

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, 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

FH Technikum Wien , Vienna, Austria	Sep 2025 – Present
• MSc in Internet of Things and Smart Systems	
FH Joanneum , Graz, Austria	Oct 2024 – Sep 2025
• 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(B1)
Hungarian	Conversational(B1)

Vienna, October 2025