Postdoctoral

Ecole/Institution/Société:
Eindhoven University of Technology, **Netherlands / Eindhoven**

Discipline:
Electrical Engineering

Type d'emploi::
Full-time

Date de publication:
2025-02-23

Personne à contacter:
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PhD Position in Circuit Design for Sensing and Computing

Department(s) Electrical Engineering

FTE: 1,0

Reference number: V36.7977

Job description

Position Overview

The NanoComputing Research Lab in Integrated Circuits (IC) group within the Department of Electrical Engineering of the Eindhoven University of Technology (TU/e) is a leading research group dedicated to pushing the boundaries of knowledge in the field of physic-based computing. We are currently seeking a highly motivated PhD student to join our team to work on the design and implementation of Oscillatory Neural Networks (ONNs) for physics-based computing applications.

Project

The successful candidate will be an integral part of the prestigious NWO AiNED AI-on-ONN project on

harnessing the unique capabilities of ONNs for sense and compute. ONNs, inspired by the dynamics of coupled oscillators, exhibit inherent properties that enable efficient problem-solving through energy minimization. In this project, we aim to further explore and exploit the potential of ONNs performing sense and compute functions.

Candidate

We are seeking a highly motivated PhD candidate to join our research team in the field of analog and mixed-signal IC design, focusing on the implementation of oscillatory neural networks for sense computing. The ideal candidate will have a strong background in circuit design and be familiar with the IC design tapeout flow.

Main Responsibilities

Design and develop analog circuits for implementing ONNs for computing

Modeling, simulate and benchmark different computing tasks such as sensor data processing.

Explore ONN implementation topology and its energy efficiency.

Conduct comparison with experimental validations of circuit designs.

Collaborate with team members in NanoComputing Research Lab.

Communicate clearly, both written and verbal

Publish research findings in high-impact journals and present at international conferences.

Job requirements

A Master's degree in Electrical Engineering, Computer Engineering, or a related field.

Strong background in analog and/or mixed-signal circuit design and simulation.

Familiarity and some knowledge on AI, machine learning and neural networks is preferred.

Familiarity with IC design tools and tapeout flow.

Proficiency in relevant software tools (e.g., SPICE, Cadence, MATLAB).

Strong written and verbal communication skills.

Conditions of employment

A meaningful job in a dynamic and ambitious university, in an interdisciplinary setting and within an international network. You will work on a beautiful, green campus within walking distance of the central train station. In addition, we offer you:

Full-time employment for four years, with an intermediate evaluation (go/no-go) after nine months. You will spend 10% of your employment on teaching tasks.

Salary and benefits (such as a pension scheme, paid pregnancy and maternity leave, partially paid parental leave) in accordance with the Collective Labour Agreement for Dutch Universities, scale P (min. €2,901 max. €3,707).

A year-end bonus of 8.3% and annual vacation pay of 8%.

High-quality training programs and other support to grow into a self-aware, autonomous scientific researcher. At TU/e we challenge you to take charge of your own learning process.

An excellent technical infrastructure, on-campus children's day care and sports facilities.

An allowance for commuting, working from home and internet costs.

A Staff Immigration Team and a tax compensation scheme (the 30% facility) for international candidates.

Information and application

About us

Eindhoven University of Technology is an internationally top-ranking university in the Netherlands that combines scientific curiosity with a hands-on attitude. Our spirit of collaboration translates into an open culture and a top-five position in collaborating with advanced industries. Fundamental knowledge enables us to design solutions for the highly complex problems of today and tomorrow.

Information

Do you recognize yourself in this profile and would you like to know more? Please contact

Prof. Aida Todri-Sanial, a.todri.sanial@tue.nl.

Lab page: https://www.tue.nl/en/research/research-groups/electronic-systems/nanocomputing-research-lab

Reference: https://www.nature.com/articles/s44335-024-00015-z

Visit our website for more information about the application process or the conditions of employment. You can also contact Mrs. Vivi Maas, HR advisor v.l.maas@tue.nl.

Are you inspired and would like to know more about working at TU/e? Please visit our career page.

Application

If you are interested in working in an exciting, dynamic, high-tech environment, where you will contribute to creating the society of the future, we invite you to submit a complete application by using the 'apply now' button on this page.

The application should include:

cover letter in which you describe your personal motivation and qualifications specifically for the position.

curriculum vitae.

transcript of master and bachelor degrees.

copies of your final MSc thesis, including English abstracts, and (if applicable) published papers (PDF files) or Links to read them in case of too large files.

Submit at least one document written in English of which you are the main author.

Results of your IELTS or TOEFL test (or equivalent).

Contact information of two academic referees.

Please keep in mind you can upload only 5 documents up to 2 MB each. If necessary, please combine files or add a link to read them online.

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