

CALL FOR GRANT APPLICATIONS (AE2023-0154)

INESC TEC is now accepting grant applications to award 1 Research Initiation Grant (BII) within the scope of the NEXUS funded by IAPMEI with reference 53 Co-financed by Component 5 - Capitalization and Business Innovation, integrated in the Resilience Dimension of the Recovery and Resilience Plan within the scope of the Recovery and Resilience Mechanism (MRR) of the European Union (EU), framed in the Next Generation EU, for the period 2021 - 2026.

1. GRANT DESCRIPTION

Type of grant: Research Initiation Grant (BII)

General scientific area: ENGINEERING

Scientific subarea: Electrical engineering

Grant duration: 6 months, starting on 2023-06-01, with the possibility of being renewed for a maximum term of one year.

Scientific advisor: Luís Manuel Pessoa

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:

- Development of python based human perception model using reconfigurable intelligent surfaces;
- Enlarge the knowledge of the state of the art regarding perception systems based on reconfigurable intelligent surfaces;
- Identification and selection of the most adequate optimization methods to address the proposed workplan;
- Develop the research skills through the application of the selected methods;
- Apply the scientific method on the research process and a critical attitude on the obtained results.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

- Literature review focused on perception models based on reconfigurable intelligent surfaces.
- Development of perception model in python, supporting the instantiation of a reconfigurable intelligent surface with parameterizable number of elements and number of states.
- Development of optimization function of the configuration of the element states, involving the minimization of the average mutual coherence measurement matrix.
- Development of optimization algorithm for the decision function of human posture recognition.
- Implementation of test routines for the statistical evaluation via simulation of the accuracy of posture recognition as a function of the number of elements of the surface and the number of independently controllable groups.
- Writing of the grant activities report.

4. REQUIRED PROFILE:

Admission requirements:

Enrolment in MSc in Electrical Engineering, Physics 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 with machine learning techniques and optimization techniques; Experience with human posture recognition algorithms based on radio-frequency signals.

Minimum requirements:

- Experience with the development of algorithms in python environment.
- Experience with signal processing techniques applied to radio-frequency sensing techniques.

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, 40%), Scientific Publications (PC, 5%), Experience (EX, 40%) and Motivation Letter (CM, 15%).

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 (65%) and EI (35%).

The Selection Jury is composed of the following members:

President of the Jury: Luís Manuel Pessoa

Full member: Nuno Paulino

Full member: Hélder Oliveira

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 dully 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 2023-04-19 to 2023-05-05

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

