CALL FOR GRANT APPLICATIONS

(AE2026-0166)

INESC TEC is now accepting grant applications to award 1 Research Grant (BI) within the scope of the -

1. GRANT DESCRIPTION

Type of grant: Research Grant (BI)

General scientific area: ENGINEERING

Scientific subarea: Electrical engineering

Area of Work: Mobile Robotics

Grant duration: 12 months, starting on 2026-07-01, with the possibility of being renewed until the end of the project.

Scientific advisor: Pedro Gomes Costa

Workplace: INESC TEC, Porto, Portugal

Maintenance stipend: € 1359.64, **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:

Research and development of a hybrid, cluster-based multi-agent systems coordination system.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

This work plan proposes the development of new approaches for the coordination of multi-agent systems, starting from a centralized fleet management platform based on graphs, already validated by the scientific community. In a first phase, the focus will be on increasing the robustness and coherence of the existing system, through the mitigation of blocking behaviors and the effects of communication latency between modules. Special attention will be given to temporal consistency between the supervisor and the planner, exploring state prediction mechanisms capable of reducing discrepancies between the actual state of the system and the state assumed during the decision-making process. Subsequently, a hybrid hierarchical architecture will be developed that combines global coordination mechanisms typical of centralized approaches with decentralized levels of control, allowing for simultaneous improvement in the scalability and responsiveness of the system.

The proposal also includes the study of dynamic graph partitioning strategies into adaptive substructures, potentially supported by artificial intelligence methods, capable of reconfiguring themselves according to the state of traffic and interactions between agents. The challenges associated with the transition of agents between different regions of the system will be investigated, ensuring continuity and consistency in global coordination. Finally, a systematic evaluation will be carried out comparing the new hybrid architecture with the original

centralized system, analyzing performance, stability, and scalability metrics in complex environments. Additionally, strategies inspired by collective intelligence and distributed heuristics will be explored, with the aim of increasing the system's efficiency and adaptability in highly complex real-world scenarios.

4. REQUIRED PROFILE:

Admission requirements:

Master's degree in Electrical and Computer Engineering, 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:
Experience working with mobile robots is valued.

Participation in extracurricular activities related to robotics is valued.

Minimum requirements:
Experience in C/C++ programming
Experience with the ROS framework.

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: Pedro Gomes Costa
Full member: Manuel Santos Silva
Full member: Diogo Miguel Matos
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 the infringement of the grant holder's duties (article 14, no. 4)
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 2026-05-21 to 2026-06-03

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