

CALL FOR GRANT APPLICATIONS (AE2025-0501)

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: Robotics and Systems Control

Grant duration: 4 months, starting on 2025-12-01.

Scientific advisor: Cláudia Daniela Rocha

Workplace: INESC TEC, Porto, Portugal

Maintenance stipend: € 651.12, [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:

The main objective of this work is to develop a management module for the robotic component responsible for communication and coordination between an exoskeleton and a robotic manipulator. This module will receive information from an external human pose estimation system and convert it into appropriate control commands for each subsystem. The aim is also to optimize the existing 2DOF exoskeleton by improving the power supply system and integrating end-of-stroke sensors to increase system reliability and safety. Additionally, dynamic control of the robotic manipulator will be implemented, ensuring correct coordinate translation between the human reference frame, the exoskeleton, and the robot, enabling coherent and responsive interaction between the user and the robotic system.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

The work will begin with the analysis of the existing 2DOF exoskeleton prototype, identifying and implementing improvements in terms of power supply and end-of-stroke sensor integration. Next, the robotic management module will be developed, responsible for receiving human pose information from an external system and coordinating communication and control between the exoskeleton and the robotic manipulator. In parallel, dynamic control of the manipulator will be implemented, ensuring correct coordinate translation between the human reference frame, the exoskeleton, and the robot, ensuring coherent and synchronized interaction. The system will be experimentally tested and validated, evaluating performance, accuracy, and dynamic response. Upon completion, a detailed technical report on the implementation and results obtained is expected, with

consideration also given to the development of a scientific paper to disseminate the work developed.

4. REQUIRED PROFILE:

Admission requirements:

Degree in electrical and computer engineering or related fields.

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 of robotic systems control. Experience, particularly through extracurricular activities, in hardware and software integration and mechatronic systems.

Minimum requirements:

Knowledge of C/C++ and/or Python programming. Basic understanding of mechatronics and robotics control.

Basic knowledge of electronics and instrumentation.

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, 45%), Scientific Publications (PC, 5%), Experience (EX, 45%) and Motivation Letter (CM, 5%).

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: Manuel Santos Silva

Full member: Luís Freitas Rocha

Full member: João Pedro Souza

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;

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 2025-10-30 to 2025-11-12

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

