

## CALL FOR GRANT APPLICATIONS (AE2022-0224)

INESC TEC is now accepting grant applications to award 4 Research Initiation Grant (BII) within the scope of the Plurianual\_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 Initiation Grant (BII)

**General scientific area:** COMPUTER SCIENCE

**Scientific subarea:**

**Grant duration:** 3 months, starting on 2022-09-15, with the possibility of being renewed for a maximum term of one year.

**Scientific advisor:** João Manuel Pedrosa

**Workplace:** INESC TEC, Porto, Portugal

**Maintenance stipend:** € 486,12, according to the table of monthly maintenance stipend for FCT grants (<http://www.fct.pt/apoios/bolsas/valores>), 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:

- Exploration of the state of the art in X-ray pathology detection and methods of explainability;
- development and validation of new methods based on deep learning to quantify x-ray image quality;
  - development and validation of new methods based on deep learning for retrieval of x-ray images based on imagiological and textual criteria;
  - development and validation of new methods for predicting pathology based on structured reports and comparison of explanatory methods;
  - development and validation of new methods based on deep learning for explainability in longitudinal x-ray cases;
  - dissemination of the project and results obtained.

### 3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

The purpose of the grants is the development and validation of explainable artificial intelligence methods in the area of chest radiography image analysis. The work plans of the grants consist of exploring methods to explain the decision of automatic algorithms, namely image quality control, retrieval of x-ray images for comparison, pathology prediction through structured reports and explanations in longitudinal cases.

#### 4. REQUIRED PROFILE:

##### Admission requirements:

Master's Student in Biomedical Engineering, Computer Engineering, Computer Science, or related;  
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 chest x-ray image analysis; Python and PyTorch/Keras experience; desire to carry out a master's thesis in the area.

##### Minimum requirements:

Average degree equal to or greater than 14; experience in computer vision and/or deep learning.

#### 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%).

##### The Selection Jury is composed of the following members:

President of the Jury: João Manuel Pedrosa

Full member: Ana Maria Mendonça

Full member: Aurélio Campilho

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 fully recognised in Portugal;
  - Documents proving the awarding of academic degrees and diplomas, or the according recognition - in cases of academic degrees or diplomas granted by a foreign higher education institution - can be dismissed in the application process, and replaced by the applicant's declaration of honour, with the verification of said condition taking place during the grant's hiring stage. The submission of the certificate is mandatory when signing the contract.
  - Academic degrees or diplomas awarded by a foreign higher education institution require an authentication by a Portuguese higher education institution, and the corresponding registration on the DGES platform, in conformity with Decree-Law no. 66/2018, of August 16, and Ordinance no. 33/2019, of January 25. More information available on the website <https://www.dges.gov.pt/pt/pagina/reconhecimento?plid=374>
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 2022-07-20 to 2022-08-02

**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](http://www.inesctec.pt/bolsas)



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