

CALL FOR GRANT APPLICATIONS (AE2025-0494)

INESC TEC is now accepting grant applications to award 1 Research Grant (BI) within the scope of the within the scope of the project FOXPM with reference 14731_COMPETE2030-FEDER-00923300 co-funded by the ERDF - European Regional Development Fund through Innovation and Digital Transition Program - COMPETE 2030 under the scope of Portugal 2030 and by National Funds through the FCT - Fundacao para a Ciencia e a Tecnologia, I.P. (Portuguese Foundation for Science and Technology).

1. GRANT DESCRIPTION

Type of grant: Research Grant (BI)

General scientific area: COMPUTER SCIENCE

Scientific subarea: Programming, Informatics

Area of Work: Anomaly Detection and Explanation

Grant duration: 12 months, starting on 2025-11-24, with the possibility of being renewed until the end of the project.

Scientific advisor: Rita Paula Ribeiro

Workplace: INESC TEC, Porto, Portugal

Maintenance stipend: € 1309.64, [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 overarching goal of this project is to develop an explainable online predictive maintenance system that combines deep learning-based failure detection with interpretable, rule-based explanations. Its goals are to:

- Detect equipment failures in real time through unsupervised models.
- Explain fault symptoms via root cause analysis and rule-based surrogate models
- Provide clear, actionable, and trustworthy explanations to maintenance experts.
- Evaluate the robustness and coherence of explanation methods under imbalanced and sparse data conditions.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

The work programme integrates Explainable AI research with industrial predictive maintenance applications:

- Study the state of the art in predictive maintenance and XAI.
- Study XAI surrogate models to explain failures detected by unsupervised models on sensor data
- Assess explanation quality and robustness through experiments on real-world, imbalanced data.
- Writing articles for journals or conferences

4. REQUIRED PROFILE:

Admission requirements:

Master in data analytics or similar 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:

Proven experience in root cause analysis, demonstrated by publications in conferences and journals.

Minimum requirements:

Strong knowledge in machine learning and explainable AI

Knowledge of root cause analysis

Experience with Python

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, 50%), Scientific Publications (PC, 15%), Experience (EX, 25%) and Motivation Letter (CM, 10%).

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 (70%) and EI (30%).

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: Rita Paula Ribeiro

Full member: Bruno Miguel Veloso

Full member: Alípio Jorge

Substitute member: Carlos Ferreira

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 2025-10-23 to 2025-11-05

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

