

CALL FOR APPLICATIONS
PHD RESEARCH GRANTS
(AE2020-0286)

INESC TEC is opening a call for the awarding of 1 PhD Research Grants (BI), intended for carrying out R&D activities by students enrolled in a doctoral program in the field of Electrical and Computer Engineering, under the FCT Research Grants Regulation (RBI), the Research Fellowship Holder Statute (EBI) and INESC TEC Grant Regulations.

The grants will be funded by the Foundation for Science and Technology (FCT) under the Collaboration Protocol for the Funding of the Multiannual Plan of Research Grants for Doctoral Students (reference HORIZON-WIDERA-2023-ACCESS-01), signed between FCT and INESC TEC (R&D Unit FCT No. 50014).

1. APPLICATION SUBMISSION

The call is open from 2026-10-01 until 5:00 p.m (Lisbon time) on 2026-10-15.

Applications and the supporting documents required under this Call for Applications must be submitted exclusively via www.inesctec.pt, in the “JOIN US” section.

Each applicant may submit only one application, under penalty of cancellation of all applications submitted.

The application and all associated documents, including the motivation letter and letter of recommendation, should be written in Portuguese or in English.

False statements or plagiarism by the applicants will lead to the cancellation of his/her application, without prejudice to the adoption of other measures of a sanctioning nature.

2. DESCRIPTION OF THE GRANT

Type of grant: PhD research grant

Research grants for PhD students focused on supporting the grant holders' research activities, towards obtaining a PhD degree in Portuguese higher education institutions. The research activities leading to the award of the doctoral degree will be carried out at INESC TEC, which will act as the host institution for the grant holders, without prejudice to the work being conducted in collaboration with more than one institution.

The research activities leading to the award of the doctoral degree for the selected grant holders must be aligned with INESC TEC's activity plan and strategy and will be carried out within doctoral programmes accredited at Portuguese higher education institutions.

Durations of the grant(s): 12 months, as a rule, starting on 2027-01-01, renewable up to a maximum of four years (48 months). The grant cannot be awarded for periods less than three consecutive months.

The work plan may be carried out entirely or partially at a national institution (a domestic grant or a mixed grant, respectively).

In the case of mixed grants, the period of the work plan that takes place in a foreign institution cannot exceed 24 months.

Host institution: INESC TEC, Porto, Portugal. INESC TEC is the host institution for the grant holders, without prejudice to the work that may be carried out in partnership with other institutions.

The research project/work plan will be supervised by Hugo Miguel Silva, PhD.

Grant amount Grant holders are awarded a monthly maintenance allowance in accordance with the table set out in Annex I of the RBI. Payment is made by bank transfer to the account identified by the grant holder. The grant holder may also receive additional remuneration, following a quarterly evaluation process (Articles 19, 21 and 22 of the INESC TEC Grant Regulations and Annex II), up to a maximum limit of 50% of the monthly grant amount (the amount of the grant may be increased by the host institution, but this additional amount will not be directly funded by FCT and will not imply any change to the work programme).

The grant may also include other components, under the terms provided for in article 18 of the RBI, and according to the amount set out in Annex II of the same document.

All grant holders benefit from personal accident insurance covering their research activities, funded by FCT.

The grant holders shall ensure their right to social security by joining the voluntary social insurance scheme, according to the Social Security Contributory Scheme Code, with FCT responsible for the charges resulting from contributions, under the provisions foreseen in article 10 of the EBI.

The grant holder is entitled to a personal health insurance, paid by INESC TEC.

3. SCHOLARSHIP PAYMENT COMPONENTS

The payments due to the scholarship holder are made by bank transfer to the account indicated by the latter. The monthly maintenance allowance is paid on the first working day of each month.

Payments related to registration, enrolment or tuition fee components are made by FCT directly to the national institution at which the scholarship holder is enrolled or registered in the doctoral programme.

4. GRANT OBJECTIVES:

Support researchers in the fields of knowledge described in this call, who intend to carry out research activities leading to the award of a doctoral degree. Part of the research activities must be carried out at INESC TEC, as applicable.

5. DESCRIPTION OF THE WORK TOPIC:

Multi-Robot Autonomous Navigation in GNSS Denied Enviroments)

Autonomous navigation in GNSS-denied environments remains a major challenge for robotic systems due to localisation drift, perceptual degradation, limited situational awareness, and communication constraints. These challenges become particularly relevant in ocean environments, where reliable GNSS coverage may be unavailable or degraded, environmental conditions are highly dynamic, and autonomous platforms must operate for extended periods with limited external infrastructure.

This PhD scholarship will focus on developing cooperative autonomous navigation methods for teams of robotic platforms operating in GNSS-denied environments, with particular emphasis on applications in ocean and maritime settings. The research will investigate how multiple autonomous agents can cooperate by sharing complementary sensing and localisation information to improve navigation accuracy, robustness, and resilience.

The research will explore multimodal perception and localisation architectures that combine sensors such as cameras, inertial measurement units, acoustic sensing, radar, and inter-agent ranging technologies. Depending on the operational scenario, additional sensing modalities relevant to maritime environments may also be considered. Sensor fusion techniques will be developed to provide reliable localisation, mapping, obstacle detection, and situational awareness under challenging conditions, including changing illumination, adverse weather, wave-induced motion, limited visibility, and sparse environmental features.

A central research topic will be the development of distributed and cooperative localisation and SLAM frameworks. These methods will enable multiple autonomous platforms to exchange local observations, relative measurements, and map information in order to maintain consistent estimates of their positions and surroundings without relying on GNSS or fixed external infrastructure. The PhD will also investigate cooperative navigation strategies involving heterogeneous robotic systems, potentially including unmanned aerial vehicles (UAVs), autonomous surface vehicles (ASVs), and autonomous underwater vehicles (AUVs). Cooperation between aerial, surface, and underwater platforms can provide complementary sensing capabilities and enable persistent

monitoring, inspection, mapping, and exploration of complex ocean environments.

From a scientific and technological perspective, the proposed methods will be evaluated not only in terms of localisation and navigation accuracy, but also with respect to computational efficiency, scalability, communication requirements, robustness, and real-time feasibility. Algorithms will therefore be designed with deployment on embedded and edge computing platforms in mind, considering the energy and computational constraints of autonomous robotic systems.

Learning-based and self-supervised approaches may also be investigated to improve perception, sensor fusion, and adaptation to changing environmental conditions. Such methods can enable autonomous systems to adjust their navigation strategies to different sensing conditions and operational scenarios while reducing their dependence on extensive manually labelled datasets.

The proposed approaches will be validated through simulation and experimental trials involving realistic GNSS-denied scenarios, with a particular focus on ocean and maritime applications. Potential applications include marine environmental monitoring, offshore infrastructure inspection, search and rescue, oceanographic data collection, cooperative exploration, and persistent surveillance.

6. REQUIRED PROFILE

Doctoral research grants are intended for applicants who are enrolled, or who meet the necessary conditions to enrol, in a doctoral programme and who intend to carry out research activities leading to the award of the doctoral degree.

Applicant eligibility requirements:

The following may apply to this call:

- Nationals or citizens of other Member States of the European Union;
- Citizens of third countries;
- Stateless persons;
- Citizens granted political refugee status.

To apply, candidates must:

- Hold a Degree or Master's degree in (Electrical/Electronic and Computer Engineering) or a related field, with valorization in (Robotics and/or Autonomous Systems) or a related field, and have a scientific and professional CV that demonstrates a suitable profile for the activities to be carried out.
- Not have previously been awarded a doctoral grant or a doctoral grant in companies directly funded by FCT, regardless of its duration.
- Reside permanently and habitually in Portugal at the start date of the period of the work plan to be carried out abroad, should the proposed work plan include a period at foreign institutions (mixed grants). This requirement applies to both Portuguese and foreign citizens.
- Not hold a doctoral degree.

7. EVALUATION AND SELECTION PROCESS:

Selection criteria and corresponding weight: the evaluation focuses on the merit and suitability of the applicants, in line with Article 12 of the INESC TEC Grant Regulations.

This process takes into account the Candidate Merit (MC), which is evaluated according to four sub-criteria: Academic Qualifications (FA, with a weight of 50%), Scientific Publications (PC, 20%), Research Experience (EI, 20%) and Motivation Letter (CM, 10%).

Criterion A – Candidate Merit (MC), with a weighting of 100%

- Sub-criterion A1 – Academic Background (FA), weighting: 50%
- Sub-criterion A2 – Scientific Publications (PC), weighting: 20%
- Sub-criterion A3 – Research Experience (EI), weighting: 20%
- Sub-criterion A4 – Motivation Letter (CM), weighting: 10%

For the purposes of the decision on the award of grants, applicants will be ranked according to the weighted average of the scores obtained in each of the four sub-criteria, as expressed by the following formula:

$$\text{Final Score (CF)} = (FA \times 0,50) + (PC \times 0,20) + (EI \times 0,20) + (CM \times 0,10)$$

For tie-breaking purposes, applicants will be ranked based on the scores awarded to each evaluation sub-criterion, in the following order of precedence: Sub-criterion A1 – Academic Background (FA), Sub-criterion A2 – Scientific Publications (PC), Sub-criterion A3 – Research Experience (EI), Sub-criterion A4 – Motivation Letter (CM).

All sub-criteria are assessed on a scale from 0 to 100, taking into account merit, suitability, and preferential factors. Applicants with MC < 50 are excluded on the grounds of absolute merit.

Important notice for applicants with diplomas issued by foreign higher education institutions:

- Applicants holding diplomas issued by foreign higher education institutions may apply and will be assessed using the same criteria as applicants with diplomas issued by Portuguese institutions, provided that they submit, as part of their application, proof of recognition of the academic degrees and conversion of the final grade to the Portuguese grading scale, in accordance with the applicable legislation.
- Applicants with recognized foreign diplomas who do not submit proof of conversion of the final grade to the Portuguese grading scale will be assessed with the minimum score of 25 points under the Academic Background criterion.
- In any case, grant contracts with applicants holding diplomas issued by foreign institutions will only be executed upon submission of proof of recognition of the academic degrees and conversion of the final grade, as indicated above.

Preference factors:

The candidate's experience will be especially valued in one of the following research lines: Experience in Computer Vision, Cooperative Navigation, Robotics & Artificial Intelligence.

DISABILITY INCENTIVE

Candidates who present a degree of disability equal to or greater than 90% will benefit from an incentive (20) in Candidate Merit score (MC).

Candidates who present a degree of disability equal to or greater than 60% and less than 90% will also benefit from an incentive (10) the Candidate Merit score (MC).

In these cases, the bonified Candidate Merit score may 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:

Jury coordinator: Prof. Eduardo Silva, ISEP/UTP and INESC TEC
Full member: Prof. André Dias, ISEP/UTP and INESC TEC
Full member: Prof. Hugo Miguel Silva, INESC TEC
Substitute member: Dra. Sara Costa Freitas, INESC TEC
Substitute member: Dr Sen Wang, Imperial College

The Selection Jury will assess the applications according to the evaluation criteria established in this Call for Applications, considering the preference factors.

All members of the evaluation panel, including the Jury coordinator, undertake to comply with a set of responsibilities essential to the assessment process, namely the duties of impartiality, the declaration of any potential conflicts of interest, and confidentiality. Throughout the evaluation process, confidentiality is fully protected and ensured in order to safeguard the independence of all assessments produced.

For each application, the panel will produce a final evaluation form in which the rationale supporting the scores awarded for each evaluation criterion and sub-criterion is presented clearly, coherently, and consistently.

Minutes will be produced for the meetings of the evaluation panel, under the responsibility of all its members. The minutes and their annexes must necessarily include the following information:

- Name and affiliation of all members of the evaluation panel;
- Identification of all excluded applications and the respective justification (where applicable);
- Methodology adopted by the panel for cases considered exceptional (where applicable);
- Final Evaluation Forms for each applicant;
- Provisional ranking and classification list of applicants, in descending order of the final score, for all applications assessed by the panel;
- Conflict of Interest (COI) declarations from all members of the panel;
- Any delegation of voting rights and responsibilities due to justified absence (where applicable).

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 (rh-global@inesctec.pt) to the email address used by the candidate in the application, under the terms referred to in Article 13 of the Regulations for Studentships and Grants of INESC TEC.

8. FORMALIZATION OF APPLICATIONS/ APPLICATION ELIGIBILITY REQUIREMENTS:

It is mandatory, under penalty of exclusion from the call, to attach the following documents to the application:

1. Details from the identity card/citizen card/passport;
2. Motivation letter (in which the applicant clarifies the reasons for his/her application, presenting his/her academic and/or professional experience, and the suitability of his/her work plan, when applicable);
3. Two separate letters of recommendation, signed by the respective issuers. These letters should include the context of the applicant's academic and/or professional relationship with the person who recommends him/her, indicating a reference to this call;
4. Curriculum Vitae (must include the list of previous Grants, their type, beginning and end dates, funding entities and host institutions);
5. Certificate of qualifications, with the respective academic degree duly recognised in Portugal, mandatorily specifying the final grade and, where possible, the grades obtained in all courses completed.
 - Documents proving the awarding of academic degrees and diplomas, and the according recognition - in cases of academic degrees or diplomas granted by a foreign higher education institution - can be dismissed in the application process, and replaced by the applicant's declaration of honour, with the verification of said condition taking place during the grant's hiring stage.
 - Proof of recognition of academic degrees awarded by foreign higher education institutions and proof of conversion of the final grade to the Portuguese grading scale, or, alternatively, a sworn statement by the applicant confirming that they will obtain recognition of the foreign degree equivalent to a Portuguese bachelor's or master's degree by the end of the application deadline;
6. Declaration of compliance with the grant holder's duties.
7. Other supporting documents relevant to the evaluation process.

With regard to the eligibility requirements mentioned above, please note the following:

- In the case of academic degrees awarded by foreign higher education institutions, and in order to ensure the principle of equal treatment between applicants holding foreign and national degrees, recognition of those degrees and conversion of the respective final grade to the Portuguese grading scale are mandatory. Recognition of foreign academic degrees and diplomas, as well as conversion of the final grade to the

Portuguese grading scale, may be requested from any public higher education institution, or from the Directorate-General for Higher Education (DGES) (only in the case of automatic recognition). In this regard, applicants are advised to consult the DGES portal: <http://www.dges.gov.pt>.

- Only applicants who have completed the study cycle leading to the bachelor's or master's degree by the end of the application deadline will be admitted. If applicants do not yet have the official certificate of degree completion, a sworn statement confirming that they have completed the required qualifications by the end of the application deadline will be accepted. The award of the grant is conditional upon submission, at the contracting stage, of documentary proof of the academic qualifications held.

GRANT AWARD REQUIREMENTS

Research grant contracts are entered into directly with FCT.

For the purposes of contracting, should the grant be awarded, the following documents must be submitted mandatorily:

- a) Copy of civil identification, tax identification and, where applicable, social security document(s);¹
- b) Copy of the certificates of the academic degrees held;
- c) Proof of recognition of foreign academic degrees and conversion of the respective final grades to the Portuguese grading scale, where applicable;
- d) Work plan;
- e) Document proving enrolment and registration in one of the Doctoral Programmes;
- f) Declaration from the supervisor(s) assuming responsibility for supervising the work plan, pursuant to Article 5-A of the Research Grant Holder Statute (template to be provided by FCT);
- g) Document proving acceptance of the candidate by the host institution where the research activities will take place, ensuring the necessary conditions for their proper development, as well as compliance with the duties set out in Article 13 of the Research Grant Holder Statute (template to be provided by FCT);
- h) Updated document proving compliance with the full-time dedication regime (template to be provided by FCT).

The award of the grant is also dependent on:

- compliance with the requirements set out in this Call for Applications;
- the outcome of the evaluation;
- the absence of any unjustified breach of the grant holder's duties under a previous grant contract financed, directly or indirectly, by FCT;
- FCT's budget availability.

Failure to submit any of the documents required to complete the contracting process within 6 months from the date of notification of the conditional grant award decision will result in the lapse of the award and the closure of the process.

DEADLINES AND PROCEDURES FOR PRIOR HEARING, COMPLAINT AND APPEAL

Following notification of the provisional list of evaluation results, applicants have a period of 10 working days to submit comments under the prior hearing of interested parties, pursuant to Articles 121 and following of the Portuguese Administrative Procedure Code.

The final decision will be issued after consideration of the submissions made during the prior hearing. The final decision may be challenged by filing a complaint within 15 working days, or, alternatively, by lodging an appeal within 30 working days, both counted from the date of notification. Applicants who choose to submit a complaint must address it to the member of FCT's Board of Directors with delegated competence. Applicants who choose to lodge an appeal must address it to FCT's Board of Directors.

9. FINANCING

Research grants contracts are signed directly with FCT.

¹ The submission of these documents may, at the candidate's discretion, be replaced by their in-person presentation to the contracting authority, which shall retain the information contained therein insofar as it is necessary for the purposes of verifying the validity and ensuring the execution of the contract, including civil, tax, and social security identification numbers, as well as the validity of the respective documents.

Grant payments will commence after the candidate returns the grant agreement duly signed, which must be done within a maximum period of 15 working days from the date of receipt.

The grants awarded under this call will be funded by FCT with funds from the State Budget and, when eligible, with resources from the European Social Fund (ESF), through the Programme for the Development of Qualifications and Inclusion (PDQI).

10. RENEWAL OF GRANTS:

The renewal of the grant depends on an application submitted by the grant holder, within 60 working days prior to the renewal start date, accompanied by the following documents:

- a) evaluation reports by the supervisor(s) and by the host entity/entities on the mentoring of the grant holder's work and on the evaluation of his/her activities;
- b) updated document proving compliance with the exclusive dedication scheme;
- c) document proving the applicant's renewed acceptance in the study cycle required for the awarding of the PhD degree.

11. MENTION OF SUPPORT AND DISSEMINATION OF RESULTS

In all R&D activities directly or indirectly funded by the grant — namely, in all communications, publications, and scientific outputs, including theses, produced with the support provided by the grant — the financial support of FCT and the European Social Fund through the Programme for the Development of Qualifications and Inclusion (PDQI), must be explicitly acknowledged.

For these purposes, the documents relating to these activities must display the logos of FCT, MECI, FSE and the EU, in accordance with the graphic guidelines applicable to each operational programme.

The dissemination of research results funded under the RBI must comply with FCT's open access policies regarding data, publications, and other research outputs.

For all grants, and particularly for actions supported by EU funding — namely the European Social Fund — monitoring and control activities may be carried out by national and EU bodies in accordance with the applicable legislation. Supported fellows are required to cooperate and provide the requested information, including responding to surveys and evaluation studies in this area, even after the grant has ended.

12. NON-DISCRIMINATION POLICY AND EQUAL ACCESS

FCT and INESC TEC actively promote a policy of non-discrimination and equal access, so that applicants do not benefit from any privilege or benefit, or are deprived of any right, based on ancestry, age, gender, sexual orientation, marital status, family and/or economic situation, education, social origin or condition, genetic background, degree of disability, chronic illness, nationality, ethnic origin or race, country of origin, language, religion, political or ideological beliefs and union membership.

An applicant with a disability has preference in the event of equal ranking. Applicants must declare in the application form, under a sworn statement, their degree of disability and the type of communication/expression support to be used during the selection process, in accordance with the above-mentioned legislation.

13. BINDING LEGISLATION AND REGULATION

This call is governed by this Call for Applications, by the FCT Research Grants Regulation approved by Regulation No. 950/2019, published in Series II of the Diário da República on 16 December 2019, by the Research Grant Holder Statute approved by Law No. 40/2004 of 18 August, as amended and in force, as well as by the INESC TEC Grant Regulations and other applicable national and European Union legislation.

For more information, please check the Regulations for Studentships and Grants of INESC TEC and relevant annexes at www.inesctec.pt/bolsas



Ciência, Tecnologia
e Ensino Superior

