

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

**Title:** *Post-Doctoral Research Fellowship- INSPIRE; 1 vacancy*

**Reference:** 2023.13876.PEX\_BIPD\_01/2026-CMEMS

A call for applications is now open for the attribution of one (1) grant of Post-Doctoral Research Fellowship within the scope of the R&D project “**INSPIRE: AI-based Smart Exoskeletons for Elder Mobility and Fall Prevention**”, **2023.13876.PEX**, at the Center for MicroElectroMechanical Systems (CMEMS-UMinho), financed by national funds through the Fundação para a Ciência e Tecnologia, I.P. (FCT), by IC&DT Projects in All Scientific Domains 2023 Program, under the following conditions:

**Scientific Area:** Biomedical Engineering

**Recipient category:** The BIPD are intended for doctorates in the areas of Biomedical Engineering.

### **Admission Requirements:**

- Hold a doctoral degree obtained within three years prior to the date of submission of the scholarship application;
- To have carried out the research leading to the award of the doctoral degree in an organization other than the one hosting the scholarship; \*
- Not exceed, with the conclusion of the contract in question, including possible renewals, an accumulated period of three years in this type of scholarship, consecutive or interpolated;
- Not to have previously held a post-doctoral scholarship contract with the same I&D Unit. Once the BIPD contract has ended, no new scholarship contract can be signed between the same host organization and the same scholarship holder.

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

\* This includes different I&D Units, even if they are based in the same Organic Unit (UOEI) of UMinho (according to nº 4 and 5 of the Article 7º of the FCT I.P. Research Grants Regulations in force).

Other requirements: area of specialization in Medical Electronics. Relevant experience in the area of physical-motor robotics; clear demonstration of technical-scientific skills in collecting and analyzing movement data; experience in work involving robotic devices; knowledge of electromyography signals; experience in control strategies and machine learning techniques for predicting motor parameters.

### **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:**

It is essential, under penalty of not being admitted to the competition, to attach the following documents to the application:

- The candidate's 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, the candidate's declaration of honor (not applicable to research initiation grants);
- Motivation letter.

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

The BIPD are restricted in time in order to stimulate scientific employment and the use of researcher contracts as a rule for hiring them - according to n° 2, article 7° of the FCT I.P. Research Grants Regulation (2019).

The work plan will be carried out by a single postdoctoral fellow, ensuring integration between technological development, experimental validation, and user involvement. The fellow will be primarily responsible for the technological and algorithmic development of the system. The fellow's work will focus on improving existing computational tools and optimizing the parameters of the best-performing approach for detecting fall-risk situations during assisted walking with the team's commercial exoskeleton.

The fellow will also be responsible for developing artificial intelligence tools for slip detection and early fall-risk indicators, with a particular emphasis on optimizing algorithms for locomotion mode classification and real-time fall-risk assessment. The fellow will further ensure the integration of these tools into the commercial exoskeleton and the development of a balance recovery control system, using ROS2, Dynamic Movement Primitives (DMPs), Central Pattern Generators, and Reinforcement Learning.

The tasks of the fellow will include the implementation, testing, and technical validation of the algorithms and control strategies, as well as the associated technical documentation of the developed system. The fellow will also contribute to the statistical analysis of data related to algorithm performance evaluation and will participate in the preparation and revision of scientific publications and technical reports within the scope of the project.

In addition, the fellow will take responsibility for user-centered studies, the biomechanical component, and the project's clinical and ethical framework. This includes identifying user requirements by coordinating the establishment of the User and Stakeholder Panel and organizing webinars, interviews, and other participatory activities to gather and systematize the needs and expectations of future users. The fellow will also conduct biomechanical studies aimed at analyzing biomechanical responses to slips, including experimental planning, data collection, and processing of gait data from volunteers.

The fellow will also be responsible for preparing the documentation required for obtaining ethical approval for the clinical study involving the commercial exoskeleton, including risk analysis and management, as well as the definition of safety measures in accordance with applicable ISO standards. Furthermore, the fellow will oversee the statistical analysis of experimental data and the interpretation of results from a biomechanical and functional perspective. The fellow will contribute to the preparation and revision of scientific articles, results reports, and methodological documentation associated with experimental protocols.

The fellow will also support the overall coordination of research activities, monitor potential deviations from the work plan, and contribute to the management of project resources. A management system will be implemented to ensure compliance with all requirements necessary to achieve the project deliverables. The fellow will also contribute to scientific dissemination activities, including the production of publications, final reports, and technical documentation of the developed system.

**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 ALGORITMI Center, University of Minho, based on Campus de Azurém, Guimarães, under the scientific guidance of Professor Ana Maria Alves Coutinho Rocha and Professor Cristina Manuela

Peixoto Santos, and coordination of Professor Paula Fernanda Varandas Ferreira, Diretor of ALGORITMI Center.

**Fellowship duration:** The grant will take place for a period of 3 months, with a provisional starting date on the april of 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 1851 €/month, according to the table of FCT grants in the country (<http://www.fct.pt/apoios/bolsas/valores>) and the table of values of the Scientific Research Scholarships of the University of Minho, updated annually by decision of 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 components of the research grant:** Define other components of the grants, as provided for in Article 18º of the FCT Research Grant Regulations (RBI).

**Other benefits:** Reimbursement of Voluntary Social Insurance, if the candidate chooses to receive it, corresponding to the 1st step of the contribution base (for scholarships of 6 months or more) 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 of the Jury: Doctor Ana Maria Alves Coutinho Rocha (Associate Professor at the Production and Systems Department of the University of Minho);

Members: Doctor Luis Miguel Valente Gonçalves (Associate Professor at the Industrial Electronics Department of the University of Minho) and Doctor Graça Maria Henriques Minas (Associate Professor with Habilitation at the Industrial Electronics Department of the University of Minho);

Alternate members: Doctor Alexandre Manuel Ferreira Silva (Assistant Professor at the Industrial Electronics Department, University of Minho) and Doctor Paulo Mateus Mendes (Associate Professor with Habilitation at the Industrial Electronics Department, 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 5 values.

Applicant Merit - AM (100%):

- a) Academic path (considering the classifications of academic degrees), with a weighting of 45%;
- b) Personal curriculum (considering professional and scientific background), with a weighting of 45%;
- c) Motivation letter, with a weighting of 10%.

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

$$MC=(a*0,45) +(b*0,45) +(c*0,10)$$

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

Applications must be submitted by email to [secretaria@algoritmi.uminho.pt](mailto:secretaria@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:

- 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;

**Form of publication/notification of results:** The results of the evaluation are published in a single list in alphabetical order , 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(nº6) 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 30/04/2026.

**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 Regulations for Scientific Research Scholarships 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.

### **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).

---

(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 | Funding Entity | Project | Type of Grant | Duration | Start | Term |
|------------|----------------|---------|---------------|----------|-------|------|
|            |                |         |               |          |       |      |

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

(Place), (date).

---

(full name)

