

## **ANNOUNCEMENT FOR THE AWARD OF A RESEARCH FELLOWSHIP**

Title: Research Fellowship for Bachelor's Degree ; 1 vacancy

**Reference:** 18/ECUM/CMAT/2026 - HipMoS4C

A call for applications is now open for the attribution of one grant of Research Fellowship for Bachelor's Degree within the scope of the I&D project **HipMoS4C: High-Performance Modelling and Simulations for companies**, at the University of Coimbra in partnership with the University of Minho (2023.16854.ICDT), funded exclusively by national funds through FCT, I.P., under the following conditions:

**Scientific Area:** Computer Science or Information Technology or Data Science

**Recipient category:** Graduates in Computer Science, Information Technology or Data Science who are enrolled in a degree-awarding course (integrated master's, master's or doctoral programme) or a non-degree-awarding course that forms part of the educational programme of a Portuguese higher education institution

Identify the type(s) of scholarship to be awarded:

- a) **Degree courses.**
- b) **Non-conferring degrees courses.**

### **Requirement for granting the fellowship:**

- The applicants may apply without prior registration in the course for which the fellowship is open. The requirement to enroll in a degree course or non-academic degree course will be verified on the date of contracting the fellowship;
- Only fellowships whose selected applicants present a valid proof of enrollment in a degree course or non-academic degree course will be contracted, according to the type of the fellowship, issued by a Higher Education Institution, indicating, respectively, the academic year or its duration (star and term).

**Applicants' eligibility:** Candidates who meet the conditions set out in Article 9 of the Research Grant Regulations, No. 950/2019, of 16-12-2019, of FCT I.P. are eligible.

Nationals or citizens of other European Union member states, third-country nationals, stateless persons, and citizens with political refugee status are eligible to apply for this competition.

### **Candidate eligibility requirements:**

- Applicants must hold, at the time of application, a bachelor's degree in the field specified in the call for applications or a related field;
- Preferred criteria: previous experience in the scientific field of the project and a solid understanding of: machine learning technologies (e.g. supervised learning) and libraries (e.g. scikit-learn); Data Mining

(i.e., data analysis, data pre-processing); the Python programming language; database technologies; reading, writing and speaking technical English

**Workplan and objectives to be achieved:**

The work to be carried out will involve the research and development of methodologies for anomaly detection and root cause analysis (RCA) in an industrial context, applied to manufacturing processes based on SMT (Surface-Mount Technology). The focus will be on exploring and improving existing machine learning models that have been trained to detect and classify defects in PCBs (Printed Circuit Boards), enhancing their interpretability and practical utility in supporting decision-making.

The project will be carried out collaboratively, guided by the following progressive objectives:

1. Analysis of the model and data associated with the SMT process.
2. Implementation and comparative evaluation of Explainable AI (XAI) techniques.
3. Identification of critical variables and relevant explanatory patterns.
4. Development of a prototype to support root cause analysis.

**Applicable legislation and regulations:** Research Fellow Statute (EBI), approved by Law n.º 40/2004 of August 18, in its current wording and FCT Research Fellowship Regulation, approved by Regulation n.º 950/2019, published in the Diário da República, 2nd series, of December 16, 2019, in its current wording, and Scientific Research Fellowship Regulation (RBIC) of the University of Minho, approved by order n.º 4998/2025, published in the Diário da República, 2nd series, n.º 81, of April 28, 2025 Amended and republished through amendment statement no. 634/2025/2, published in the Official Gazette, 2nd series, no. 132, of July 11.

**Host/Contracting institution and scientific supervision:** The workplan will be carried out in the Center of Mathematics, of School of Sciences of University of Minho, in Campus de Gualtar, Braga, under the scientific supervision of Gaspar José Brandão Queirós de Azevedo Machado, Assistant Professor from Mathematics Department, School of Sciences of University of Minho and Luís Aníbal Barbosa de Araújo, Development Engineer at Bosch Car Multimedia Portugal under the coordination of Thomas Walter Kahl, Director of Mathematics Center, School of Sciences of University of Minho.

**Fellowship duration:** The grant will take place for a period of 3 months, with a provisional starting date on the June of 2026. The fellowship grant may, eventually, be renewed up to the maximum limit of 7 months

**Amount of the research grant:** The amount of the grant corresponds to 1090,98 €/month, according to the table of values of the Research scholarship of the University of Minho, updated annually, as decided by the Management Board.

Payment is made on the 23rd of each month, through bank transfer to the Bank Identification Number of the fellow identified in the contractualization process.

**Other benefits:** Reimbursement of Voluntary Social Insurance, if the candidate chooses to receive it, corresponding to the 1st level of discounts (for research grants with a total duration 6 months or higher) and personal accident insurance.

**Exclusivity regime:** The grantee will perform the activities under exclusivity, as foreseen in article 5° of the Research Fellow Statutes and applicable regulations.

**Selection panel:** Stéphane Louis Clain (chair of the jury), Full Professor in the Department of Mathematics at the University of Coimbra, Maria Teresa Mesquita da Cunha Machado Malheiro (first standing member), Associate Professor in the Department of Mathematics at the Faculty of Sciences, University of Minho, Gaspar José Brandão Queirós de Azevedo Machado (second permanent member), Assistant Professor in the Department of Mathematics at the Faculty of Sciences, University of Minho, Rui Miguel Soares Pereira (alternate member), Associate Professor in the Department of Mathematics at the University of Minho. In the event of the Chair of the Jury being unable to attend, they shall be replaced by the first standing member, with the alternate member being appointed to replace the second standing member.

**Criteria and procedures for applications assessment and selection:** The applications assessment will focus on the candidate's Merit, following evaluation criteria, valued on a scale of 1 to 5 values<sup>1</sup>:

A. Candidate's merit (MC), weighted at 70%:

A.1: Academic record (reflecting the grades achieved in academic qualifications), weighted at 30%.

A.2: Personal curriculum vitae (reflecting academic, scientific and professional background), resulting from the assessment of the indicators referred to above as preferred factors for curriculum evaluation, with a weighting of 70%.

The score for the 'Candidate merit' criterion will then be obtained by applying the following formula:

$$\mathbf{MC = (A1 \times 0.3) + (A2 \times 0.7).}$$

Candidates ranked in the top 5 positions, who obtain a minimum score of 3.5 in the 'Candidate merit' criterion, will be admitted to the interview stage.

B. Candidate interview (ENT), with a weighting of 30%, according to the following sub-criteria:

B.1: Interpersonal skills, with a weighting of 33%;

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<sup>1</sup> If a second evaluation method is fixed – Interview, it may not have a weighting higher than 40%, according to n° 4 of article 11° of UMinho regulation; The jury shall define whether all candidates are interviewed or identify the criterion to be applied to a set of candidates to be interviewed and its valuation (for instance, selection of candidates ranked between the 1st and 4th position in the evaluation list of MC (candidate merit)). The jury may adjust the weightings (the assessment must be substantiated in as much detail as possible, in a clear and consistent manner).

B.2: Knowledge demonstrated in the field of the competition, with a weighting of 33%;

B.3: Motivation, with a weighting of 17%;

B.4: Language skills, with a weighting of 17%.

Each of these sub-criteria is assessed according to the following levels:

- High – 5 points;
- Good – 4 points;
- Sufficient – 3 points;
- Low – 2 points;
- Insufficient – 1 point.

The final interview score will be calculated using the following formula:

$$\mathbf{ENT = (B1 \times 0.33) + (B2 \times 0.33) + (B3 \times 0.17) + (B4 \times 0.17).}$$

The final score (CF) for candidates will then be calculated using the following formula:

$$\mathbf{CF = (MC \times 0.70) + (ENT \times 0.30).}$$

The selection panel may decide not to award the scholarship if none of the candidates achieves a final grade higher than 3.5.

**Note:** Applicants with degrees obtained abroad must present proof of recognition of qualifications in Portugal and conversion of the final classification obtained in them to the Portuguese classification scale or declaration under the terms indicated in the previous point. Candidates who do not comply with one of these provisions, the selection panel will assign “0” in the grade of the graduation and/or master course. Candidates will be evaluated on the remaining parameters.

**Application deadline and submission:** The call for applications is open for a period of 10 working days from the date of publication on the Euraxess portal.

Applications must be submitted by email to [bolsas@ecum.uminho.pt](mailto:bolsas@ecum.uminho.pt), indicating the reference number of the competition in the subject line, **18/ECUM/CMAT/2026 - HipMoS4C**. Only applications submitted within the established deadline and accompanied by the following documents will be accepted:

- a) Candidate's updated curriculum vitae;
- b) Certificates of the academic degrees obtained or, if applicable, the candidate's declaration of honor that he/she has completed the degrees required in the notice by the application deadline (not applicable to research initiation grants).

For degrees obtained abroad, the record of recognition of the academic degrees and record of the conversion of the respective final classification to the Portuguese classification scale must be presented, or, alternatively, a declaration of honor from the candidate.

This declaration must attest to facts that occurred prior to the application. In the event of a discrepancy between the information contained in the declaration and the documentation submitted for the purposes of contracting the scholarship, only the information contained in the latter will be considered. If it is found that the documents proving the academic degree and diploma, or their recognition under the terms of Decree-Law n. ° 66/2018, of August 16, do not correspond to the classifications awarded in the assessment of the academic career and may consequently alter the candidate's ranking, the scholarship will not be contracted;

- c) Motivation Letter.
- d) Any other documents the applicant considers relevant to the assessment process

**Form of publication/notification of results:** The results of the evaluation are published in a single list by final score obtained, posted in a visible and public place in the host unit, as well as by email to all candidates, attaching, for this purpose, the minutes of the jury's deliberations, within a maximum period of 90 working days from the deadline for submission of applications.

Candidates are informed, at a preliminary hearing, in accordance with Articles 121 and 122 of the Administrative Procedure Code, of the likely outcome of the final decision, and may comment within 10 working days of this notification.

(The waiver of the hearing for interested parties must be justified in accordance with Article 124 of the CPA)

An appeal may be lodged against the final decision within 15 working days, or an appeal may be lodged with the highest executive body of the funding entity within 30 days, both after the respective notification (Article 12(n°6) of the FCT Research Grant Regulations).

Within 10 working days of notification of the grant award, the applicant must declare their acceptance in writing. In case of non-acceptance, the next highest ranked applicant will be notified immediately.

**Constitution of a selection reserve list:** The applicants ranked in the next positions on the ordered list will be included in a selection reserve list, which can be used until 31/12/2026.

**Fellowship contractualization:** The scholarship is awarded through the signing of a contract between the University of Minho and the scholarship recipient, in accordance with point 2.4 of the Rules for the Award and

Management of Scholarships

[https://www.fct.pt/wpcontent/uploads/2022/03/Normas\\_de\\_Atribuicao\\_de\\_Bolsas\\_2021.pdf](https://www.fct.pt/wpcontent/uploads/2022/03/Normas_de_Atribuicao_de_Bolsas_2021.pdf) and the draft contract in Annex II of the University of Minho's Scientific Research Scholarship Regulations.

The contract can only be signed after receipt of all the documentation required for the type of scholarship, which must occur within a maximum period of 6 months, including proof of academic degrees or diplomas, as well as enrollment in non-degree study cycles or courses, as applicable.

Once all the documentation has been received, the contracting entity has 60 working days to sign the scholarship contract. Once received by the scholarship holder, the contract must be returned, duly signed, within 15 working days.

**Term and cancellation of fellowship contracts:** Without prejudice to the other grounds laid down in the University of Minho's Scientific Research Scholarship Regulation and in the Research Fellow Statute, the scholarship will cease on completion of the contracted work plan, as well as on expiry of the period for which it was granted or renewed.

The **final report** must be submitted to the scientific advisor, in accordance with the defined objectives and evaluation criteria, no later than 60 working days after the end of the scholarship and must be drawn up in accordance with Annex I of the Regulations of the University of Minho.

**Non-discrimination and equal access policy:** Universidade do Minho actively promotes a policy of non-discrimination and equal access, so that no candidate may be privileged, benefited, harmed or deprived of any right or exempt from any duty due, namely, to ancestry, age, sex, sexual orientation, marital status, family status, economic situation, education, social origin or condition, genetic heritage, reduced working capacity, disability, chronic illness, nationality, ethnic origin or race, territory of origin, language, religion, political or ideological convictions and trade union membership.

Note: Under FCT rules (point 9), it is “expressly mandatory to use the FCT logo and, when applicable, the logos of the European Union and the Operational Program, following the graphic standards available on the websites of the respective Operational Programs.”

## **Declaration of Honor**

### **Academic qualifications**

I, (full name), candidate for the vacancy for the award of a (type of scholarship), within the scope of the project (name or reference of the project), published on the Euraxess portal, with the reference (ref. notice), declare on my honor that I have completed the academic degree of (academic degree), qualifying for the type of scholarship in the competition, namely the course (designation), by the (University conferring the degree), on the date XX/XX/XXXX, with a final average of XXXXX values on the YY scale.

As it is not possible for me to present proof of qualifications until the end of the competition, I declare that I undertake to present the aforementioned certificate at the conclusion of the scholarship contract, in the event that I am selected for the vacancy in the competition.

As this is true, I hereby date and sign this declaration.

(Place), (date).

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(full name)

NOTE: The declaration may only attest to facts that occurred prior to the application.

In the event of a discrepancy between the information contained in the declaration and the documentation submitted for the purpose of contracting the scholarship, only the information contained in the latter will be taken into account.

## Declaration of Honor

I, (full name), bearer of identification document number (XXXX), candidate for a research grant (type of grant), within the scope of the project (name or reference of the project), published on the Euraxess portal, with the reference (ref. call for proposals), declare on my honor that (I have not received any research grants to date / I have received the following research grants) under the Research Grant Holder Statute.

University	Financing Entity	Project	Type of Grant	Duration	Start	Term

As this is true, I hereby date and sign this declaration.

(Place), (date).

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(full name)