CALL FOR GRANT APPLICATIONS
(AE2024-0397)

INESC TEC is now accepting grant applications to award 1 Research Grant (BI) within the scope of the INESC TEC LA funded by National Funds through FCT - Portuguese Foundation for Science and Technology, I.P., project reference LA/P/0063/2020.

1. GRANT DESCRIPTION

Type of grant: Research Grant (BI)

General scientific area: COMPUTER SCIENCE,ENVIRONMENTAL SCIENCE

Scientific subarea: Programming,Earth science

Area of Work: Development of Digital Twin technologies and the application of Artificial Intelligence for monitoring and analyzing agricultural systems.

Grant duration: 12 months, starting on 2024-11-01, with the possibility of being renewed until the end of the project.

Scientific advisor: Joaquim João Sousa

Workplace: INESC TEC, UTAD, Portugal

Maintenance stipend: € 1259,64, according to the table of monthly maintenance stipend for FCT grants , paid via bank transfer. Grant holders may be awarded potential supplements, according to a quarterly evaluation process (Articles 19, 21 and 22 of the Regulations for Grants of INESC TEC and Annex II), up to a maximum limit of 50% of the monthly maintenance stipend.

INESC TEC supports costs with registration, enrolment or tuition fees, during the grant duration, under the terms established in the internal document: "Payment of Tuition fees to grant holders".

The grant holder will benefit from health insurance, supported by INESC TEC.

2. OBJECTIVES:

The purpose of the grant is to support scientific research in the creation of advanced digital models that represent agricultural systems, allowing detailed analysis of their conditions and performance. The scholarship holder will be responsible for integrating environmental and physiological data into computational models, applying Artificial Intelligence techniques to optimize the management and monitoring of the areas studied.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

• Bibliographic Review: Carry out a comprehensive review of the existing scientific literature on the application of Digital Twins in agricultural contexts, with special attention to the techniques that best adapt to the Mediterranean context.
• Data Acquisition and Processing: Participate in the acquisition of data in the field, including data obtained using Unmanned Aerial Vehicles (UAVs), and carry out the processing of this data, ensuring high spatial resolution.
• Development of the Digital Twin: Contribute to the development of a digital twin that faithfully represents the agricultural areas of interest, using appropriate software and tools.
• Data Integration and Analysis: Implement and test an infrastructure capable of integrating environmental and physiological variables into the digital twin, providing a dynamic and updated representation of agricultural systems.
• Validation and Optimization: Validate the developed model by comparing it with observational data and previous studies, adjusting the model as necessary.
• Dissemination of Results: Publish research results in renowned scientific journals and participate in the writing

of technical-scientific reports that document the advances and discoveries made during the scholarship period.

4. REQUIRED PROFILE:

Admission requirements:

Master's degree in Computer Science, Geosciences, or related areas.
The awarding of the fellowship is dependent on the applicants' enrolment in study cycle or non-award courses of Higher Education Institutions.

Preference factors:

• Previous experience in developing Digital Twin models and/or in Artificial Intelligence applications in similar contexts.
• Scientific publications in areas related to the scholarship object.
• Good command of the English language, both in written comprehension and in the production of scientific texts.
• Availability to start activities immediately after granting the scholarship.

Minimum requirements:

• Master's degree in Computer Science, Geosciences, or related areas.
• Solid knowledge in programming, with Python being preferred due to its relevance in the area of ■■Artificial Intelligence.
• Ability to develop and apply Artificial Intelligence techniques in the context of modeling complex systems.

5. EVALUATION OF APPLICATIONS AND SELECTION PROCESS:

Selection criteria and corresponding valuation: the first phase comprises the Academic Evaluation (AC), based on the criteria referred to in Article 12 of the Regulations for Grants of INESC TEC, while the second phase comprehends the Individual Interview (EI). All factors are evaluated on a scale of 0 to 100, taking into account the applicants' merit, suitability and conformity with the preference factors.
The weight of the AC factors are as follows: Academic Qualifications (FA, 45%), Scientific Publications (PC, 5%), Experience (EX, 45%) and Motivation Letter (CM, 5%).
Candidates who score less than 50 points in the AC average will be considered excluded on absolute merit. The top five candidates approved on absolute merit will be qualified for the individual interview. The Final Grade (CF) is obtained by the weighted average of AC (80%) and EI (20%).

DISABILITY INCENTIVE

Candidates who present a degree of disability equal to or greater than 90% will benefit from an incentive (20) in the score of the CV Assessment.
Candidates who present a degree of disability equal to or greater than 60% and less than 90% will also benefit from an incentive (10) in the score of the CV Assessment.
Said score may, in these cases, exceed 100 points.
Candidates must demonstrate the degree of disability during the application, namely through the submission of the Multi-Purpose Medical Certificate of Disability, issued in accordance with Decree-Law no. 202/96, of October 23 - currently in effect.
Candidates must declare, in the application form, the type of disability used throughout the selection process, in order to proceed with the required adaptations.

The Selection Jury is composed of the following members:

President of the Jury: Joaquim João Sousa
Full member: António Cunha
Full member: Filipe Neves Santos
Substitute member:

Release of results and prior hearing: the results of the selection process, as well as the terms and procedures for prior hearing, will be released to the applicants by email, under the terms referred to in Article 13 of the Regulations for Studentships and Fellowships of INESC TEC.

6. FORMALISATION OF APPLICATIONS:

Application Documents:

1. Motivation letter;
2. Curriculum Vitae (must include the list of previous fellowships, their type, beginning and end dates, funding entities and host institutions);
3. Certificate or diploma degree;
4. Proof of enrollment in a degree awarding study cycle or in a non degree awarding Higher Education program.
   - The proof of enrollment may be presented just during the grant hiring stage.
5. Signed declaration stating the infringement of the grant holder's duties (article 14, no. 4)
6. Documental evidence to support the country of residence, residence permit or other legally equivalent document, in cases where the applicant is a foreigner or non-resident in Portugal - valid until the beginning of the grant.
7. Other supporting documents relevant to the final assessment.

Failure to deliver the required documents within the 90-day period after the date of the notice of the conditional awarding of the grant implies its cancellation.

Application period: From 2024-09-26 to 2024-10-09

Submission of applications: the application will be formalised by submitting the form available in the *Work With Us* section of INESC TEC website.

7. BINDING LEGISLATION AND REGULATION

The hiring process shall comply with the current legislation regarding the Research Grant Holder Statute, approved by Law no. 40/2004 of August 18, in its current wording, as well as by the Regulations for Grants of INESC TEC and for FCT Grants Regulation in force.

For more information, please check the Regulations for Grants of INESC TEC and relevant annexes at www.inesctec.pt/bolsas