

# Amirmahdi Joudi

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## Education

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- 2025-2029 **EPFL - École Polytechnique Fédérale de Lausanne**, Geneva, Switzerland  
Ph.D. in Electrical Engineering; Expected Graduation: 2029
- 2022-2025 **University of Tehran**, Tehran, Iran  
M.Sc. in Electrical Engineering; GPA: 19.33/20.00; ranked 1st
- 2018-2022 **University of Tehran**, Tehran, Iran  
B.Eng. in Electrical Engineering; GPA: 18.91/20.00; ranked 3rd

## Research Experience

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- 2021-2022 **Undergraduate Research Assistant at CAD-LAB, University of Tehran**  
Under Supervision of Prof. Zainalabedin Navabi
- **AFTAB RTL optimization using QFlow:** Timing and power optimization of a risc-v processor named AFTAB at register transfer level using post-route STA in qflow, and dynamic power report in Synopsys Design Compiler.
  - **AFTAB FPGA prototyping using ALTERA Cyclone series:** FPGA implementation and testing of AFTAB using cyclone FPGA and GNU-toolchain.
- 2022-2025 **Graduate Research Assistant at CAD-LAB, University of Tehran**  
Under Supervision of Prof. Zainalabedin Navabi
- **HIRMA: High-Performance Implementation for RISC-V Microcontroller Applications:** a RISC-V based microcontroller design named HIRMA, including FPGA prototyping and ASIC design (180 nm).
  - **An Integrated Framework for Aging Analysis Based on an Age-Aware Cell Library:** device-level aging parameters backpropagation into age-aware gate models in systemC using an automated framework.
  - **SoC design and prototyping:** Mentoring a group for FPGA prototyping of an embedded-system including risc-v processor, uart, timer, crc, aes, rsa, and memories with implementation of small-OS in C language for the purpose of embedded-systems.
  - **PIES-BCI (Project for implementation of an embedded system for brain-computer interface applications):** a framework for compilation of a reconfigurable embedded system including filters, feature extractors, and classifiers for BCI applications like P300-speller in systemC and verilog for FPGA and ASIC purposes.
- 2025-2029 **Doctoral Assistant at INL, EPFL**  
Under Supervision of Prof. Mahsa Shoaran
- **Hardware for Brain-To-Text:** An scalable and low-power hardware architecture for brain-to-text applications on FPGA and ASIC (28 nm).

## Publication

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- 2023 **HIRMA: High-Performance Implementation for RISC-V Microcontroller Applications**  
2023 IEEE East-West Design and Test Symposium (EWDTS). Nov 2, 2023
- 2024 **An Integrated Framework for Aging Analysis Based on an Age-Aware Cell Library**  
2024 currently under review

## Teaching Assistant

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2023-2024	<b>Computer Architecture</b> , Teaching Assistant for Prof. Saeed Safari
2023	<b>Core-based Embedded System Design</b> , Teaching Assistant for Prof. Ahmad Shabani
2023	<b>Operating Systems</b> , Teaching Assistant for Prof. Mehdi Kargahi
2023	<b>Object-Oriented Modeling of Electronic Circuits</b> , Teaching Assistant for Prof. Zain Navabi
2022	<b>FPGA-based Embedded System Design</b> , Teaching Assistant for Prof. Bijan Alizadeh
2022-2023	<b>Digital Logic Design 1 Lab</b> , Teaching Assistant for Prof. Zainalabedin Navabi
2021-2022	<b>Digital Logic Design 1</b> , Teaching Assistant for Prof. Zainalabedin Navabi

## Awards & Achievements

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- **Full Scholarship Offer:** Full scholarship offer for graduate studies from University of Tehran and Sharif Institute of Technology. Awarded to undergraduate students who have been ranked in the top 5 according to their GPA. I ranked 3 among 116 students and I got accepted for M.Sc in digital electronic systems.
- **Ranked 1st in M.Sc Overall Ranking**
- **Ranked 3rd in B.Eng Overall Ranking**

## Work and Internship Experience

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2025	<b>Intern at INL EPFL, E3 Program</b> Intern at INL as hardware designer
2021-2022	<b>Research and Development engineer at MEHBANG Group</b> ARM embedded programmer and PCB designer at Xima and Datis elevator branch
2021	<b>Intern at MEHBANG Group</b> Intern at MEHBANG, QUBY branch as Raspberry Pi and ARM programmer

## Skills

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- **Logic Design:** ESL design, processors, accelerators, SoC frameworks, EDA tools, FPGAs, post manufacturing testing, FPGA based testers, HW for ML, AI HW, embedded-BCI, and ASIC design.
- **Programming:** C, C++, SystemC, Python, MATLAB, HSpice, Open MP, CUDA.
- **Hardware Description Language:** VHDL, Verilog, SystemVerilog, Chisel.
- **Tools:** MATLAB Simulink, Xilinx ISE, Xilinx Vivado, Synopsys Design Compiler, Cadence Innovus, Cadence Virtuoso, Altium Designer, Calibre, ModelSim, QuestaSim, Quartus, Keil, riscv-gnu-toolchain, GEM5, Qflow, OpenLane, Linux.
- **Languages:** Persian (Native), English (Professional).

## Relevant Coursework

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- **Major coursework:** Digital Logic Design, Computer Architecture, Numerical Methods, Statistics and Probability, Electronics I-II, Signals and Systems, Engineering Mathematics, Computer Programming, Advanced Programming, Object Oriented Modeling of Electronic Systems, Electronic System Level Design, Digital Electronics, FPGA-based Embedded System Design, Core-based Embedded System Design, Data Structures and Algorithms, Parallel Programming, Advanced VLSI, VHDL, Advanced Computer Architecture, Verification of Digital Systems, Computer Arithmetic, Artificial Intelligence, Deep Neural Networks, Operating Systems, Test and Testability, Industrial Electronics, Entrepreneurship.

## Test Degrees

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Jul 2024	<b>TOEFL iBT</b> , Score: 107
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