

CALL FOR GRANT APPLICATIONS

(AE2026-0219)

INESC TEC is now accepting grant applications to award 1 Research Grant (BI) within the scope of the on the scope of the project ATLAS, with reference EAPA_0109/2024, co-funded by the European Union by Interreg Atlantic Area Programme 2021-2027.

1. GRANT DESCRIPTION

Type of grant: Research Grant (BI)

General scientific area: ENGINEERING

Scientific subarea: Computer engineering

Area of Work:

Grant duration: 12 months, starting on 2026-09-21, with the possibility of being renewed until the end of the project.

Scientific advisor: Bruno Miguel Ferreira

Workplace: INESC TEC, Porto, Portugal

Maintenance stipend: € 1090.98, [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 fellowship aims to support research and development activities in the field of underwater acoustics applied to the detection and localization of acoustic sources in marine environments, utilizing discrete hydrophone arrays and Distributed Acoustic Sensing (DAS) technology.

The objective is to develop methods for acoustic event detection, segmentation and selection of intervals of interest, Time Difference of Arrival (TDOA) estimation, and underwater acoustic source localization. A subsequent phase will explore the use of fiber-optic-based DAS systems for distributed acoustic monitoring and for the geolocation of the sensor infrastructure itself using reverse estimation techniques.

The fellow will collaborate with the Robotics and Autonomous Systems Center team on the development, integration, and validation of the proposed solutions. Activities will include the implementation and evaluation of algorithms for signal processing, detection, correlation, localization, and tracking of acoustic sources, as well as the analysis of communication and processing requirements associated with the systems in question. The work will also involve processing and integrating data from hydrophones, DAS systems, and external information sources—specifically AIS (Automatic Identification System) and GNSS data.

3. BRIEF PRESENTATION OF THE WORK PROGRAMME AND TRAINING:



The training associated with the scholarship will enable the fellow to gain advanced experience in digital signal processing, underwater acoustics, estimation theory, localization based on time-difference-of-arrival (TDOA), and data analysis from distributed acoustic sensing (DAS) systems.

Special attention will be paid to developing methods for the efficient detection of acoustic events, reducing the volume of data to be communicated and processed, robust TDOA estimation, and acoustic source localization in complex environments. The work will also provide experience in processing data obtained from DAS systems and solving inverse problems related to estimating the geometry of instrumented submarine cables.

The work plan will include the following activities:

Study of the operating principles of discrete hydrophones and Distributed Acoustic Sensing (DAS) systems, as well as the characteristics of the acquired signals;

Characterization of underwater acoustic sources, including vessels, marine mammals, impulsive sources, and calibration sources;

Study of acoustic propagation phenomena in underwater environments and their impact on detection and localization;

Development and implementation of algorithms for filtering, detection, and temporal segmentation of acoustic signals;

Evaluation of the impact of selecting the interval of interest on data volume reduction and the performance of localization algorithms;

Implementation and validation of cross-correlation and generalized cross-correlation techniques to estimate time differences of arrival;

Development and evaluation of TDOA-based acoustic source localization algorithms;

Study and implementation of target tracking techniques based on Kalman filters, nonlinear filters, and smoothing methods;

Characterization of communication, storage, and processing requirements associated with different monitoring architectures;

Adaptation of processing pipelines for data from DAS systems;

Development of methods for geolocating DAS channels and estimating the geometry of instrumented submarine cables;

Production of technical and scientific documentation, including technical reports, scientific papers, and materials for disseminating results; Collaboration with the Robotics and Autonomous Systems Center team and project partners on technical and scientific activities;

Writing of the Grant report.

4. REQUIRED PROFILE:

Admission requirements:

Undergraduate degree in Electrical and Computer Engineering, Computer Engineering, Engineering Physics, Telecommunications Engineering, Aerospace Engineering, Applied Mathematics, 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 underwater acoustics, acoustic signal processing, or sonar systems;

Experience with detection, filtering, correlation, and parameter estimation techniques;

Knowledge of TDOA-based localization, multilateration, or positioning systems;

Experience with Kalman filters, nonlinear optimization methods, or target tracking algorithms;

Knowledge of distributed communication systems and edge/cloud architectures;

Experience in processing large datasets and scientific computing;

Knowledge of Distributed Acoustic Sensing (DAS) systems, fiber-optic sensing, or distributed monitoring;

Experience in parallel programming and high-performance computing;

Ability to work autonomously within a multidisciplinary team;

Experience in communicating technical-scientific results orally and in writing;

Proficiency in English (spoken and written) sufficient for reading international technical documentation and producing reports and scientific papers.

Minimum requirements:

Knowledge of digital signal processing and data analysis;

Knowledge of applied mathematics, statistics, and estimation;

Knowledge of scientific programming in Python and/or MATLAB;

Programming experience in C/C++;

Proven experience in acoustic signal processing;

Ability to analyze and interpret experimental results;

Experience in producing technical documentation, scientific reports, or academic papers.

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, 70%), Scientific Publications (PC, 0%), Experience (EX, 20%) 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%).

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: Nuno Cruz
Full member: Bruno Miguel Ferreira
Full member: Nuno Miguel Abreu
Substitute member: Marcos Martins

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 2026-07-23 to 2026-08-05

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

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