

## CALL FOR GRANT APPLICATIONS (AE2024-0555)

INESC TEC is now accepting grant applications to award 1 Research Initiation Grant (BII) within the scope of the AI-based Robotic Solution Addressing Compensatory Patterns for Upper Limb Rehabilitation (CTI), Co-financed by Component 5 - Capitalization and Business Innovation of core funding for Technology and Innovation Centres (CTI), 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, with reference 21.

### 1. GRANT DESCRIPTION

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

**General scientific area:** ENGINEERING

**Scientific subarea:** Electrical engineering

**Area of Work:**

**Grant duration:** 6 months, starting on 2025-02-01, with the possibility of being renewed for a maximum term of one year.

**Scientific advisor:** Hélder Filipe Oliveira

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

**Maintenance stipend:** € 601,12, [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:

Human pose estimation is the task seeking to find the position and orientation of a person's body joints, for example, in a single frame or sequence of images. It plays a major role in understanding human movement, having wide-ranging applications in fields such as robotics, human-computer interaction, and healthcare. By accurately estimating human pose, it becomes possible to recognize gestures, facilitate immersive gaming, improve rehabilitation and physical therapy, and enable more natural and intuitive human-machine interactions. For the detection of the pose, wearable, pressure, and vision-based sensors are used. However, wearable sensors can cause discomfort during the execution of the exercises and may induce unnatural movements leading to incorrect postures, while pressure sensors only allow evaluating a reduced number of exercises. On the other hand, markerless vision-based approaches do not interfere with the patient and allow capturing a wide range of exercises. Besides, the use of a deep learning approach can capture the most significant features leading to highly accurate human pose estimations. The objective are the Exploration of Deep learning (DL) approaches for human pose detection/tracking based on vision sensors.

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

- extend the knowledge of the state of the art in deep learning for human pose detection;
- identify and select the appropriate methods for the study in question;
- develop the research capacity through the application of the selected methods;

- exercise a critical spirit in the evaluation of the research process and the results obtained.

#### 4. REQUIRED PROFILE:

##### Admission requirements:

Bachelor in Informatics, electrical and electronic, and biomedical 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:

Experience in research projects, and writing of scientific papers.

##### Minimum requirements:

Experience in Computer Vision and machine 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, 40%), Scientific Publications (PC, 10%), Experience (EX, 20%) and Motivation Letter (CM, 30%).

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%).

#### DISABILITY INCENTIVE

Candidates who present a degree of disability equal to or greater than 90% will benefit from an incentive (20) in the score of the CV Assessment.

Candidates who present a degree of disability equal to or greater than 60% and less than 90% will also benefit from an incentive (10) in the score of the CV Assessment.

Said score may, in these cases, exceed 100 points.

Candidates must demonstrate the degree of disability during the application, namely through the submission of the Multi-Purpose Medical Certificate of Disability, issued in accordance with Decree-Law no. 202/96, of October 23 - currently in effect.

Candidates must declare, in the application form, the type of disability used throughout the selection process, in order to proceed with the required adaptations.

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

President of the Jury: Hélder Filipe Oliveira

Full member: Tânia Pereira

Full member: Ana Filipa Sequeira

Substitute member: Daniela Santos

**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 2024-12-19 to 2025-01-03

**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)

