

## CALL FOR AWARDING RESEARCH FELLOWSHIPS WITHIN PROJECT GRANTS AND R&D INSTITUTIONS

### 1 Research Fellowship under Special Regime (BI-RE) for Master Degree Student

1 Research Fellowship(s) under Special Regime (BI-RE) is (are) open at the **FCiências.ID – Associação para a Investigação e Desenvolvimento de Ciências**, for the Project/R&D Institution “SATO – Self Assessment Towards Optimisation of Building Energy” and “SMART2B – Smartness to existing Buildings”, financed by European Union’s H2020 research and innovation programme, under the following conditions:

1. **Scientific Area:** Energy Systems on Buildings
2. **Requirements for admission:** Portuguese nationals, foreign and stateless persons may submit applications to this selection procedure, with a Bachelor Degree in Energy and Environmental Engineering, Physical and Technological Engineering, Mechanical Engineering or Civil Engineering; Python programming experience; Experience in technical drawing software (AutoCAD).
3. **Additional optional skills and qualifications:** Experience in dynamic thermal simulation (EnergyPlus).
4. **Contracting requirements:** Presentation of the academic qualifications and/or diplomas. Enrollment in a Master Degree in Energy and Environmental Engineering, Physical and Technological Engineering, Mechanical Engineering or Civil Engineering
5. **Work plan:** The combination of higher air temperatures and continuously increasing occupant expectations and standards of comfort in buildings will lead to increased demand for cooling energy in both service and commercial buildings and residential buildings. To reduce energy consumption in buildings, designers are encouraged to implement passive design and low-power cooling strategies such as natural ventilation (NV), night cooling (NC), shading systems and thermal inertia availability. These strategies use the outdoor climate as a free or low-power cooling source and, as such, are highly dependent on weather conditions. This project proposes to develop and test a control system for building energy systems that combines traditional HVAC and lighting systems with low energy consumption passive systems (NV, passive heating/cooling, natural lighting). The proposed AI-based control system combines the capabilities of Predictive Control Models (PCM) with Reinforcement Learning (RL), resulting in a Predictive Reinforcement Learning (PRL) approach. The PCM component of the hybrid control system uses Deep Neural Network (DNN) models to accurately predict indoor and outdoor environmental conditions. The RL component of the system allows for integrating occupant feedback, allowing optimal control of passive systems with automatic and personalized adjustment to occupant preferences. The experimental component is integrated in the WP6 of the SATO project and in the WP6 of the SMART2B project, where two identical and adjacent test chambers located in Building C1 of the Faculty of Sciences of the University of Lisbon (FCUL) will be used.
6. **Legislation framework:** Research Fellowship Holder Statute, in accordance with Law 40/2004, of 18 August, in its current version and the FCT Regulation for Research Studentships and Fellowships, in its current version (Reg. 950/2019 published in DR on 16<sup>th</sup> December: <https://dre.pt/application/file/a/127230968>, or at the FCT website: <https://www.fct.pt/apoios/bolsas/regulamento.phtml.pt>), and FCiências.ID Fellowship Regulation, as approved on 12<sup>th</sup> May 2020 (available at [Regulamento de Bolsas de Investigação Científica da FCiências.ID](https://www.fciencias.id/regulamento-de-bolsas-de-investigacao-cientifica-da-fciencias.id)).



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7. **Place of work:** The work will be developed at Instituto Dom Luiz (IDL), in Faculty of Sciences of the University of Lisbon, Campo Grande, Lisbon, Portugal under the scientific supervision of Professor Guilherme Carvalho Canhoto Carrilho da Graça.
8. **Fellowship duration:** This position is initially opened for 6 months and will begin in November 2021. The fellowship contract may be potentially renewed for 6 months, in accordance with the provisions of Regulation of Research Fellowships from the Foundation for Science and Technology, I.P and FCIências.ID Fellowship Regulation.
9. **Monthly allowance:** The fellowship amounts to € 850, according to [table values](#) of the FCIências.ID Fellowship Regulation. The fellowship holder will have a personal accident insurance and can ensure the right to social security through adherence to the voluntary social insurance scheme, if not covered by any other social protection scheme, pursuant to *Código dos Regimes Contributivos do Sistema Previdencial de Segurança Social*. The fellowship will be paid monthly by bank transfer
10. **Evaluation and selection process:** Candidates will be assessed by the quality of their CV and possibly, a selection interview. If the selection interview is not carried out, the final evaluation will be obtained with a weighting of 100% in the curriculum evaluation. If the jury chooses to carry out the selection interview, it will be carried out to the 2 (two) candidates with the best classification in the curriculum evaluation. In the event that the selection interview is carried out, the final evaluation will be obtained taking into account the following considerations: 50% for the curriculum evaluation and 50% for the selection interview.
11. **Selection Committee:** Professor Guilherme Carvalho Canhoto Carrilho da Graça (President of the jury), Professor Marta João Nunes Oliveira Panão (Effective member), Professor Killian Paulo Kiernan Lobato (Effective member), Professor João Manuel de Almeida Serra (Substitute member) and Professor Miguel Centeno da Costa Ferreira Brito (Substitute member).
12. **Publication/notification of results:** All the candidates will be notified by e-mail, sent by the call holder, with the selection meeting minutes enclosed.
13. **Deadlines:** This call for applications is open from 13/10/2021 to 21/10/2021 .
14. **Application:** Applications should be sent via e-mail to [cdrosa@fc.ul.pt](mailto:cdrosa@fc.ul.pt), referring in the e-mail subject the ID SATO-BIRE-202112, by attaching the following documents:
- Curriculum vitae – **CV may be provided in PDF or through the [CIÊNCIAVITAE](#) system;**
  - Certificate of completion of previous degree;
  - other documents considered relevant.
15. **Time limits for the appeal procedure:** In case of negative decision, the candidates have 10 business days, after the date of announcement of the results of the candidates evaluation, to pronounce their disagreement in accordance with the *Código do Procedimento Administrativo*. Appeals against the final decision may be submitted to the Administration Board of FCIências.ID ([fciencias.id@fciencias-id.pt](mailto:fciencias.id@fciencias-id.pt)) within 15 business days after the notification date



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**Note 1:** The documents that prove the entitlement of the academic qualifications and diplomas, or the proof of registration in the academic degree or diploma requested on the call, can be dismissed during the application period and replaced by a declaration on their honour from the applicant. Their delivery is mandatory for the fellowship contractualization.

**NOTE 2:** Please note that - higher education degrees and diplomas awarded by foreign higher education institutions need to be recognized by a Portuguese higher education institution, pursuant to the [Decree-Law nr. 66/2018](#) (August 16) and the [Ministerial Order nr. 33/2019](#) (January 25). The presentation of the recognition certificate is mandatory for contract signature. More information can be obtained at: <https://www.dges.gov.pt/en/pagina/degree-and-diploma-recognition>.

