

## DRAFT ANNOUNCEMENT FOR THE AWARD OF A RESEARCH FELLOWSHIP

**Title:** Research Fellowship for Bachelor's Degree holder - Inspire; 1 vacancy

**Reference:** 2023.13876.PEX\_BI-01/2026-CMEMS

A call for applications is now open for the attribution of one (1) grant of bachelor's degree holder within the scope of the I&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:** Electronical Engineering

**Recipient category:** Bachelor's degrees enrolled in non-academic degree courses, developed in association or cooperation with one or more R&D units.

### 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:

a) Mandatory requirements:

- Academic degree appropriate for admission to the Bachelor's cycle of studies;
- Prior training in scientific areas relevant to the scope of the research project;

b) Preferential factors:

- Academic merit demonstrated throughout previous studies;

- Specific experience in methodologies or techniques associated with the project;
- Demonstrated motivation and expressed interest in the scientific area concerned.

**Workplan and objectives to be achieved:**

The work plan will consist of: i) Supporting the design and implementation of biomechanical simulation environments for the formulation of the Reinforcement Learning (RL) problem applied to the control of the active hip-knee exoskeleton (Hank, Gogo), including the definition of state spaces (encompassing kinematic, dynamic, and gait context variables), action spaces corresponding to joint torque commands, reward functions oriented towards balance recovery and fall risk minimisation, and safety constraints ensuring the physical integrity of the user during the training and inference processes. ii) Developing, training, and evaluating RL algorithms - namely actor-critic policy-based methods such as PPO or SAC - with the aim of optimising personalised assistance and balance recovery strategies in response to early slip or fall signs, exploring transfer learning and curriculum learning techniques to reduce dependency on large data volumes and accelerate convergence in real-world usage scenarios. iii) Integrating the RL algorithms with bio-inspired controllers, namely Central Pattern Generators (CPGs) and Dynamic Movement Primitives (DMPs), so as to produce smooth, anticipatory assistive responses synchronised with the human movement pattern, fostering an intuitive human-robot interaction adapted to the individual kinesiological characteristics of the elderly user across different locomotion modes within activities of daily living. iv) Implementing, testing, and validating the developed control modules in both computational and robotic environments, using the ROS2 architecture for real-time integration with the system's inertial and electromyographic sensors, ensuring compliance with the temporal requirements established in the project specifications, and producing detailed technical documentation - including code, control parameters, validation protocols, and integration instructions - that guarantees the reproducibility and transferability of the obtained results.

**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 Center for Microelectromechanical Systems (CMEMS) of University of Minho, located in the *Campus de Azurém*, Guimarães, under the scientific supervision of the Professor Cristina Manuela Peixoto dos Santos and coordination of the Professor Luís Miguel Valente Gonçalves.

**Fellowship duration:** The grant will take place for a period of 6 months, with a provisional starting date on the July 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 1 090,98 €/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 contractualization 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:** The candidate selection panel is composed of the following members:

- President – Doctor Graça Maria Henriques Minas (Associate Professor with Aggregation at the Department of Industrial Electronics of the University of Minho);
- Effective Members – Doctor Luís Miguel Valente Gonçalves (Associate Professor at the Department of Industrial Electronics of the University of Minho) and Doctor Alexandre Manuel Teixeira de Barros Ferreira Silva (Assistant Professor at the Department of Industrial Electronics of the University of Minho);
- Substitute members – Doctor Cristina Manuela Peixoto Santos (Assistant Professor with Aggregation at the Department of Industrial Electronics of the University of Minho) and Doctor Susana Oliveira Catarino (Assistant Professor at the Department of Industrial Electronics 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 5 values:

Applicant Merit - AM (100%):

- a) Academic path (considering the classifications of academic degrees), with a weighting of 40%;

- b) Personal curriculum (considering professional and scientific background), with a weighting of 40%;
- c) Motivation letter, with a weighting of 20%.

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

$$MC=(a*0,4) +(b*0,4) +(c*0,2)$$

If none of the candidates for the competition have the appropriate profile to carry out the work plan, the Jury reserves the right to close the competition without making any appointments.

**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 bachelor course. Candidates will be evaluated on the remaining parameters.

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

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

- d) Motivation Letter.

**Form of publication/notification of results:** The results of the evaluation are published in a single list by final score obtained, 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](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.



## 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)