

## ANNOUNCEMENT FOR THE AWARD OF A POST-DOCTORAL RESEARCH FELLOWSHIP

### Post-Doctoral research Fellowship - 1 vacancy

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

A call for applications is now open for the attribution of 1 grant of Post-Doctoral research fellowship within the scope of the R&D project “Inteligência Artificial na Otimização da Rega para Olivais Resilientes às Alterações Climáticas” from the Centre of Mathematics of University of Minho, with reference PL24-00057, financed by the Promove program from Fundação “la Caixa” | BPI and the Portuguese Foundation for Science and Technology (FCT), under the following conditions:

**Scientific Area:** Mathematics

**Recipient category:** The BIPD are intended for doctorates in the area of Mathematics, who cumulatively meet the following requirements:

- Holders of a PhD degree obtained in the three years prior to the date of submission of the fellowship application\*\*\*;
- Do not exceed, with the conclusion of the contract in question, including possible renewals, a cumulative period of three years in this type of fellowship, consecutive or interpolated.

Candidates who do not cumulatively meet the requirements described will be excluded.

\*\*\*Documents proving the ownership of academic degrees and diplomas, or their respective recognition when they have been awarded by foreign higher education institutions, when applicable for the type of scholarship in the call for applications, may be waived at the application stage, being replaced by declaration of honor of the candidate, with the verification of this condition occurring only in the phase of contracting the scholarship. This statement 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 the purpose of contracting the grant, only the information contained in the latter will be considered. If it is verified that 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 and may, consequently, change the candidate's ranking, the fellowship contracting will not be done.

**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:**

The goals of this workplan are: (1) start and automate the data collection on the field; (2) evaluate and identify the most appropriate neural network architectures to be used with the data collected. To achieve these goals the following planification will be followed:

1. Literature review
2. Data collection:
  - Evaluation of the variables of interest for the problem at hand, and identification of the adequate sensors to capture these variables.
  - Installation and automatization of the data collection from the sensors.
3. Data organization and preprocessing focused on neural network training:
  - Data analysis and development of a framework to preprocess and organize it as to be used for training neural networks.
  - Evaluation of neural network architectures to be used with the type of data collected and available.
4. Documentation of steps 1 and 2.

**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 series, 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 Professor Doctor Maria Fernanda Pires da Costa, Associate Professor of the Department of Mathematics, School of Sciences, 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 (non-renewable).

**Amount of the research grant:** The value stipend (Monthly Maintenance Allowance) is 1801,00 euros, 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 series, 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: Maria Fernanda Pires da Costa, Associate Professor of the Department of Mathematics, School of Sciences, University of Minho

**Effective members:**

Susana Margarida Ferreira Sá Faria, Associate Professor of the Department of Mathematics, School of Sciences, University of Minho

Carolina Paula Baptista Ribeiro, Auxiliar Professor of the Department of Mathematics, School of Sciences, University of Minho

**Substitute members:**

Gaspar José Brandão Queirós Azevedo Machado, Auxiliar Professor of the Department of Mathematics, School of Sciences, University of Minho

Flora José Rocha Ferreira, Invited Auxiliar Professor of the Department of Mathematics, School of Sciences, 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 3 evaluation criteria, valued on a scale of 1 to 5 values:

Applicant Merit - AM (100%):

- a) Personal curriculum (considering professional and scientific background), with a weighting of 50%;
- b) Relevant and current research in Machine Learning/Deep Learning. Scientific articles published on: neural networks, time-series, optimization, eXplainable AI, climate AI, with a weighting of 30%;
- c) Publications in a top tier A\* venues, for example ICLR, NeurIPS, ICML, CVPR, AAAI, IJCAI, and datasets for neural network training, with a weighting of 20%.

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, 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, addressed to the Pro-Rector for Research and Projects, Professor Sandra Paiva.

**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, mandatorily, by sending an application letter accompanied by the following documents: *curriculum vitae and certificate of qualifications or declaration of the candidate (if applicable)*.

Applications must be sent by email to **bolsas@ecum.uminho.pt**, indicating the reference **41/ECUM/CMAT/2024 - IA-Olivais** of the call for applications in Subject. 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 doctoral degree or its recognition in Portugal, under Decree-law no. 66/2018 of august 16th].

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 began after proper authorization by the contracting entity.

**Term and cancellation of fellowship contracts:** Without prejudice to the other causes provided 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.