

# Muhammad Zareii

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## Profile

Electronics Engineer and Master’s student in Wireless Communications Engineering (WCE) at the University of Oulu. Strong background in embedded hardware, firmware development, and signal processing, complemented by research in semiconductor devices and wave simulations. Hands-on R&D experience in developing embedded systems, with current focus on hardware/software design for communication systems and D2NN-based direction-of-arrival estimation.

## Professional Experience

**Electronics R&D Engineer** — Sepidgaman Parseh, Shiraz, Iran | 2022–2024

- Designed and developed embedded systems and biomedical electronics.
- Built motor driver modules, color detection sensors, and laser drivers.
- Programmed microcontrollers (AVR, ARM, ESP32) for control, data acquisition, and communication.

## Education

**M.Sc., Wireless Communications Engineering (WCE)** — University of Oulu, Finland (2025–present)

**M.Sc. studies (coursework completed, top rank), Micro/Nano Electronics** — Tarbiat Modares University, Tehran, Iran (2023–present)

- Completed full coursework with top rank in the Department of Electronics Engineering; also completed advanced courses in the Department of Physics (Nanophysics & Optics).
- Program left unattended prior to thesis submission; official transcript of records available upon request.

**B.Sc., Electrical Engineering (Electronics)** — University of Tabriz, Iran (2018–2023)

## Skills

- Semiconductor & IC Design:** Solid understanding of analog/mixed-signal fundamentals, semiconductor device modeling, and layout design principles; coursework & lab experience with Cadence Virtuoso and SPICE.
- EDA & Simulation Tools:** Cadence Virtuoso, COMSOL Multiphysics, MATLAB, Altium Designer, Proteus.
- Electronics & Fabrication:** Micro/nano-fabrication concepts, photonic device simulation, optoelectronic component modeling (LiNbO<sub>3</sub>, perovskites, photonic crystals).
- Embedded & Systems:** STM32 (CubeIDE, FreeRTOS, I<sup>2</sup>C/SPI/UART), real-time data logging, system integration.
- Programming:** C, C++, Python, MATLAB, Git/GitHub.

## Selected Projects

- Model Builder WebApp (2025):** Semiconductor process modeling tool with AI-assisted frontend (HTML/JavaScript) and Python backend; integrates Excel/live sensor data from embedded stations to optimize fabrication parameters.
- Data Logger Board (2025):** STM32-based modular data logger with SD storage, multi-sensor interfaces, and custom UI.
- Simulation of Photonic Crystal Gates (2023):** Modeled all-optical logic gates using COMSOL.
- Wireless Identity Verification (2023):** ESP32-based system with computer vision for gesture and face recognition.

## References

References from Tarbiat Modares University (Departments of Electronics Engineering and Physics – Nanophysics & Optics) and from Sepidgaman Parseh are available upon request.