

## CALL FOR GRANT APPLICATIONS (AE2020-0210)

INESC TEC is now accepting grant applications to award 1 Research Initiation Grant (BII) within the scope of the MoST funded by Fundo Europeu de Desenvolvimento Regional (FEDER) through the Operational Programme for Competitiveness and Internationalisation - COMPETE 2020 Programme, and by National Funds through the FCT - Portuguese Foundation for Science and Technology, I.P., project (reference PTDC/CCI-INF/32636/2017 (POCI-01-0145-FEDER-032636))

### 1. GRANT DESCRIPTION

**Type of grant:** Research Initiation Grant (BII)

**General scientific area:** COMPUTER SCIENCE

**Scientific subarea:** Informatics

**Grant duration:** 9 months, starting on 2021-01-01, with the possibility of being renewed until the end of the project.

**Scientific advisor:** Alexandre Carvalho

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

**Maintenance stipend:** € 416,12, 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.

Costs attributable to INESC TEC may include registration, enrolment or tuition fee stipend, either directly or through reimbursement, during the grant duration.

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

### 2. OBJECTIVES:

The objectives of this scholarship are:

- extend knowledge of the state of the art in the area of spatial-temporal information systems (indexing and automatic event detection)
- identify and select the appropriate methods for the study in question;
- develop research capacity through the application of selected methods;
- evaluate the research process and the results obtained.

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

Recent technological advances made it possible to collect large volumes of data on the evolution of spatio-temporal entities, far superior to the existing capacity to analyze them and extract relevant information. For this reason, tools capable of automating quantitative analysis processes on spatio-temporal data are increasingly needed, guaranteeing levels of objectivity, precision and reproducibility compatible with scientific work. The activities presented next are part of the WP3 of the MOST project and further extend the work previously carried out:

Part I - detection of spatio-temporal events

To extend the future work presented in a master's thesis on the representation and automatic detection of events related to a spatio-temporal entity, already carried out in this context and project scope. It is intended to:

- complement the results already achieved in the aforementioned thesis and expand the knowledge of the state of the art in the area of change detection algorithms, as a key piece in the calculation of differences between pairs of geometric shapes that represent two states of a space-time entity
- classify the algorithms and select the most promising algorithm, substantiating the choice

- experiment and compare the new results with those previously obtained
- write a scientific article presenting the work done and results obtained

#### Part II

- develop a test scenario using boids (from computer graphics)
- experiment the new test scenario with the already developed prototypes related to spatial and spatio-temporal indexing;
- collect and analyze results and draw conclusions
- write a scientific article presenting the work done and results achieved

#### Part III

- write the scholarship activity report

### 4. REQUIRED PROFILE:

#### Admission requirements:

Degree or master's student in computer science, engineering or similar

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 on web development (javascript); - experience in computer graphics (webgl) - algorithms in algorithm and data structures; - excellent performance in the following course units: programming, software development and computer graphics

#### Minimum requirements:

- current classification equal or higher than 13 values;
- no overdue course units.

### 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, 0%), 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: Alexandre Carvalho  
Full member: Rui Pedro Rodrigues  
Full member: António Coelho  
Substitute member: Hugo Paredes

**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 2020-11-25 to 2020-12-14

**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)

