CENTER FOR NEUROSCIENCE AND CELL BIOLOGY

PUBLIC NOTICE

Summary: International tender to fill one PhD-holding position vacancy for a Computational/ Theoretical Neuroscientist postdoctoral researcher.

Reference CNC-PD DB 2024.01.

By dispatch of the President of the Center for Neuroscience and Cell Biology (CNC), it is publicly made known that an international tender is open for 10 working days, to fill one PhD-holding position vacancy for a Computational/ Theoretical Neuroscientist at postdoctoral level, under an uncertain term employment contract pursuant to the Portuguese Labour Code, approved Law nr. 7/2009, of February 12, in its current version, and additional applicable legislation. The position is open in the scientific area(s) of Health and Medical Sciences – major in Systems, Behavioural and Computational Neuroscience, to carry out research activities in the context of Project "DYNAMIC BRAIN FUNCTION: Towards the Understanding and Treatment of Brain Disorders" (Grant Agreement Nr. 952422; https://dynabrain.cnc.uc.pt/).

Project supported by the European Union's Horizon 2020 Research and Innovation programme, under its ERA Chairs call H2020-WIDESPREAD-2018-2020-6.

I — Reference, Place of Work and Monthly Wage:

I.1 — Public tender reference: *CNC-PD DB 2024.01*

I.2 — Place of work: Center for Neuroscience and Cell Biology (CNC), UC-Biotech, Biocant Park - Parque Tecnológico de Cantanhede, Núcleo 04, Lote 8, Cantanhede, Portugal.

I.3 — Job description:
The Postdoctoral researcher is expected to conduct research activities in modelling and simulation of reward-modulated prosocial behavior and decision-making. The project aims to uncover the computational and/or mechanistic bases of prosociality at the behavioral and circuit levels.

Tasks / Activities

Based on empirical observations and working at the interface between experiment and theory, the fellow will investigate prosocial decision-making employing models at different levels of granularity: from very abstract reinforcement learning models to detailed biophysical models.

Concrete tasks will involve:

- Develop, test and deploy Multi-Agent Reinforcement Learning (MARL) models based on TD-Learning and/or Q-Learning, as well as corresponding environments and tasks.
- Explore MARL models and environments at different degrees of complexity (from discrete time and space to continuous control systems) to model animal behavior in dryadic social interaction settings
- Develop neural population models that incorporate reward-modulation and capture the dynamics of multiple interacting sub-cortical nuclei, engaged in a social decision-making task.

I.4 — Gross monthly wage: 2.403,37 €, level 35 of the single remuneration table, approved by Ordinance nr. 1553-C/2008, of December 31st, in its current version.

I.5 — Maximum duration: up to a maximum of 2.9 years, never going beyond the project's end date.

II — Admission Requirements:

II.1 — To have at least 18 years of age by the deadline of the present tender.

II.2 — Must hold, by the deadline of the present tender, a Ph.D. degree in the above-mentioned scientific area(s), or in a related one that, in complement with the applicant's scientific and curricular path, demonstrates capacity to thoroughly develop work in the main field(s) of the present tender. The ideal candidate should hold a PhD degree in Computational / Theoretical Neuroscience, Computer Science or Physics (specializing in Machine Learning and Artificial Intelligence or Biophysics) or other strongly analytical fields. Documented experience with Reinforcement Learning algorithms and Artificial Neural Networks is desirable and so is extensive programming and scientific software development experience.

III — How to apply:

III.1 — Submission of the application: applications must be submitted online through the project-specific electronic platform DYNABrain - Join us: https://dynabrain.cnc.uc.pt/?page_id=1048, by selecting the procedure to which the candidate intends to apply and uploading all the necessary documents merged in a single digital file in *portable document format* (pdf).

If, as part of the application, a classified document is submitted that reveals commercial or industrial secrets, or secrets relating to literary, artistic or scientific property, the applicant must clearly indicate its confidential/ classified nature in each such document, under risk of the work in question being freely accessed by any of the other applicants during tender record consultation.

III.2 — Documents to be uploaded:

III.2.1 — Detailed *Curriculum Vitae*, duly dated and signed.
The *Curriculum Vitae* should contain a list of previous scientific affiliations, indicating institution and role performed, list of publications, participation in projects, a brief synopsis of the main contributions that the applicant consider as relevant for this call (focusing for example in his/her main 3 publications) and a list of all other merits that the applicant considers important to demonstrate his/her background and suitability for the proposed call All published works mentioned in the *Curriculum Vitae* should also have indication of the respective unique identifier(s) (e.g., DOI) and/or accessible URL.

III.2.2 — Copy of all qualification certificates or diplomas. Applicants holding a doctorate degree awarded by a foreign higher education institution should, by the end of the application deadline:

Provide proof of the degree recognition under the terms of Decree-Law nr. 66/2018 of August 16, or, Attach documental proof that said recognition has already been requested under the terms of Decree-Law nr. 66/2018 of August 16.

III.2.3 — Motivation Letter, where the applicant should state his/her motivations to join this project and the areas where the applicant see that can contribute to its development.

III.2.4 — Name and contact of 2 professional references, and any other elements that the candidate considers relevant.

III.3 — All application documents indicated in III.2 should be submitted in English.

III.4 — Applications that are not duly formulated or do not fulfil the formal criteria for admission to the present tender, under the terms defined in the legislation in force and in this notice, will not be admitted. The submission of any required documentation beyond the stipulated deadline also dictates the non-admission to the tender.

III.5 — Candidates who are non-native English speakers should attest their competence in English (Independent User). English competence will be confirmed through the applicant's written documents and the interview.

III.6 — The present tender ceases with the occupation of the position(s) or when the position(s) cannot be occupied due to the inexistence or insufficiency of candidates to proceed with the tender.

IV — Selection methods and criteria:

IV.1 — Selection Methods: Assessment of scientific and curricular path [ASC (90%)] and Interview [I (10%)].

IV.2 — In the assessment of the candidate's scientific and curricular path, the scientific and technical performance and the dissemination, outreach and management activities will be considered. Narrative articulated in the motivation letter will also be taken into account in this section. Candidates are expected to have relevant experience and skills in the scientific areas of the application and some degree of independence. The evaluation is made in accordance with the criteria and weights described below.

IV.2.1 — Scientific and technical performance of the candidate, which should attest the candidate's capacity to carry out the activities described in I.3, with a weight of 80 %, based on the relevance, quality, recentness and national and international recognition of the scientific and technological production and training received in the area of the tender. It will particularly focus on: the quality of the scientific contributions to the field, scientific papers in journals; previous experience with Reinforcement Learning algorithms and Artificial Neural Networks, previous professional experience in international laboratories as researcher, although not required, previous experience interfacing deep behavioral phenotyping with neural activity dynamics is a plus;

IV.2.2 —Dissemination, outreach and management activities, with a weight of 5 %, based on the following evaluation parameters:

IV.2.2.1 — Dissemination and outreach: dissemination of knowledge, including mentoring/supervising students, organization and active participation in courses and scientific meetings, as well as science communication outreach activities;

IV.2.2.2 — Management: management activities of science, technology and innovation including coordination and/or active participation in scientific projects and observation and monitoring activities of the scientific and technological system or the higher education system;

IV.2.3 — The motivation letter, with a weight of 5 %, focusing on the interest demonstrated by the candidate to contribute to the project and to its impact and national and international recognition.

IV.3 — The assessment of the candidate's scientific and curricular path is made according to the criteria and weights defined in IV.2, being duly substantiated and expressed by the selection committee on a scale of 0 to 100 values (up to the centesimal place).

IV.4 — The evaluation of the interview is made according to the criteria and weights defined in IV.2., being duly substantiated and expressed by the selection committee on a scale of 0 to 100 values (up to the centesimal place).

IV.5 — All the candidates complying with the application eligibility requirements will be subjected to assessment of their scientific and curricular path, following the criteria and evaluation parameters defined in IV.2 and IV.3. However, only the top higher-ranking three (3) candidates scoring above threshold (ASC ≥ 60) in result of the assessment of the scientific and curricular path will be called for the interview.

IV.6 — Candidates who score below 47.5 in one of the selection methods (ASC or I) will be excluded from the tender procedure, and the ensuing method, if it exists, will not be applied. Likewise, candidates who fail to appear, who withdraw or who, although approved, were not included in the tiers used, will also be excluded from the tender.

IV.7 — The final score (FS), expressed on a scale of 0 to 100 values (up to the centesimal place), is calculated by the following formula:

$$FS = (ASC \times 90\ \%) + (I \times 10\ \%)$$

V — Selection Process:

V.1.1 — The Selection Committee decides, first, on the admission and exclusion of applications. In case of non-fulfilment or partial fulfilment of any of the requirements defined in section III above, the Committee decides whether this insufficiency prevents application acceptance, or if it has no relevant impact on the evaluation process, in which case the application may nevertheless be accepted.

V.1.2 — After admission or exclusion of the candidates, the selection committee starts the procedures for the phased application of the selection methods. All admitted candidates undergo assessment of their scientific and curricular path. Only the merit of the candidates will be evaluated, considering their previous experience in the scientific area(s) for which the tender is open, according to the selection criteria and evaluation parameters above described, and the committee will refrain from assessing or scoring outside the referred area(s). The ranking of the candidates in the ASC method is numerical and based on the scores given to each candidate.

V.1.3 — The Selection Committee notifies by e-mail the candidates admitted to the Interview.

V.1.4 — The Selection Committee interviews the candidates admitted to the Interview phase. The interview of each candidate shall have the maximum duration of half an hour, though it may be extended for another half hour by decision of the Chairman of the committee. The interview will consider the candidates' merit, scored on the basis of their previous experience in the scientific area(s) for which the tender is open, as well as their motivation and level of proficiency in the language(s) required in III.5. The interview is conducted by the Chairman of the committee, although other committee members may also intervene and interact with the candidate. This interview shall be held in English.

V.1.5 — Candidates who fail to attend the interview at the set time and place shall be excluded from the tender procedure. Similarly, candidates failing to attend a duly scheduled teleconference call shall also be deemed excluded.

V.1.6 — After conducting and scoring the interviews, the committee calculates the final score and ranks the candidates approved in both methods by applying the formula defined above in IV.7.

V.1.7 — The candidates are notified of the proposed final decision following the terms set out in point VI of this notice. The notification includes the list with the proposed ordering of the admitted candidates as well as the list of the excluded candidates.

V.2 — Candidates can, if they so wish, appeal to the decision of the Selection Committee, in due respect for their right to a fair hearing, pursuant to Article 121 of the *Código do Procedimento Administrativo* [CPA - Code of Administrative Proceedings]. The period to submit an appeal begins on the date the candidates are notified of the Selection Committee's deliberation, pursuant to paragraph 8 of Article 113 of the CPA.

V.2.1 — Should any candidate exercise their right to be heard, the committee shall hold a new meeting in order to analyse the appeal, and the candidates will be notified of its deliberations, under the terms of section VI herein.

V.2.2 — If the committee finds the candidates' allegations well-founded, it shall proceed according to its deliberations, thereby notifying the candidates under the terms of point VI.1.

V.2.3 — If the committee finds such allegations unfounded, upon the candidates' notification under the terms of point VI.1, the selection process shall then be submitted to CNC's Board of Directors for homologation.

V.3 — All candidates will be notified of the homologation decision, under the terms set out in point VI of the present notice. The administrative records of the tender may be consulted by the candidates, upon prior scheduling.

VI — Notification of the candidates:

VI.1 — The candidates are notified by e-mail of the following acts: the list of admitted and excluded candidates, as well as the identification of the candidates selected for the interview, and among them, those the Chairman of the Selection Committee has allowed to be interviewed by teleconference; the proposed final decision for the tender; the decisions regarding eventual allegations of the candidates and the homologated final decision.

VI.2 — The entire tender records may be consulted by candidates, upon scheduled appointment requested via e-mail to the Human Resources Management Service e-mail address: rh@cnc.uc.pt.

VII — Selection Committee:

Chairman — Doctor Cristina Márquez Vega, Coordinator Researcher of the Center for Neuroscience and Cell Biology, University of Coimbra, and ERA Chair holder under project DYNABrain;

Committee members:

Doctor Renato Duarte, Auxiliary Researcher of the Center for Neuroscience and Cell Biology, University of Coimbra;

Doctor Flavia Ricciardi, Postdoctoral fellow of the Center for Neuroscience and Cell Biology, University of Coimbra;

Alternate committee members:

Doctor Ana Luísa Monteiro de Carvalho, Associate Professor of the Life Sciences Department of the Department, Faculty of Sciences and Technology, University of Coimbra;

Doctor Natalia Madeira, , Postdoctoral fellow of the Center for Neuroscience and Cell Biology, University of Coimbra;

In the event of absence or impediment, the Chairman shall be replaced by the Committee member indicated in the first place, who, in case of similar absence/impediment, will be replaced by the Committee member indicated next and so on.

For the record, the present public Notice has been prepared and will be announced in English in CNC's electronic platform dedicated to job opportunities and in the international platform EURAXESS, https://euraxess.ec.europa.eu/jobs.

Pursuant to paragraph h) of Article 9 of the Portuguese Constitution, the Center for Neuroscience and Cell Biology, as employer, actively promotes a policy of equal opportunities between men and women in their access to employment and professional development, and acts to prevent all forms of discrimination. Therefore, no one can be privileged, benefited, harmed or deprived of any right or exempted from any duty on account of, in particular, ancestry, age, sexual orientation, gender, marital status, family, economic situation, education, origin or social condition, genetic heritage, reduced work capacity, disability, chronic illness, nationality, ethnic or racial origin, territory of origin, language, religion, political or ideological beliefs and trade union membership.

In accordance with Decree-Law nr. 29/2001, of 3 February, candidates with disabilities take precedence over others when they obtained the same classification, and this prevails over any other eligible preference.

Pursuant to Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and the free movement of such data (RGPD) and Portuguese Law no. 58/2019 of 8 August, the entity responsible for processing the personal data of the candidates, collected within the scope of this tender, procedure is the Center for Neuroscience and Cell Biology (CNC). CNC guarantees that personal data collected in physical or digital support, whatever their nature, are treated responsibly, only for the purpose of recruitment, through appropriate policies and measures in order to prevent access and misuse or possible intrusions, minimizing risks and contributing to their safety. CNC does not provide or allow access to personal data by third parties, except for the purpose of complying with duly justified legal obligations. The personal data collected will be kept for a maximum of 6 months, counting from the end of the legal period of preservation foreseen for the procedure. At any time, the interested party can contact CNC through the email dpo_cnc@cnc.uc.pt to request information on the processing of personal data or to exercise the legally established rights.

Coimbra, march 2024