

(BL7/2025-IST-ID)

Research Studentships (PhD students)

Applications are open for 1 Research Studentship, within the framework of project AHEAD (AI-Informed Holistic Evs Integration Approaches For Distribution Grids), co-financed by the European Commission (GA 101160665), under the following conditions:

Scientific Area: Matemática: Análise Numérica, Otimização e Modelação Matemática

Admission Requirements: *To be enrolled at a PhD.*

The candidate must also:

- a) Hold a masters in the fields of Applied Mathematics and Computation, or a closely related field.*
- b) Have previous research experience.*
- c) Have very good English written and oral skills.*
- d) Have extensive knowledge of data science methods.*
- e) Have a very strong background in applied mathematics and excellent analytical skills.*
- f) Have good programming skills in programming languages such as Python.*

Workplan: The AHEAD project will create a simulation environment capable of predicting the most convenient location to place the electric vehicle (EV) charging stations and optimize both the usage of the power grid resources, and the charging stations. This simulation environment will exploit the unique features of currently available AI models and include two layers: the spatial mapping one (placing the chargers where the people need them to be), and the power grid one (placing the chargers where the grid can host them).

Flexibility services will be designed and tested in the model, to minimize the impact of EV charging pools on the network, and ensure the consumers have economic benefits. Moreover, these smart charging algorithms will be tested in six demonstration sites, dedicated to assessing the technical and economic feasibility of smart charging light and heavy-duty EVs, and boats.

The selected candidate will be working on tasks related to the activities to be developed in Portugal, and on the data-driven modelling of spatial and grid models for EV charging infrastructures.

- a) Developing a framework for the authoring of Reduced Order Models (ROMs) of energy use for EV charging infrastructures.
- b) Extend the ROMs to enable the incorporation of real-time information (status of EVSE) and forecasts of disturbances (e.g., EVSE occupancy, weather).
- c) Assist the research team in the deployment and maintenance of the different technologies in the Funchal demonstrator.
- d) Assist the research team in producing reports and scientific presentations/publications.

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; IST-ID Research Fellowships Regulation, available on https://ist-id.pt/files/sites/43/regulamento-de-bolsas-da-ist_id-2.pdf.

Workplace: The work will be developed at the Interactive Technologies Institute / LARSyS, under the scientific supervision of Dr. Lucas Pereira. The activities will be developed in the city of Funchal, where the demonstration activities will be conducted. The position is **on-site**.

Duration: The research fellowship will have the duration of 12 months. It's expected to begin in February 2025. The research fellowship is not renewable.

Monthly maintenance allowance: the amount of the monthly maintenance allowance is €1259,64, being the payment method of the Fellow by wire transfer.

Selection methods: The selection methods will be the following:

- a) Curriculum Vitae evaluation (70%)
- b) Motivation letter (30%)
- c) Individual Interview (as a tie-break procedure, to be conducted online), to be conducted online

Composition of the selection Jury: Dr. Lucas Pereira (President), Prof. Hugo Morais, Prof. Augusto Esteves

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

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

Application deadline and formalization: The call is open from January 21 until February 3, 2025.

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

B1 Form – Fellowship application (<https://ist-id.pt/concursos/bolsas/>);

- i) *Curriculum Vitae*;
- ii) Academic degree certificate, where applicable;
- iii) Proof of enrollment at an academic degree course (PhD);
- iv) Motivation letter;

Applications must be submitted to the email: dina.dionisio@tecnico.ulisboa.pt (cc: lucas.pereira@tecnico.ulisboa.pt) with the subject [AHEAD]: Application to BI-M1