

## CALL FOR GRANT APPLICATIONS (AE2022-0115)

INESC TEC is now accepting grant applications to award 1 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:** 5 months 30 days, starting on 2022-05-01, with the possibility of being renewed for a maximum term of one year.

**Scientific advisor:** João Marco

**Workplace:** INESC TEC, Braga, 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:

Network traffic classification is a fundamental task for multiple aspects of communications network management and operation. Understanding the traffic characteristics allows network services to be scaled and configured to provide better performance and quality of service to supported applications and services. In the context of anonymised networks, this classification is more complex due to different approaches to packet encryption. In this context, the work to be developed in the scope of this research grant aims to study and explore the application of machine learning algorithms in the classification process at various levels of anonymised traffic, with a particular interest in the Tor network.

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

The work plan is aligned with a master's dissertation topic in Informatics Engineering at the intersection of the areas of information security and computer networking.

In this context, the work will involve:

- Research and evaluation of the state-of-the-art of traffic classification
- Research and evaluation of traffic classification approaches supported by machine learning
- Exploring strategies towards early traffic classification
- Adaptation of an Intrusion Detection System (IDS) as a proof-of-concept
- Comparative evaluation of the proof-of-concept
- Dissemination of results in the form of scientific publication

#### 4. REQUIRED PROFILE:

##### Admission requirements:

- Be enrolled in Master in Informatics Engineering.

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

##### Preference factors:

- Knowledge about traffic classification and characterisation - Knowledge about machine learning - Knowledge about Intrusion Detection Systems (IDS)

##### Minimum requirements:

- Knowledge about computer networks
- Experience of development in C and Python languages
- Proficiency in Portuguese and English

#### 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, 60%), Scientific Publications (PC, 10%), Experience (EX, 10%) 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: João Marco
- Full member: João Tiago Paulo
- Full member: Fábio André Coelho
- Substitute member: António Luís Sousa

**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 2022-03-30 to 2022-04-12

**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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# FCT

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MINISTÉRIO DA EDUCAÇÃO E CIÊNCIA