Mahmoud Osman

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Professional Summary

Embedded systems engineer with hands-on experience in IoT device design, PCB development, and microcontroller-based systems. Proficient in C++ (OOP), Python (data analysis), and firmware development using FreeRTOS/ESP-IDF. Experienced in FPGA prototyping, component selection, circuit testing, and instrumentation. Passionate about building optimized hardware/software systems and communicating technical concepts through teaching and collaboration.

Education

Joanneum University of Applied Sciences, Graz, Austria   Oct 2024 – Present
- MSc in Electronics Engineering (Embedded Systems)

University of Pécs, Pécs, Hungary   Sep 2019 – Jan 2023
- BSc in Electrical Engineering (Embedded Systems)

Work Experience

Specialized Lecturer, University of Pécs, Pécs, Hungary   Feb 2023 – Jan 2025
- Delivered undergraduate courses in microcomputers, project laboratory, communication engineering, and microelectronic system design
- Reviewed and assessed over 10 bachelor theses as an external examiner.
- Led hardware/software development for a smart IoT comfort-monitoring device.
- Conducted verification and analysis using oscilloscopes, power supplies, and multimeters.

Junior Researcher, CoolLife Project, ABUD Kft, Budapest, Hungary   Dec 2022 – Jan 2023
- Reviewed scientific literature on sustainable building technologies using Zotero for reference management.
- Extracted and synthesized key insights to support research objectives and technical documentation.
- Collaborated with colleagues from multiple EU countries, including Italy and Austria, to align research efforts and share insights across teams.

Electrical Engineering Intern, Solar Decathlon Europe, Wuppertal, Germany   Feb 2022 – June 2022
- Designed and implemented a solar power system integrating solar panels, inverter, and battery storage.
- Configured a PLC-based smart home system for centralized lighting control.
- Set up and configured a router for local area network connectivity.
- Installed and wired the home electrical distribution box, including connections for lighting, switches, and sockets.

Project Experience

LM5146 Buck Converter
- Designed 8-layer PCB using Altium Designer for 48V to 12V @ 6A conversion with 96% efficiency.
- Conducted comprehensive component selection and evaluation to optimize performance while maintaining cost effectiveness.

IoT Data Acquisition Device
- Developed ESP32-based device for environmental monitoring.
- Programmed in FreeRTOS (ESP-IDF) for real-time sensor data acquisition.
- Designed PCB schematics and layouts using KiCAD.

Skills

- **Hardware & PCB Design**: Altium Designer, KiCAD, schematic capture, analog & digital design, DFM/DFT, prototyping.
- **Embedded Systems**: C, C++, Python, FreeRTOS, ESP-IDF, ESP32, Arduino, SystemVerilog, Xilinx FPGA.
- **Tools & Software**: Git, Linux, MATLAB, Cadence PSPICE, MS Office.
- **Lab Skills**: Measurement Instruments, Oscilloscope, multimeter, power supply, soldering, debugging.

Soft Skills

Team collaboration, public speaking, teaching and mentoring, technical communication, problem-solving, analytical thinking.

Languages

Arabic	Native
English	Proficient(C1)
German	Conversational(A2/B1)
Hungarian	Conversational(A2/B1)

Graz, July 2025