

PhD position at NaMLab

Memristor / Memcapacitor Device Development

NaMLab is looking for a PhD candidate in the field of device development of memristive and memcapacitive devices and implementation of memcapacitor-based neuro-transistors. Utilizing these devices a hybrid Memristor-CMOS architecture for adoption as versatile non-conventional computation platform will be developed in close collaboration with two project partners at TU-Dresden. The work will cover all aspects from device level to system level in order to gain a comprehensive understanding of the practicality of adopting the aforementioned device concepts in unconventional computing systems such as multi-layer perceptrons (MLP), convolutional neural networks (CNN), and recurrent neural networks with long-short term memory (ReNN-LSTM). Device manufacturing, electrical characterization and modeling of the electrical behavior are integral parts of the research.

Responsibilities:

- Development and optimization of memristor and memcapacitor devices
- Integration of the devices into passive cross-bar structures and co-integration with NFET devices from the project partner IHM
- Electrical characterization and modeling of the manufactured devices
- Communication with project partners and reporting
- Concept development and basic circuit design

Your profile:

- M.Sc. / M.Eng. in electrical engineering / physics
- Well-grounded knowledge on semiconductor manufacturing and device physics
- Basic knowledge in analog circuit design
- Good technical comprehension and creativity
- Ability to work in a team environment

The following skills are a plus:

- Expertise in electrical characterization
- Experience in working in a clean room environment

Period:

- Planned starting date: February 2021
- Duration: 3 years

We offer:

The salary will be based on German research organization standards.

For further information please contact:

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