CALL FOR GRANT APPLICATIONS
(AE2024-0408)

INESC TEC is now accepting grant applications to award 1 Research Initiation Grant (BII) within the scope of the Produtech_R3 funded by IAPMEI with reference 60 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,COMPUTER SCIENCE

Scientific subarea: Electrical engineering,Computer engineering

Area of Work: Mobile Robotics

Grant duration: 6 months, starting on 2024-11-01, with the possibility of being renewed for a maximum term of one year.

Scientific advisor: Héber Miguel Sobreira

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:

Improvement of the mechanical structures and electronic systems of a hybrid/semi-autonomous forklift to achieve greater navigation and localization accuracy.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

In the logistics sector, the overwhelming majority of cargo currently transported is packed on pallets that are usually handled by pallet trucks or forklifts. In recent times, this sector has been experiencing increasing difficulty in recruiting forklift operators, which is why several autonomous vehicle solutions for automated pallet handling are beginning to appear on the market.
INESC TEC developed a first prototype of an autonomous forklift, based on a Toyota SWE140 forklift, with the aim of having one of these platforms for testing remote control algorithms, autonomous pallet handling and internal demonstrations of these technologies. Meanwhile, a number of possible improvements to this vehicle have been identified, including (but not limited to) the integration of a system to switch between manual and automatic/autonomous operating modes, the sensing of the steering axis and the lifting axis of the forks and the development/parameterization of a safety and emergency stop system.
Thus, the work of this fellowship will involve:
• review documentation, mechanical and electrical designs of the existing vehicle;
• design of 3D parts to implement new functionalities;
• implementation of new components in the robot;

○ **INESC TEC**
Instituto de Engenharia de Sistemas e Computadores, Tecnologia e Ciência
Associação privada sem fins lucrativos declarada de utilidade pública
Pessoa Coletiva 504 441 361 - CRC Porto

Campus da FEUP   T +351 222 094 000
Rua Dr. Roberto Frias   F +351 222 094 050
4200 - 465 Porto   info@inesctec.pt
Portugal   www.inesctec.pt

- integration with ROS and Ubuntu;
- calibrations and mechanical adjustments;
- laboratory tests and identification of areas for improvement.

4. REQUIRED PROFILE:

Admission requirements:
> The candidate must be enrolled in a Master's degree in Electrical Engineering, Computer Science or related areas;
> The awarding of the fellowship is dependent on the applicants' enrolment in study cycle or non-award courses of Higher Education Institutions.

Preference factors:
- Participation in extracurricular activities linked to robotics or automation is valued;
- Knowledge of microcontroller programming is valued.
- ROS programming knowledge and previous practical experience using ROS are valued.

Minimum requirements:
- The candidate must be enrolled in a Master's degree in Electrical Engineering, Computer Science or related areas;
- Experience in hardware, electronic and/or mechanical development;
- Candidate must have experience in C/C++ and/or Python programming.

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: Héber Miguel Sobreira
> Full member: Manuel Santos Silva
> Full member: Pedro Gomes Costa
> Substitute member: Luís Freitas Rocha

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 2024-09-26 to 2024-10-09

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