

CALL FOR GRANT APPLICATIONS (AE2023-0481)

INESC TEC is now accepting grant applications to award 2 Research Initiation Grant (BII) within the scope of the INESC TEC LA funded by National Funds through FCT - Portuguese Foundation for Science and Technology, I.P., project reference UIDB/50014/2020

1. GRANT DESCRIPTION

Type of grant: Research Initiation Grant (BII)

General scientific area: ENGINEERING

Scientific subarea: Electrical engineering

Area of Work: Engineering

Grant duration: 5 months, starting on 2024-02-01, with the possibility of being renewed until the end of the project.

Scientific advisor: Ana Filipa Sequeira

Workplace: INESC TEC, Porto, Portugal

Maintenance stipend: € 541,12, [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 proposed work focuses on understanding the reasoning behind the predictions of the machine learning (ML) model that drives a biometric system. The study aims at investigating how explainable artificial intelligence (xAI) will allow us to comprehend, validate and improve the models (e.g., mitigating biases). The methods to develop will contribute to mitigating the dangers of opaque biometric applications. For instance, undetected biases in biometrics-based applications (e.g., courts, border control systems) can further increase the discrimination against minority groups, thus perpetuating an everlasting problem. The expected work will promote increased transparency and interpretability of biometric systems based on deep learning (DL) approaches for example by presenting clear and understandable explanations to the end-users of the biometric systems that can be either experts or non-experts. The study will use, mainly, the face biometric trait to develop novel xAI methods for biometric systems, incorporate the explanations within the prediction, devise an approach to integrate the explanations as feedback for the model optimisation and create an interactive demo illustrative of the achievements.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

The workplan for this position comprises several main tasks, such as:

- Acquire background knowledge and research state of the art techniques in face biometrics and explainable artificial intelligence (xAI).
- Manage the collection of expert/crowd sourced annotations.
- Implement/evaluate literature methodologies for Interpretable Face Biometrics to develop benchmarking approaches.
- Design novel interpretability-based techniques, such as differential losses to promote explainability or active

learning work flows to integrate explanation in the training.

- Implement the studied methodologies in a demo environment that will emulate a real face recognition application capable of providing explanations for the decisions.
- Disseminate the research outputs through internal reports, scientific publications, and public exhibits.
- Exercise critical thinking in evaluating the research process and the results obtained.

4. REQUIRED PROFILE:

Admission requirements:

Students enrolled in a professional higher technical course, in a degree, in an integrated master's degree or in a master's degree.

The awarding of the fellowship is dependent on the applicants' enrolment in study cycle or non-award courses of Higher Education Institutions.

Preference factors:

Experience in Computer Vision and Machine Learning.

Minimum requirements:

Minimum or equal grade of 16 in the Bachelor studies

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, 10%), Experience (EX, 20%) and Motivation Letter (CM, 20%).

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%).

The Selection Jury is composed of the following members:

President of the Jury: Ana Filipa Sequeira

Full member: Hélder Filipe Oliveira

Full member: Tânia Pereira

Substitute member: Jaime Cardoso

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 not having benefited from any other research fellowship (Article 5, no. 5)
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 2023-12-07 to 2023-12-21

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



Governo da República
Portuguesa

