

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

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

**Reference:** 2023.13876.PEX\_BIPD\_01/2025-CMEMS

A call for applications is now open for the attribution of (1) grant(s) 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 **Foundation for Science and Technology I.P. (FCT)**, under the programme IC&DT in all Scientific Domains 2023, under the following conditions:

**Scientific Area:** Biomedical Engineering

**Recipient category:** The BIPD are intended for doctorates in the areas of Biomedical Engineering, 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\*;
- Have carried out the research work that led to the attribution of a PhD degree in an entity other than the host unit ALGORITMI Center\*\*;
- The research activities do not require post-doctoral experience;
- 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;
- 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.

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.

\*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.

\*\* Different R&D Units are included, even if located in the same Organic Unit (UOEI) of UMinho (nº 4 and 5 of article 7 of the FCT I.P Research Grant Regulation, in force)

**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).

**Profile:**

The following are eligible to apply for this competition:

- Nationals or citizens of other member states of the European Union;
- Citizens of third countries;
- Stateless persons;
- Citizens with political refugee status

**Admissibility 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 work plan will consist of: i) improving the development of computational tools and optimizing the parameters of the best tool for detecting fall risk situations in assisted walking with the team's commercial exoskeleton; ii) identifying user requirements, coordinating the training of the End-User and Stakeholder Panel, organizing webinars and interviews to gather requirements. It will also carry out biomechanical studies to study biomechanical responses to slips; iii) developing artificial intelligence tools for slip detection and early fall signs, with a focus on optimizing algorithms for classifying modes of locomotion and assessing fall risk; iv) integrating and controlling balance recovery through slip detection tools in a commercial exoskeleton, using ROS2, DMPs, CPGs and Reinforcement Learning to develop a balance recovery control system; v) the overall coordination of research activities and the management of possible deviations from the project's work plan and resources. A management system will be implemented that meets all the requirements necessary to achieve the project's deliverables. The work plan also aims to draw up documents (e.g. risk analysis and management, safety measures in accordance with ISO standards) for requesting an ethical opinion for the clinical study with the commercial exoskeleton and the statistical processing of gait data from volunteers, within the scope of Activity 5. Finally, the grantee can contribute to the preparation/revision of a scientific article, contributing to the deliverables of Activity 6, as well as a report with the results obtained and technical documentation.

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

**Fellowship duration:** The grant will take place for a period of 12 months, with a provisional starting date on the April 2025. The fellowship grant may eventually be renewed up to the maximum duration allowed in the project and/or by the legislation and regulations in force for the type of scholarship granted, provided that the candidate obtains approval from the supervisor.

**Amount of the research grant:** The value stipend (Monthly Maintenance Allowance) is 1851 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 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 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 the other components of the research grants, in accordance with the nº 5 of the article 18º of the FCT Regulation for Research Studentships and Fellowships, nº 950/2019 of 16-12-2019 or article 21º of the Regulation of Research Fellowships of the University of Minho (RBIC), accordingly with the regulations applicable).

**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:** The selection panel is constituted by the following members:

- a) President of the Jury: Doctor Ana Maria Alves Coutinho Rocha (Associate Professor at the Production and Systems Department of the University of Minho);
- b) 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);

- c) Alternate members: Doctor Alexandre 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 1 to 5 values (or another scale)<sup>1</sup>:

Applicant Merit - AM (100%):

Candidate Merit - CM (100%):

- a) Education (which reflects the classifications of academic degrees), with a weighting of 45%;
- b) Academic and professional curriculum (which reflects your scientific and professional trajectory), with a weighting of 45%;
- c) Motivation letter, weighing 10%.

The candidate's final merit classification will be obtained by applying the following formula:

$$CM=(a*0.45)+(b*0.45)+(c*0.1)$$

Candidates who score less than 9.5 in any of the selection methods will be excluded from the procedure.

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 consider. 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 evaluation results project, based in the selection panel minutes, will be send to the applicants by email, in accordance with article 12 of the FCT's RBI (FCT funding) | article 13 of UMinho's RBIC (other funding subject to UMinho regulations).

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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*).

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 with delegation of powers in this area.

**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<sup>th</sup> April 2025.

**Application deadline and submission:** Applications will be accepted for a minimum period of 10 working days after the publication of the notice on the European Scientific Mobility Portal Euraxess.

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 [secretaria@cmems.uminho.pt](mailto:secretaria@cmems.uminho.pt), indicating the reference 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.

## 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)