

## ANNOUNCEMENT FOR THE AWARD OF A RESEARCH FELLOWSHIP

### Research Fellowship - 1 vacancy

### 40/ECUM/CMAT/2024 - IA-Olivais

A call for applications is now open for the attribution of 1 grant of integrated master's or master's degree within the scope of the R&D project “Inteligência Artificial na Otimização da Rega para Olivais Resilientes às Alterações Climáticas” of the Centre of Mathematics of University of Minho, with reference PL24-00057, financed through Promove Program by “La Caixa” Foundation | BPI and the Portuguese Foundation for Science and Technology (FCT), under the following conditions:

**Scientific Area:** Mathematics

**Recipient category:** It is intended for carrying out R&D activities by students enrolled in degree courses as integrated master's or master's in mathematics or similar areas.

#### **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 the academic services of the Higher Education Institution, indicating, respectively, the academic year or its duration (start and term).

#### **Candidates profile:**

- a) *Hold a Bachelor's degree in Mathematics.*

**Applicants eligibility:** Applicants must comply with the eligibility conditions laid down in article 9 of the Research Grants Regulation of the Portuguese Foundation for Science and Technology (2019).

#### **Workplan and objectives to be achieved:**

Project Goals:

1. Creation of a numerical database from soil sensors and weather station data;
2. Identification, extraction, and processing of available data;
3. Development of an AI model for long-term weather forecasting;
4. Development of an AI model for long-term soil condition forecasting;
5. Explainability of the models;

6. Development of a simple and intuitive application for mobile and desktop devices to use the models from points 3 and 4.

Taks:

1. State of the art review on irrigation problems in olive groves using AI;
2. Statistical analysis of field-collected data;
3. Training an AI model for weather condition forecasting;
4. Training an AI model for soil condition forecasting;
5. Development of a graphical interface;
6. Explainability of AI models;
7. Writing the report and conclusion.

**Applicable legislation and regulations:** Research Fellowship Holder Statutes, approved by Law no. 40/2004 of August 18, in its current version published by Decree-Law no. 123/2019 of august 28; Regulation of Scientific Research Fellowships of the University of Minho (RBIC), published in “Diário da República”, 2nd serie, no. 119, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of 22-06-2021 and Regulation of Research Studentships and Fellowships (RBI) of the Foundation for Science and Technology, I.P. - in force.

**Host/Contracting institution and scientific supervision:** The workplan will be carried out in the Centre of Mathematics of University of Minho, located in the Campus de Gualtar, 4710-057, Braga, under the scientific supervision of the Doctor Cecília Eduarda Coelho Machado da Cruz Martins, Integrated Member of the Centre of Mathematics of University of Minho

**Fellowship duration:** The grant will take place for a period of 3 months, with a provisional starting date on February of 2025. The fellowship grant may eventually be renewed up to 3 months.

**Amount of the research grant:** The value stipend (Monthly Maintenance Allowance) is **990,98€** per month, in accordance with the stipends values published by the Foundation for Science and Technology (FCT I.P.) in the country (Annex I – Monthly Stipends Values for the maintenance allowances of the [FCT Regulation for Research Studentships and Fellowships](#)) and Annex II of the Regulation of Scientific Research Fellowships of the University of Minho (RBIC), published in “Diário da República”, 2nd serie, no. 119, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of 22-06-2021, according to the applicable regulation.

Payment is made on the 23st 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 Security (Social Security contributions), 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:** Susana Margarida Ferreira Sá Faria, Professora Associada do Departamento de Matemática da Escola de Ciências da Universidade do Minho

**First effective member:** Maria Fernanda Pires da Costa, Professora Associada do Departamento de Matemática da Escola de Ciências da Universidade do Minho

**Second effective member:** Carolina Paula Baptista Ribeiro, Professora Assistente do Departamento de Matemática da Escola de Ciências da Universidade do Minho

**First substitute member:** Gaspar José Brandão Queirós Azevedo Machado, Professor Auxiliar do Departamento de Matemática da Escola de Ciências da Universidade do Minho

**Second substitute member:** Flora José Rocha Ferreira, Professora Auxiliar Convidada do Departamento de Matemática da Escola de Ciências da Universidade do 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 1 to 5 values (or another scale)<sup>1</sup>:

**Applicant Merit - AM (100%):**

- a) Personal curriculum (considering professional and scientific background), with a weighting of 50%
- b) Motivation letter, with a weighting of 40%;
- c) Machine Learning/Deep Learning experience (through projects, courses, competitions), with a weighing ting of 10%.

**The academic degrees and diplomas documents, or their respective recognition when awarded by foreign higher education institutions are not mandatory in the application phase, being replaced by a declaration of honor of the candidate with the contents of academic results. The documents of academic qualification or respective recognition will be required in the contracting phase and must attest facts that occurred on a date prior to the application.** In situations of divergence between the information contained in the declaration and the documentation submitted for contracting the grant,

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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 no. 1 of article 12º 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 interview and its valuation (*for instance, selection of candidates ranked between the 1s and 4<sup>th</sup> position in the evaluation list of APCC*).

only the information contained in the latter will be considered. If the documents proving the ownership of the academic degree and diploma, or the respective recognition under the terms of Decree-Law No. 66/2018, of August 16, do not correspond to the classifications awarded in the evaluation of the academic path, which can change the candidate's ranking, the fellowship won't be contracted.

**Disclosure of results:** The provisional results of applications, based in the selection panel minutes, will be sent to the applicants by email until 90 working days from the applications deadline.

If case of unfavourable results, the candidates have a period of 10 working days to comment, if desired, in a prior hearing to interested parties, pursuant to articles 121 and 122 of the Code of Administrative Procedure (DL no. 4 / 2015 of January 7th).

**Complaint and appeal procedures:** The final results of the evaluation will be published through an ordered list (*alphabetically, by final grade obtained*), posted in a visible and public place of the host unit, as well as by email to all applicants, enclosing for that purpose, the minutes of the jury deliberations.

The selected candidate must inform its willingness to accept the grant, in writing. In case of rejection, the fellowship will be awarded to the next candidate in the ordered list of applicants.

The final decision can be contested within 15 working days, by sending to the President of the jury the corresponding claim. Interested parties may also submit an optional hierarchical appeal, in the terms of the number 3 of article 13 of Regulation of Scientific Research Fellowships of the University of Minho (RBIC).

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

Applications must be formalized by sending an application letter with the following documents: curriculum vitae; qualifications certificate or declaration of the applicant; motivation letter; statement proving that meets the conditions for the grant typology, according to the application requirements; other documents important to the evaluation process).

Applications must be sent by email to [bolsas@ecum.uminho.pt](mailto:bolsas@ecum.uminho.pt), indicating the reference of the call for applications in Subject: 40/ECUM/CMAT/2024 - IA-Olivais. Applications submitted by other means will not be accepted.

**Fellowship contractualization:** The fellowship will be attributed by signing a fellowship contract between the University of Minho and the fellow, accordingly with the contract minute (annex IV of the Regulation of Research Fellowships of the University of Minho (RBIC), published in *Diário da República, 2nd Série, no. 119*, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of 22-06-2021, as indicated in 2.4 of the FCT document: "[Rules for Granting and Management of Grants within the scope of R&D projects, including infrastructure projects, the multi-annual financing program for R&D units and other FCT financing instruments \(Version 2021\)](#)".

The contract may only be concluded after all the documentation required is collected, which must take place within a maximum period of 6 months [including evidences of the academic degrees or diplomas and enrolment in degree courses or non-conferring courses, depending on the type of scholarship].

Once all the documentation has been received, the contracting entity has a period of 60 working days to conclude the scholarship contract. Once received, the fellow must return the contract duly signed within 15 working days.

The activities under the fellowship contract can only be begun after proper authorization by the contracting entity.

**Term and cancellation of fellowship contracts:** Without prejudice to the other causes provided in the fellowship regulations (FCT and UMinho) and in the Statute of the Research Fellow, the fellowship ends with the completion of the work plan, as well as with the expiration date for which it was granted or renewed.

At the end of the fellowship, the grantee is obliged to present a Final Report of the work carried out, in accordance with the objectives and evaluation criteria defined with the scientific advisor, within 30 days after the end of the scholarship.

The **final report** must be prepared in accordance with Annex I of the Scientific Research Fellowships Regulation of the University of Minho (RBIC), published in *Diário da República, 2nd Série, no. 119*, through dispatch no. 6524/2020 of 22-06-2020, ratified by ratification declaration no. 447/2021 of 22-06-2021.

## 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.

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

(Place), (date).

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(full name)