

CALL FOR GRANT APPLICATIONS (AE2024-0007)

INESC TEC is now accepting grant applications to award 1 Research Initiation Grant (BII) within the scope of the Plurianual_LA funded by National Funds through FCT - Portuguese Foundation for Science and Technology, I.P., project reference LA/P/0063/2020

1. GRANT DESCRIPTION

Type of grant: Research Initiation Grant (BII)

General scientific area: ENGINEERING

Scientific subarea: Electrical engineering

Area of Work: Robotics

Grant duration: 3 months, starting on 2024-02-14, with the possibility of being renewed for a maximum term of one year.

Scientific advisor: Nuno Cruz

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:

- Develop software drivers for integration of components in an AUV
- Design/adapt an estimation layer for pure dead-reckoning navigation
- Evaluate the performance of dead-reckoning approach and compare with beacon-supported navigation
- Report and disseminate the developed work

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:

Study the following topics:

State estimation

Motion models (kinematics, underwater vehicle dynamics)

Sensors enabling underwater navigation/localization

Acoustic ranging using transponders

Underwater localization principles

Adapt/develop an estimator for AUV state estimation

Develop IMU (Inertial Measurement Unit) drivers to integrate in the AUV

Simulate and validate estimator before deployment

Preparation of experiments, including partial testing, tank experiments

Take part in outdoor experiments

Evaluate the performance of purely inertial navigation (DVL+IMU) and compare against LBL methods

Report and disseminate the work (publication)

4. REQUIRED PROFILE:

Admission requirements:

Pursuing a Bachelor's/Degree in Engineering or related field

The awarding of the fellowship is dependent on the applicants' enrolment in study cycle or non-award courses of Higher Education Institutions.

Preference factors:

Previous experience working in sensor integration for autonomous navigation.

Minimum requirements:

Knowledges of:

- Programming languages : C, C++, Python
- Design Software : Solidworks
- Mechatronic Software

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, 60%), Scientific Publications (PC, 0%), Experience (EX, 30%) and Motivation Letter (CM, 10%).

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%).

The Selection Jury is composed of the following members:

President of the Jury: Nuno Cruz

Full member: Bruno Miguel Ferreira

Full member: Nuno Miguel Abreu

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 2024-01-12 to 2024-01-25

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



Governo da República Portuguesa

FCT

Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA EDUCAÇÃO E CIÊNCIA