

CALL FOR 1 RESEARCH GRANT FOR A PHD STUDENT WITHIN THE SCOPE OF THE PROJECT RUGGED | Refª RUGGED-BIM-3

Application period: 28-Sep-2026 to 12-Oct-2026

The Institute of Systems and Robotics of the University of Coimbra (ISR-UC) opens a call for applications for one (1) Research Grant (BI) **for a PhD student** within the scope of the RUGGED project, with the reference 2023.16314.ICDT (<https://doi.org/10.54499/2023.16314.ICDT>), funded by the Portuguese Foundation for Science and Technology (FCT), I.P., in the following conditions:

Type of Grant: Research Grant for a PhD student (*Bolsa de Investigação para estudante inscrito em doutoramento*), in accordance with article 6 of the Regulation for Research Fellowships of the *Fundação para a Ciência e a Tecnologia* (FCT), I.P.

Number of positions: 1

Scientific Area: Electrical and Computer Engineering.

Admission requirements: The candidate must be enrolled in a PhD program in Electrical Engineering at a Portuguese Higher Education Institution.

Work plan: The selected candidate will support the RUGGED research team by contributing to the development, integration, and validation of perception and software components for robust robotic operation in extreme agroforestry and emergency-response environments. The work will focus on three main lines:

1. Sensor placement and resilient multi-sensor system design for field robotic platforms

- Design, integration, and evaluation of sensor placement on a field robotic platform equipped with 4D radar, FMCW LiDAR, spinning 360° LiDAR, IMU, and GPS-RTK;
- Support the simultaneous acquisition and comparison of redundant 3D sensing modalities for robust perception in low-visibility environments;
- Study system-level design choices to overcome the limitations of optical sensors in smoke, dust, fog, rain, vegetation occlusion, and low illumination conditions;
- Contribute to the definition of resilient perception architectures for outdoor robotic operation.

2. Machine learning-based resilient perception, segmentation, and metric-semantic mapping

- Develop and evaluate machine learning-based image segmentation methods for robust perception in extreme environments;
- Contribute to metric-semantic mapping approaches using multimodal sensor fusion;

- Investigate perception pipelines supporting safe human-in-the-loop and semi-autonomous operation;
- Assist in the design and validation of robust perception modules combining radar, LiDAR, RGB/RGB-D, inertial, and GNSS-RTK information.

3. Scientific dissemination

- Support scientific dissemination through the preparation of technical reports, datasets, software documentation, and open-source contributions;
- Contribute to publications in reputed journals in field robotics and to papers submitted to international conferences;
- Participate in experimental campaigns, field deployments, benchmarking activities, and result analysis.

The candidate will be expected to participate in experimental validation and field tests, supporting the acquisition, processing, and analysis of data collected in realistic outdoor environments.

Regime: The attribution of the fellowship does not generate or entitle a relation of a legal-labour nature, and the fellowship is undertaken in an exclusive dedication regime. The fellowship holder is awarded the Fellowship Statute of the ISR-UC, in its current wording, according to the Research Fellowship Holder Statute, and according to the Regulation for Research Fellowships of the FCT, both in their current wording.

Regulation: This call process shall comply with the applicable national legislation and regulations governing research grants, namely the Research Fellowship Holder Statute (*Estatuto do Bolseiro de Investigação*), approved by Law no. 40/2004 of 18 August, in its current wording, and the Regulation of Research Fellowships of the FCT (*Regulamento de Bolsas de Investigação*) in force whenever the grant is directly or indirectly funded by FCT, or, when applicable, the ISR-UC Regulation of Research Fellowships approved by FCT.

Location: The activities will take place at the Instituto de Sistemas e Robótica – Universidade de Coimbra.

Duration: 6 months, possibly **renewable**, by agreement between both parties. The grant cannot exceed the duration of the project.

Scientific orientation: Professor David Portugal and Professor Paulo Peixoto.

Financial conditions: The amount of the fellowship is **€ 1359.64**, in accordance with the table of values of the scholarships awarded directly or indirectly by FCT in Portugal (<https://www.fct.pt/wp-content/uploads/2026/03/Tabela-de-Valores-SMM-2026.pdf>), to be

paid by bank transfer, plus personal accidents insurance and social security (Seguro Social Voluntário, first level contributions) if the applicant chooses to subscribe.

Selection and attribution criteria: The selection methods to be used will be **a) Curricular Evaluation** ($0.3*a1 + 0.4*a2 + 0.3*a3$) with a valuation of **100%**. If the Jury deems it necessary, an interview may be carried out with the candidates placed in the first positions according to the ranking resulting from the above criteria. In this case, the final score will include the **a) Curricular Evaluation** ($0.3*a1 + 0.4*a2 + 0.3*a3$) with a valuation of 70% and the **b) Interview** ($0.5*b1 + 0.5*b2$) with a valuation of 30%.

a) Curricular Evaluation

Criterion a1. Absolute merit of the candidate **(30%)**.

Considering his/her educational background and research experience.

Criterion a2. Knowledge of tools and methodologies related to mobile robotics, 3D perception, sensor fusion, localization, mapping, and environmental digitization **(40%)**.

Demonstrated through coursework, research, or participation in R&D projects involving robotics, computer vision, SLAM, mobile sensing, sensor fusion, or related areas will be valued.

Criterion a3. Technical and programming skills **(30%)**.

Strong proficiency in Python or C++, and software development for robotics or mobile sensing applications. Familiarity with Linux-based development, ROS, sensor integration, real-time data processing, point-cloud processing, 3D reconstruction, computer vision, and mapping frameworks will be valued. Knowledge of scientific experimentation, field testing, data analysis, software documentation, and scientific writing will also be considered an asset.

b) Interview (should it occur)

Criterion b1. Motivation to work on the research topic and pursuing doctoral studies **(50%)**.

Criterion b2. Competence in the oral response to questions on the selection criteria subjects. Appropriate spoken English skills will be valued **(50%)**.

Jury responsible for selection:

- President: Professor Doctor David Bina Siassipour Portugal;
- 1st Member: Professor Doctor Paulo José Monteiro Peixoto;
- 2nd Member: Professor Doctor João Luís Ruivo Carvalho Paulo.

Formalization of application: Applications must be formalized by sending the following elements:

- (1) Letter of motivation — **mandatory**;
- (2) Curriculum Vitae (CV) — **mandatory**;

- (3) Copy of all the Certificate of Qualifications with the final average and preferably a complete list of the concluded courses/subjects/curricular units and their classifications — **mandatory**;
- (4) Proof of enrollment in a PhD program of a Portuguese higher education institution, or a Declaration on the Honor by the candidate that he/she will enroll in the course until the date of contract signature — **mandatory**;
- (5) A declaration under honour by the candidate listing any fellowships received, their type and duration — **mandatory if the candidate has received any fellowships in Portugal**.

Application submission: The applications shall be sent by email to gustavo.bongiovi@isr.uc.pt with CC: davidbsp@isr.uc.pt specifying in the subject: Refª RUGGED-BIM-3

Submission of applications: The application process is open from **28-September-2026 until 12-October-2026**.

Form of publicity / notification of the results: The results of the evaluation will be publicized at the ISR-UC website through a list ordered by the final grade obtained, with the candidates being notified by email. After the dissemination of the results through email, the candidates must consider themselves, from the outset, notified to, if they wish, express themselves in a prior hearing within a maximum period of 10 working days after that date. At the end of this period, the selected candidate must consider himself summoned to start the grant.

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