- IMPORTANT NOTE -

INL is actively working to mitigate the risk of CoVid-19 and is promoting protection measures within our community with an impact on regular activities. Ongoing and new R&S processes may have changed during this exceptional period. Please check the details in the job vacancy to keep track of any updates.

Research Engineer – Neural-interface Technology

Job Reference: Ref.
Employer: International Iberian Nanotechnology Laboratory (INL)
Location: Braga, Portugal
Group/Unit: 2D Materials and Devices (2DMD), Technology Engineering (TE)
Number of Vacancies: 1
Employment Type: Full time
Contract Duration: 24 months

Open Date for Applications: January 17th, 2022
Closing Date for Applications: February 17th, 2022, 23h00m (Lisbon Time)

Key words: #graphene #2D electronics

Overview

The 2D Materials and Devices Group is dedicated to producing and validating a graphene bioelectronics neural interface for in vivo multimodal brain sensing. One of the project's challenges is the design and fabrication of high-speed electronics to control and acquire the graphene sensor's signals at a high sampling rate. We are looking for a highly qualified Research Engineer to join our team in developing the electronics necessary to drive and control said graphene chips. The position is open and supported by the project NeuralGRAB - Graphene aptasensor bioelectronics: a neural interface for neurotransmission probing in neurological disorders funded by "la Caixa" Foundation under the grant agreement LCF/PR/HR21/00410.

The project aims to develop a novel bioelectronics neural interface to record in vivo brain electrical activity and five different neurotransmitters simultaneously, with a physiological spatiotemporal resolution, by combining RNA/DNA aptamer-based biosensors with graphene field-effect transistors and biosensors prototyping with functional neurophysiological experiments. The project is supported by an INL led consortium with the CSIC-INTAS Center for Astrobiology, Spain, and the University of Minho Medical School, Portugal.

The current position profile requires a Research Engineer to develop and optimize the control electronics for the operation of the graphene sensing chips. The selected candidate will be working with an international INL team under Dr. Pedro Alpuim (project leader and 2DMD Group leader) and Eng. Marco Martins (TE Group leader).

Job Duties

The Research Engineer will be responsible for the design, fabrication (where appropriate), and test of discrete analog, digital, and mixed-signal systems and interfaces from PCB layout to complete system integration, building the electronic control, and the data acquisition systems in the area of application. The selected candidate will undertake the following main activities and responsibilities:

- Use electrical models to design and produce electrical circuits based on discreet elements (printed circuit boards);

- Design and fabricate mixed-signal interfaces (ADCs, amplifiers, filters, current mirrors, others) and optimize these for low noise and low power operation if required;
- Design and implement software of embedded devices and systems;
- Development of Embedded FPGA solutions to accelerate high throughput data applications and Cyberphysical Systems development leading to larger SoC;
- Design, modeling, simulation, and implementation of feedback control schemes ranging from PID, adaptive to fuzzy logic;
- Implementation of neural networks for advanced data processing.

Note: The employment contract may be renewed based on the individual performance and the project duration.

Mandatory Qualifications

Education
- MSc Degree in Electrical Engineering or other relevant subject is required.

Experience
- Experience in the design, fabrication (where appropriate), and test of discrete analog, digital, and mixed-signal systems and interfaces;

Technical Skills
- Design, fabrication (where appropriate), and test discrete analog, digital, and mixed-signal systems and interfaces.

Other Skills
- Good English (written and spoken) and communication skills are required.

Preferred Qualifications
- Previous international experience in related fields is considered a plus.

Personal Skills
- Strong motivation to work as part of a team in an interdisciplinary environment;
- Teamwork spirit;
- Good communication skills;
- "Hands-on" approach combined with a high commitment to respecting working deadlines;
- High organization and dynamism;
- Problem-solving ability.

Note: Candidates should not have a labor contract with INL during the 12 months before the application.

Our Benefits
- Competitive salary;
- Tax benefits and other Diplomatic privileges;
- Private health insurance;
- Family allowances (according to the family situation);
- Free nursery service at INL premises (subject to availability);
- Support for education fees of dependent children;
- Relocation support;
- 30 working days of annual leave.

How to Apply
The application **must be in English** and include the following **mandatory documents**:

a) Cover letter;
b) *Curriculum Vitae*;
c) Academic and/or Professional diplomas;
d) **Recognition of academic degrees** (only academic degrees awarded by non-Portuguese higher education institutions)*.

*The selected candidate(s) with an academic degree granted by a non-Portuguese higher education institution must present, for hiring purposes, the certificate of Recognition of that degree(s) issued by the **Portuguese Directorate-General for Higher Education or by a Portuguese Public Higher Education Institution**. Please consult the website of the Portuguese Directorate-General for Higher Education: **https://www.dges.gov.pt/en.**

At the application stage, the supporting document(s) mentioned in paragraph (d) [Recognition of academic degrees (only academic degrees awarded by non-Portuguese higher education institutions)] **may be replaced by a Declaration of Honour (Template) from the candidate**. In this case, the application of the candidate will be provisionally accepted provided that the following conditions shall be satisfied:

1. The Declaration of Honour should state facts only prior to the application. If the information on the Declaration of Honour differs from the certificate of Recognition submitted at the stage of preparing the contract, only this last one is considered;
2. The Certificate of Recognition issued by the competent Portuguese Authority is mandatory at the stage of preparing the contract;
3. The Certificate of Recognition must match the information considered in the evaluation stage.

Online application instructions:

1. The application is made online by clicking the "Apply" button below;
2. The candidate must complete all required sections of the online application form;
3. The candidate must submit the mandatory documents mentioned above in pdf format by including them in the "Additional files" section using the "Add Portfolio" button.

Important note:
Incomplete applications, including the failure to provide mandatory documents or providing inaccurate information, will result in the application not being considered.

How the Selection Process works

A. Applications eligibility check

This stage will be carried out based on the mandatory requirements, education, experience, and technical skills defined for the job and the validation of the mandatory documents. Only candidates who meet the eligibility criteria will move to the next stage.

B. CV Assessment
The Selection Committee will evaluate the eligible applications based on their CV and other submitted documents and their suitability for the position. The best-ranked candidates will be shortlisted for the interview stage(s).

C. Interview(s)
The interview(s) may be done in different formats: video recording, online or onsite.

The question-based interview will evaluate the match between the candidate's profile and the requirements for the position, including the technical and personal skills. The candidate may be requested to prepare a short presentation to better support this stage.

D. Nomination
The selected candidate will be nominated and formally offered the position, including disclosing the contractual conditions.

Additional Information

Application feedback
We highly value the candidate's interest in becoming part of the INL experience, and we will maintain good communications with all candidates. No matter the outcome of the application, we will always provide feedback.

Equal Opportunity and Non-Discrimination Principle
INL follows a non-discrimination and equal access principle, wherefore no candidate can be privileged, benefited, impaired, or deprived of any rights whatsoever or be exempt of duties based on any possible discriminatory issues.

The advertisement deadline may be extended at any time without previous notice to improve the recruitment process's suitability and effectiveness.

About INL
The International Iberian Nanotechnology Laboratory – INL (http://www.inl.int), is the first and only Intergovernmental Organisation entirely focused on Nanoscience and Nanotechnology.
It was founded under an international legal framework to perform interdisciplinary research, deploy and communicate nanotechnology for the benefit of society. INL aims to be a recognized leading global nanotechnology innovation hub.