

Technische Universität Braunschweig - Institute of Neuromorphic Computing



Technische Universität Braunschweig is one of Germany's leading universities of technology. With more than 15,000 students and around 3,800 employees in research, teaching, and administration, it offers an exciting and diverse working environment. Our research focuses on mobility, engineering for health, metrology, and the city of the future. Everyone is talking about artificial intelligence — but who is developing the necessary chips? We are, for example! Data transfer between processor and memory is the central energy and performance bottleneck of modern AI hardware (the "von Neumann bottleneck"). Digital compute-in-memory resolves this bottleneck by executing multiply-accumulate operations directly within or immediately adjacent to the memory arrays — fully digital and therefore robust, scalable, and precise, while drastically reducing energy consumption. The Institute of Neuromorphic Computing (head: Prof. Dr. Thomas Kämpfe) designs and optimizes analog, mixed-signal, and digital integrated circuits in advanced CMOS technologies (e.g., FDSOI) for highly energy-efficient, brain-inspired computing systems — from in-memory computing and neuromorphic AI accelerators to hyperdimensional and probabilistic computing, frequently based on novel non-volatile memory technologies such as ferroelectric memories (FeFET). In close collaboration with renowned German and European partners from science and industry, including Fraunhofer IPMS, we take our designs all the way to fabricated silicon (tape-out). Starting from the earliest possible date we are looking for a Research associate (m/f/d) focusing on digital compute-in-memory accelerators

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(EG 13 TV-L - full-time/part-time) The position is suitable both for PhD candidates (with the clear goal of obtaining a doctorate) and for postdoctoral researchers. The position is initially a two-year fixed-term contract, with the intention of extending it. The fixed-term employment relationship is governed by the German Academic Fixed-Term Contract Act.

City: Braunschweig; Starting date (earliest): At the earliest possible; Duration: 2 Jahre;
Remuneration: EG 13 TV-L; Closing date: 06/08/26

Tasks

- Research and design of digital compute-in-memory architectures and macros (e.g., SRAM-based digital CIM macros, bit-serial/bit-parallel MAC arrays, adder trees) for energy-efficient deep learning accelerators
- Development of the design architecture, breakdown of requirements into functional blocks, and integration of the CIM macros into accelerator systems (memory hierarchy, datapaths, control, network-on-chip)
- RTL design (VHDL, Verilog/SystemVerilog) and RTL-to-GDS implementation (synthesis, place & route, e.g., Design Compiler, Cadence Genus/Innovus), including PPA analysis and optimization up to tape-out
- Hardware/software co-design: mapping and quantization of neural networks onto digital CIM macros as well as application-level evaluation (accuracy, energy, latency)

- Creation and execution of test benches for RTL and timing simulations, functional verification (timing analysis, code coverage, coding-rule checks), and FPGA prototyping
- Lab-based characterization and evaluation of fabricated chips
- Preparation of design documentation and publication of results in peer-reviewed journals and at international conferences
- Contribution to the institute's teaching activities (exercises, lab courses, supervision of student theses); as a postdoc, additional involvement in project acquisition and co-supervision of PhD candidates.

Requirements

- Completed scientific university degree (Master's or Diplom) in electrical engineering, electronics, information technology, computer science, or a comparable field; for an appointment as a postdoc, additionally an excellent doctorate in a relevant area
- Experience in RTL design (VHDL, Verilog/SystemVerilog) and/or FPGA design for different technologies and vendors (e.g., AMD/Xilinx, Intel/Altera, Lattice)
- Knowledge of synthesis and physical design tools (e.g., Design Compiler, Cadence Innovus) is an advantage
- Expertise in at least one of the following areas is a plus: compute-in-memory, memory technologies and memory circuits (e.g., SRAM), deep learning and neural network quantization, edge AI
- Strong problem-solving and analytical skills with the ability to independently drive complex design efforts
- High motivation to publish scientific results in peer-reviewed journals and to present at international conferences
- Good written and spoken English as the basis for working in an international team; German language skills are an advantage.

What we offer

- Varied and topical research work at one of Germany's leading technical universities with access to state-of-the-art EDA tools and regular tape-out opportunities
- The opportunity to pursue a doctorate with intensive scientific supervision or — as a postdoc — to further develop your scientific profile
- Remuneration in accordance with salary grade EG 13 TV-L, including an annual special payment and occupational pension scheme (VBL), plus 30 days of vacation per year
- Flexible working hours, part-time models, and the option of mobile working
- A family-friendly university culture (audited as a family-friendly university since 2007)
- A wide range of internal and external professional development opportunities and an extensive university sports program.

Application

We welcome applicants of all nationalities. We also welcome applications from severely disabled persons, who will be given preference in the case of equal suitability. Please

indicate this in your application and enclose appropriate proof. TU Braunschweig works to fulfill its equality mandate on the basis of the Lower Saxony Equal Rights Act (NGG); applications from women are therefore particularly welcome.

By submitting your application, you consent to your personal data being stored and processed for the purpose of the selection procedure.

Unfortunately, application costs cannot be reimbursed.

Application and Contact

Please send your complete application (cover letter, CV, transcripts/certificates, and — if applicable — a list of publications) by 06 August 2026, quoting the keyword "DigitalCIM", as a single PDF file by email to:

Prof. Dr. Thomas Kämpfe
thomas.kaempfe(at)tu-braunschweig.de

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Institute of Neuromorphic Computing
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38106 Braunschweig, Germany

For questions regarding the position, please contact Prof. Dr. Thomas Kämpfe.

More information at <https://stellenticket.de/205906/BEUTH/>
Offer visible until 06/08/26

