institution part of the national scientific and technological system.

SALARY LEVEL

According to INESC TEC's wage framework, the wage awarded is 3563.49€, corresponding to the initial remuneration position at level I2, similar to Assistant Researcher, according to the categories of the Public Scientific Research Career Statute, approved by the latest wording of Decree-Law 124/99 (April 20).

JOB DESCRIPTION, SCIENTIFIC PROFILE AND RATIONALE

Job Description:
The selected candidate will be integrated in the INESC TEC team on Computing for Embedded and Cyber-Physical Systems. The team members have more than 25 years of research experience in the domain of embedded and cyber-physical systems, with a wide range of national and international activities.
Within the laboratory, the hired PhD will be responsible for promoting research activities in the domain of embedded computing systems, developing the research topic of hardware/software for advanced computing platforms for autonomous systems.
The main activities of the hired researcher will include promoting research works advancing the state-of-the-art in the application of emerging embedded systems technologies in advanced computing platforms for autonomous systems, working in collaboration with other professors and PhD researchers, supervise students' doctoral and master thesis, and engage with industry partners to

apply the scientific advances in real-world applications addressing current and future societal challenges.

Scientific Profile:
The candidate will be required to have a scientific profile aligned with this area of research and its applications, backed with recognized publications, and preferably with previous experience in preparing and leading external research funding activities, and teaching at master and doctoral level.

Rationale:
Embedded systems are nowadays omnipresent in our environment, with applications as diverse as smart watches and automotive autonomous systems, air quality systems and renewable generation control. Their development went from the small-scale development of isolated embedded monitoring and control devices to the development of complex, connected, system of systems, integrating hardware, software, control and the physical processes. The emergence of the concept of Cyber-Physical Systems is a recognition of the interrelation between both computing and physical worlds, being a fundamental part of smart applications in domains such as manufacturing, smart cities, energy communities, transportation or health.
However, the increase in the complexity of systems (and of systems of systems), the challenging requirements on high performance of autonomous systems, the dependability and cybersecurity requirements of cyber-physical systems, etc, are challenging the way embedded computing systems are developed. Software moved from centralized self-contained applications to distributed intelligent components, which requires both novel middleware and runtimes, as well as new and improved development approaches. Processor architectures moved from single-core to multi and many-core including heterogeneous accelerator devices such as GPUs, DSPs or FPGAs, requiring software to cope with concurrent and parallel synchronous and asynchronous computation.
The emergence of connected autonomous systems introduced the need to develop software for a compute continuum which includes computation in highly heterogeneous devices, from small IoT platforms, to the Cloud, but within a single software ecosystem. And, finally, the emergence of edge AI, where AI components are considered not only in the applications executing on the Edge (AI on Edge), but, and as challenging, as enablers of more flexible and efficient Edge management (AI for Edge). The embedded infrastructure needs to become intelligent to support intelligent applications, whilst meeting requirements such as real-time, safety and security, using advanced hardware platforms and software frameworks.
This research topic directly addresses the Global Challenges and European Industrial Competitiveness Pillar of the Horizon Europe program. In particular, the research topics directly address several of the areas of the Digital, Industry and Space Cluster, specifically Key Digital Technologies, advanced computing, and next generation internet. In fact, the importance of activities for Cyber-Physical Systems is widely recognised, being an important part of the CHIPS JU Joint Undertaking, the European Public-Private Partnership for research, development and innovation (https://www.chips-ju.europa.eu/), and its Strategic Research and Innovation Agenda (https://ecssria.eu/), in which INESC TEC researchers are actively involved.
Due to the technical challenges and application domains, activities are also aligned with the Agenda for Sustainable Development, in particular the drive for more efficient and reliable computing systems, which are able to optimize smart applications in the targeted domains, are directly related to SDG #9 (tackling resilient infrastructures, foster innovation), but also #11 (safe, resilient and sustainable cities) and #7 (reliable, sustainable and modern energy).

WORK PLACE

INESC TEC, Porto, Portugal.

REQUIRED PROFILE:

National, foreigner and stateless candidates holding a PhD in Informatics Engineering, Electrotechnical and Computers Engineering, or related scientific area, and who hold a scientific and professional CV that showcases a profile suitable for the position of Assistant Researcher and the position with reference 2023.14760.TENURE.006, described above.

FORMALISATION OF THE APPLICATIONS

The applications will be formalised by submitting a specific form in INESC TEC's website. The form is available in the icon "Apply now".

On the same form, each candidate must upload the following documents:

- **Motivation letter** for the job opening, addressed to the Chief Executive Officer at INESC TEC, including a plan of **activities and individual career development** for a maximum period of five years. The plan should demonstrate alignment with INESC TEC's strategy (check chapter no. 2 of INESC TEC's Activity Plan for the current year) and the duties to be performed, without exceeding 2000 words and no more than five pages.
- ***Curriculum Vita*,** structured according to the F1-F4 criteria below, for the assessment of the respective relevance, quality, timeliness and adequacy, highlighting all the higher education and the scientific and technological results; the activities of basic, applied or practice-based research; teaching and students' supervision experience; activities of knowledge dissemination, and management of science activities over the past five years - considered by the candidate as more relevant or with greater impact.
- **Copy of certificates or diplomas**;

Note: Selected candidates with academic degrees obtained abroad must present, for contracting purposes, the records of recognition of said degrees and adequate compliance with the Portuguese grading systems (whenever their degree received a final grade), issued by the Directorate General for Higher Education or by a Portuguese public higher education institution, pursuant to Decree-Law no. 341/2007 (12 October) and Ordinance no. 227/2017 (July 25). As an alternative, they can include a document to recognise the validity of foreign grades and the corresponding Portuguese grades, issued by a Portuguese public higher education institution (process regulated by Decree-Law no. 283/83 [21 June]).

- **Other documents** that they consider relevant for the evaluation of the scientific and academic path.

Candidates who incorrectly submit their applications or who do not meet the demanded requirements will be excluded from admission.

The jury has the power to require any candidate, in case of doubt, to present documents proving their statements. False statements made by the candidates will be punished under the terms of the applicable legislation.

EVALUATION AND SELECTION PROCESS

The evaluation is carried out in two phases, which will result in a final classification between 0 and 100 points.

First phase: curricular assessment

The selection is made through the evaluation of the motivation letter, which will include the plan of activities and individual career development, and of the scientific and curricular journey - focusing on the generation of scientific results and professional activities **over the last five years (considered more relevant by the applicants)**. This five-year period may be extended by the jury, at the request of the candidate, if reasoned on suspension of the scientific activities for specific reasons, e.g., parental leave, serious illness, and other legally established cases that determine unavailability for work.

The scientific and professional CV of the candidate will be evaluated focusing on the relevance, quality and timeliness of the factors referred to below in the specific subject area(s), considering the specific requirements and the adequacy for the duties to be performed.

F1 - Production of scientific, technological, cultural or artistic results that the candidate considers relevant.
F2 – Applied or practice-based research activities considered to have the greatest impact by the candidate. This includes proven ability to establish national or international collaborations.
F3 - Teaching, supervision, extension and knowledge dissemination activities, namely in the context of the promotion of culture and scientific practices, that the candidate considers more relevant, with emphasis on proven ability to supervise junior researchers, post-doctoral fellows, or students.
F4 - Project and science, technology and innovation programmes management, or experience in observing, monitoring and evaluating the scientific, technological and higher education systems in Portugal or abroad. Emphasis is placed on proven ability to secure research funding and participate in the preparation and submission of science, technology and innovation proposals.
F5 - Motivation letter, including the plan of activities and individual career development, adequate and in compliance with the duties to be developed under the strategic project at INESC TEC.

The evaluation of all candidates in the first phase must be completed within a period of no more than one month after the applications are received.

Candidates shall be approved on absolute merit if they obtain at least 70 points in the curriculum evaluations from the majority of the jury members, except for the President, who votes only in the event of a tie.

The top five candidates - with the highest average and approved in absolute merit - will advance to the second stage, which features an individual interview, either face-to-face or online. The interview will represent a maximum of 10% of the final score.

Second phase: interview
The Jury will individually interview the candidates who advance to the second phase.

During the interview, the members of the Jury will encourage an open debate about the quality and the innovative and creative nature of the research and professional activities of the candidates, considering the requirements and the areas of the open position.

The interviews will take place within a period not exceeding 10 working days after the decision of the Jury.

FUNCTIONING OF THE JURY

Each member of the Jury will assess all the candidates according to the criteria mentioned before (from F1 to F5), following a 0 and 100 score system; they must present the reasoning for their scores. Abstention is not allowed in this process.
The same applies to the candidates selected for the interview process.
The candidates who are not selected for interview will receive 0 points for the second stage.

The curricular assessment (AC) of each candidate stems from the average of the factors (Fi) multiplied by the relevance coefficients for the specific position, as provided below.

$$AC = 0.2*F1 + 0.2*F2 + 0.2*F3 + 0.1*F4 + 0.3*F5$$

The final score (CF) stems from the average of the curricular assessment and the interview (E), multiplied by the relevance coefficients, as provided below.

$$CF = 0.9*AC + 0.1*E$$

After completing the application of the selection criteria, each member of the Jury will sort the candidates according to the final score. On the basis of these rankings, the Jury will rank the candidates in succession for the first and subsequent places (each member of the Jury follows their personal order). The candidate who gets more than half the votes will be selected. If this does not happen in the first vote for a particular seat, the least voted candidate is eliminated, and the procedure is repeated with the others. The President of the Jury only votes in case there is a tie.

The Jury shall recommend the hiring of the candidate approved on absolute merit and ranked in first place. If this candidate does not accept the position, the Jury shall recommend the next-ranked candidate, and so on, until the position is accepted.

Minutes are drawn up of the Jury's meetings, which contain a summary of what took place, as well as the assessments made by each of the members and the reasons for them - and they must be available to the candidates when requested.

SELECTION JURY
The jury is composed of:

President of the Jury: José Orlando Roque Nascimento Pereira, Associate Professor, University of Minho and INESC TEC
External Full Member: António Casimiro Costa, Associate Professor, Faculty of Sciences of the University of Lisbon.
External Full Member: Isabel Praça Gomes Pereira, Coordinator Professor, Instituto Superior de Engenharia do Porto (ISEP).
Full Member: Armando Jorge Miranda de Sousa, Associate Professor, Faculty of Engineering, University of Porto and INESC TEC
Full Member: Luis Miguel Pinho, Coordinator Professor, Instituto Superior de Engenharia do Porto (ISEP) and INESC TEC

APPLICATION PERIOD

Applications must be submitted by 23:59 on 2025-08-30.

NOTIFICATION OF THE RESULTS, PRIOR HEARING AND FINAL DECISION OF THE RESULTS

The results of the selection process will be disclosed to the candidates by email.

After being notified, the candidates have 10 working days to comment on the results of the selection process under their right to a preliminary hearing. The final decision of the Jury will be given within 10 days from the deadline for the decision under the right to a prior hearing.

The present call is exclusive to the open position, expiring after the selection of the top candidate.

NON-DISCRIMINATION AND EQUAL ACCESS POLICY

INESC TEC actively promotes a policy of non-discrimination and equal access, so that no candidate can be privileged, benefited, harmed or deprived of any right or exempted from any duty, on basis of origin, age, sex, sexual orientation, marital status, family or economic status, education, social origin or condition, genetic heritage, reduced capacity for work, disability, chronic illness, nationality, ethnic origin or race, region of origin, language, religion, political or ideological convictions and trade union membership.

Candidates with disabilities will be selected over others, in case of equal final score. The degree of disability is mandatorily proven through the presentation, in an application, of the Medical Certificate of Multipurpose Disability (AMIM), issued under the terms of Decree-Law no. 202/96 (October 23), in the latest wording.

The Executive Commission of INESC TEC approved this job advertisement in the meeting of 2025-07-10, also being responsible for the final decision on hiring.