FARHAD EBRAHIMI

Lecturer & Research Assistant

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EXPERIENCE

Lecturer

FAU Erlangen-Nürnberg Technische Fakultät

Oct 2022 – Ongoing | Erlangen, Bavaria

- Architecture of supercomputers

Research Assistant

FAU Erlangen-Nürnberg Technische Fakultät

April 2022 – Ongoing | Erlangen, Bavaria

- **NOVA:** Non-volatile ternary processors based on the free processor instruction set architecture RISC-V".

SELECTED PROJECTS

- Design and Implementation of a 7-stage Ternary RISC-V processor supporting RV32IZmmul_zicsr ISA extension on an FPGA (RTL Design - Zynq™ 7000 & Zynq™ UltraScale+)
- Integration of custom instructions into the RISC-V Architecture & GNU-RISC-V-Toolchain supporting CSD arithmetic calculation
- Design of a Simple System-on-Chip (SoC) using Vivado & Modelsim simulators, featuring a CPU, Histogram, and MAC IPs, all interconnected via the Wishbone Bus (RTL).
- Initiated Petalinux with an Ubuntu rootfs for development on the Ultrascale+ family and developed drivers to interface with the PL IP core.
- Development of a Partial Reconfigurable Low-Pass FIR Filter (RTL).

TEACHING ASSISTANT

- Computer Architecture for Medical Applications, FAU, Summer 2024
- Computer Architecture for Medical Applications, FAU, Summer 2023
- ChiefTA,Fault-TolerantSystems,TarbiatModaresUniversity, Fall 2021
- Computer Architecture, University of Tehran, Fall 2018

PUBLICATIONS

Journal & Conference

- F. E. Azandaryani and D. Fey, "A µ-architectural design approach in accelerating risc-v performance with csd-encoded operands," *IEEE/SBC 36th International Symposium on Computer Architecture and High-Performance Computing*, 2024.
- F. E. Azandaryani and D. Fey, "Extern: Boosting risc-v core performance using ternary encoding," *Microprocessors and Microsystems*, vol. 107, 2024.
- F. E. Azandaryani, O. Akbari, M. Kamal, A. A. Kusha, and M. Pedram, "Accuracy configurable adders with negligible delay overhead in exact operating mode," *ACM Transactions on Design Automation of Electronic Systems*, 2022.
- F. E. Azandaryani, O. Akbari, M. Kamal, A. Afzali-Kusha, and M. Pedram, "Block-based carry speculative approximate adder for energy-efficient applications," *IEEE Transactions on Circuits and Systems II: Express Briefs*, vol. 67, 2019.

EDUCATION

M.S. in Computer Science

University of Tehran

Sept 2016 – Feb 2019

B.S. in Computer Science

Hamedan University of technology

Sept 2010 – Jan 2015

SKILLS

VHDL/Verilog | Vivado | Modelsim | Design Compiler & Prim Time | FPGA | C/C++/SystemC | openMP & CUDA | VScode | Version control | Github/lab

FIELD OF INTEREST

Approximate Computing | HW Accelerator | Computer Architecture | ASIC/FPGA Design | Re-configurable computing | CPU & RISC-V | SoC modeling/Design | Computer Arithmetic

LANGUAGES

German
English
Azerbaijani
Persian/Farsi

REFEREES

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Prof. Ali Afzali Kusha
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