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

- Design and Implementation of ternary-based RISC-V softcore on FPGA

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 Arichtecture & 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
- Chief TA, Fault-Tolerant Systems, Tarbiat Modares University, Fall 2021
- Computer Architecture, University of Tehran, Fall 2018

PUBLICATIONS

📄 Journal & Conference

- F. E. Azandaryani and D. Fey, "Accelerating computations in risc-v cores: A μ-architectural method using ternary encoding of operands," *27th Euromicro Conference Series on Digital System Design (DSD)*, 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 · Xilinx ISE · C/C++/SystemC · VScode · Visual Studio · Code Vision · Version control · Github

FIELD OF INTEREST

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

LANGUAGES

English
Azerbaijani
Persian
German

REFEREES

Prof. Dietmar Fey
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Prof. Ali Afzali Kusha
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✉ afzali@ut.ac.ir

Dr. Omid Akbari
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