

## 1 Research Studentship for students of a course that does not award an academic degree

Applications are open for one Research Studentship for students of a course that does not award an academic degree, within the framework of project MIA-BREAST, reference 2022.04485.PTDC, financed by national funds through FCT/MCTES (PIDDAC), under the following conditions:

**Scientific Area:** Artificial Intelligence

### Admission Requirements:

a) to hold a master degree and be enrolled at a course that does not award an academic degree and it is integrated in the educational project of a higher education institution, performed in association or cooperation with one or several R&D units;

b) not to exceed with this contract, including the possible renovations, an accumulated period of two years in this type of studentship, continuously or with interruptions.

**Workplan:** This work aims to develop new machine learning methods for breast diagnosis. Specifically, multiple instance learning (MIL) applied to three different image modalities: (i) mammography, (ii) ultrasound and (iii) Magnetic Resonance Imaging (MRI). The work will comprise the following two tasks: (1) classification, and (2) detection of breast lesions. The first task aims to assign a score, while the second is targeted to locate the region of the lesion in the breast tissue. To accomplish the first task above, we will use MIL – a weakly supervised training approach - that assigns a score (i.e., classification). For the second task (detection), the salient regions will be obtained using vision transformers embedded in the MIL framework. As a final stage of the working plan, we also use other methodology – multimodal meta-learning – as a way to obtain the breast diagnosis in the breast multimodality.

**Legislation and Regulations:** Statute of Scientific Research Fellow, approved by Law nr. 40/2004, of August 18, as worded by Decree-Law nr. 123/2019, of August 28; FCT Regulation for Research Studentships and Fellowships, available on <https://www.fct.pt/apoios/bolsas/docs/RegulamentoBolsasFCT2019.pdf> and <https://dre.pt/application/file/a/127230968>.

**Workplace:** The work will be developed at Institute for Systems and Robotics of Instituto Superior Técnico, under the scientific supervision of professors Carlos Santiago, Catarina Barata and Jacinto C. Nascimento.

**Duration:** The research fellowship will have a duration of **12** months and it won't be renewed. It's expected to begin in **June/2024**.

**Monthly maintenance allowance:** According to the values for Research Fellowships awarded by FCT in Portugal ([https://www.fct.pt/wp-content/uploads/2024/02/Tabela-de-Valores-SMM\\_atualizacao-2024.pdf](https://www.fct.pt/wp-content/uploads/2024/02/Tabela-de-Valores-SMM_atualizacao-2024.pdf)), the amount of the monthly maintenance allowance is € **1259,64** Euros, being the payment method an option of the Fellow by Wire Transfer.

**Selection methods:** The selection methods will be the following: *Curriculum evaluation, comprising the final grade of the Master's degree (40%), and an individual interview where the candidate must express the knowledge of Multiple instance Learning applies to medical imaging field (60%)*. The jury will select the first two candidates for an interview, based on the curricular assessment.

**Composition of the selection Jury:** professors Catarina Barata, Carlos Santiago, and Jacinto C. Nascimento.

**Announcement/ notification of the results:** The final evaluation results will be communicated to all applicants by email.



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**Deadlines and procedures of complaint and appeal.** A complaint may be lodged from the final decision within 15 working days, or an appeal to the Executive Board of IST-ID within 30 working days, both counted from the respective notification

**Application deadline and formalization:** The call is open from May 15 until May 27, 2024.

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It is mandatory to formalize applications with the submission of the following documents:

- i) B1 Form – Fellowship application (<https://ist-id.pt/concursos/bolsas/> );
- ii) *Curriculum Vitae*;
- iii) academic degree certificate;
- iv) motivation letter;
- v) declaration on honour that the applicant does not exceed with this contract an accumulated period of two years in this type of studentship, continuously or with interruptions.
- vi) proof of enrollment at a course that does not award an academic degree which must be presented at the time of contract signature;

Applications must be submitted to the following emails:

[ana.c.fidalgo.barata@tecnico.ulisboa.pt](mailto:ana.c.fidalgo.barata@tecnico.ulisboa.pt)

[jan@isr.tecnico.ulisboa.pt](mailto:jan@isr.tecnico.ulisboa.pt)



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