ANNOUNCEMENT FOR THE AWARD OF A RESEARCH FELLOWSHIP

Title: Research Fellowship; 4 vacancy

Reference: CALG_AMALIA_2025_26_(4)

A call for applications is now open for the attribution of 4 research grants within the scope of the I&D project AMALIA - Creation of the Large-Scale Language Model of the Portuguese Language of Portugal (Automatic Multimodal Language Assistant with Artificial Intelligence), reference AMALIA, inserted in measure RE-C05-i08 of the Recovery and Resilience Program, through the Foundation for Science and Technology - FCT, under the following conditions:

Scientific Area: Engineering, Biomedical Engineering (Medical Informatics), or related areas

Recipient category: Bachelors, enrolled in the course:

a) **Degree courses:** enrolled in integrated master's degree/master's degree.
b) **Non-conferring degrees courses:** enrolled in non-degree 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:

- Candidates must have, at the time of application, a bachelor's degree in Computer Engineering, Biomedical Engineering, Information Systems, Linguistics, Computer Science, Artificial Intelligence or related areas that demonstrate a solid computational base;
- Candidates enrolled in a non-degree course: Candidates who exceed, with the conclusion of the scholarship contract in question, including the renewals provided for in the notice, an accumulated period of two years in this type of scholarship, consecutive or interpolated, cannot benefit from the scholarship in competition;
- Candidates enrolled in a degree-granting course: Enrollment in a master's/integrated master's degree in the areas of Computer Engineering, Biomedical Engineering – Medical Informatics, Digital Humanities, Computational Linguistics, Data Science, Artificial Intelligence, or related courses with a strong computational and research component;
- Proof of academic qualifications completed by the deadline for applications is required, in the contracting phase, including those resulting from academic degree recognition processes.
- Preferred factors:
    - In-depth knowledge of Deep Learning and LLMs: practical knowledge with Deep Learning architectures, and in particular, with Large Language Models (LLMs). Knowledge is valued both in advanced prompt engineering techniques (e.g., few-shot learning, chain-of-thought prompting) and in fine-tuning and adaptation of models (e.g., LoRA, PEFT) for specific tasks;
    - Relevant knowledge: Understanding and/or proven knowledge in areas such as Education and Technology (EdTech), Human-Computer Interaction (HCI), Natural Language Processing (NLP), or Applied Artificial Intelligence. Demonstrable projects (e.g., GitHub repositories, publications, prototypes) that show the ability to apply this knowledge in practice will be highly valued;

- Research and Innovation Skills: Demonstration of intellectual curiosity, proactivity in solving complex problems and the ability to work independently and in a team in an R&D environment;
- Communication Skills: Good oral and written communication skills, essential for the preparation of technical reports, scientific articles and presentations.

Workplan and objectives to be achieved:

The work plan will focus on R&D activities aimed at consolidating the scientific training of the grant holder through the development of research work. The scientific work to be developed consists of:

1) Development of Multi-Agent Architectures for Co-creation and Adaptation of Content
   a) Investigate and implement agents who act as instructional design assistants. The system must be able to receive topics or drafts from the teacher and generate structured materials (e.g., PowerPoint presentations, outlines, summaries) adjusted to the teacher's pedagogical style.
   b) Develop agents specialized in the "re-contextualization" of content. These agents must ingest the teacher-approved source material and dynamically rewrite or reillustrate it (using LLMs and image generation models) to match the student's tastes (e.g., turn a physics problem into a comic book narrative or a football game statistic).
   c) Create interfaces that allow the teacher to validate the base content (ensuring scientific rigor) and students to provide feedback on the thematic adaptation, refining the personalization process.
2) Modelling Interest Profiles and Teaching/Learning Styles
   a) Develop models to capture teacher preferences (level of formality, visual complexity, preferred lesson structure) so that the "zero draft" of the generated material is as useful as possible.
   b) Create mechanisms that do not infringe European legislation to identify and map students' passions and hobbies (e.g., sports, pop culture, music, video games) and their cognitive styles, using this data as "seeds" (prompts) for the personalization of the material.
   c) Ensure that the adaptation to the student's interests does not misrepresent the pedagogical concept (e.g., ensure that a football metaphor correctly explains the underlying concept).
3) Dynamic Narrative Generation and Content Skinning
   a) Investigate the use of Generative AI to alter not only the text, but the visual aesthetics of materials. For example, generate slides where the icons and backgrounds reflect the theme "Superheroes" for Student A, and the theme "Football" for Student B, while maintaining the same structural information.
   b) Implement game elements that adapt to the generated narrative (e.g., if the theme is football, the "points" are "goals"; if it is a comic, they are "missions accomplished").
   c) Develop metrics and guardrails in LLMs to ensure that, regardless of the thematic "cover" placed on the content, the learning objectives defined by the teacher remain unchanged.
4) Evaluation of Personalization Effectiveness and Cognitive Load
   a) Evaluate whether the system effectively reduces the teacher's class preparation time and whether the quality of the PowerPoints/materials generated is satisfactory.
   b) Measure, through comparative studies, whether the consumption of material "covered" with the student's personal tastes increases motivation, knowledge retention and time dedicated to study.
   c) Check for hallucinations or information loss during the process of transforming the base content to personalized content.
5) Documentation and Scientific Dissemination
   a) Document the prompt architectures and agent workflows used for content transformation.
   b) Produce scientific articles focused on the extreme personalization of teaching materials via Generative AI and the role of the teacher as a curator of adaptive content.

Applicable legislation and regulations: Research Fellow Statute (EBI), approved by Law n°. 40/2004 of August 18, in its current wording and FCT Research Fellowship Regulation, approved by Regulation n° 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° 4998/2025, published in the Diário da República, 2nd series, n° 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 ISLab laboratory (Synthetic Intelligence Laboratory), Department of Informatics, Algoritmi Centre, School of Engineering of the University of Minho, located

at the Gualtar Campus, under the scientific guidance and coordination of Paulo Jorge Freitas de Oliveira Novais, Full Professor of the Department of Informatics of the School of Engineering of the University of Minho.

Fellowship duration: The grant will take place for a period of **4 months**, with a provisional starting date on **February 2026**. The fellowship grant may, eventually, be renewed up to the maximum limit allowed by the project and/or applicable legislation.

Amount of the research grant: The amount of the grant corresponds to 1040,98 €/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 contratualization 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 5º of the Research Fellow Statutes and applicable regulations.

Selection panel
President: Paulo Jorge Freitas de Oliveira Novais, Full Professor of the Department of Informatics of the School of Engineering of the University of Minho
Effective members: José Manuel Ferreira Machado, Full Professor of the Department of Informatics of the School of Engineering of the University of Minho and Francisco Supino Marcondes, Assistant Professor of the Department of Informatics, School of Engineering of the University of Minho
Alternate Members: Dalila Alves Durães, Assistant Professor at the Department of Informatics of the School of Engineering of the University of Minho and José Alberto Lencastre Freitas Borges de Araújo, Associate Professor at the Department of Curriculum Studies and Educational Technology of the Institute of Education of the University of Minho

The first effective member will substitute the President of the selection panel in case of impediment, being nominate the first substitute member in the place of the first effective 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 0 to 20 values:

- **A.** Applicant Merit - AM (100%)
  - **A.1:** Academic path, which reflects the area of training of the course and the grades of the academic degrees (using tables A.1.1. and A.1.2. defined in the minutes of criteria), with a weighting of **50%**;
    - **A.1.1:** Area of training of the course, with a weighting of 50%;
    - **A.1.2:** Grades of academic degrees, with a weighting of 50%;
  - **A.2:** Personal curriculum (which reflects the scientific and professional background), with a weighting of **40%;**
  - **A.3:** Motivation letter, with a weighting of **10%**.

The final classification of the applicant's merit with the achieved through the following formula:

AM = **(A.1 x 0,5) +(A.2 x 0,4) +(A.3 x 0,1)**

Since A.1 = (A.1.1 × 0.5) + (A.1.2 × 0.5)

If the jury does not consider itself able to decide using the method indicated in A (AM), it may choose to conduct an Interview. In this case, AM will have a weighting of 70% and the candidates classified in the first 5 positions, who obtain the minimum classification of 12 in the AM, will be admitted to the Interview phase, with the Jury evaluating the following sub-criteria:

- **B.** Interview, ENT (**30%**):
  - **B.1:** Interpersonal skills: **30%**;

B.2: Demonstrated knowledge in the area in the competition **40%**;
B.3: Motivation **20%**;
B.4: Language skills **10%**.

The Interview classification (ENT) will be obtained by applying the following formula:

ENT = (B.1. × 0.3) + (B.2. × 0.4) + (B.3. × 0.2) + (B.4. × 0.1)

The final classification (CF) of the Candidate's Merit (MC) and Interview (ENT) will be obtained by applying the following formula:

CF = (MC × 0.7) + (ENT × 0.3)

Candidates who obtain a final classification of less than 12 points will be excluded from the competition.

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 from **29/12/2025** till **14/01/2026**.

Applications must be submitted by email to **recrutamento@algoritmi.uminho.pt**, indicating the reference number of the competition in the subject line. Only applications submitted within the established deadline and accompanied by the following documents will be accepted:

- Candidate's updated *curriculum vitae*;
- 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);

Form of publication/notification of results: The results of the evaluation are published in a single list, 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.
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.

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 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.

Universidade do Minho
Escola de Engenharia

CENTROALGORITMI

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)