UZAIR ASHFAQ

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About Me

Master's student in Embedded Systems Security at Grenoble INP–Esisar, focused on embedded firmware and connected devices. Experienced with MCU programming (STM32/PIC/ESP32), RTOS-based development, RTL design and verification, and PCB design, supporting embedded bring-up and system integration across common communication protocols. Seeking a 6-month internship starting Feb–Mar 2026 in embedded firmware or secure embedded system design.

Education

International Master in Embedded Systems Security (IMESS) Sep 2025 – Present
Grenoble INP – Esisar, Université Grenoble Alpes, Valence, France

BS in Electrical (Electronics) Engineering Sep 2020 – Aug 2024
COMSATS University Islamabad, Pakistan

Experience

Embedded Systems Engineer – *Lean Automation* Sep 2024 – Aug 2025
Abbottabad, Pakistan

- Developed embedded C firmware for STM32/PIC microcontrollers, integrating UART/I^2C communication, timers, and interrupt-driven control loops for industrial automation, improving communication reliability and system responsiveness.
- Designed and revised 4-layer PCBs in Altium Designer, improving signal integrity and reducing bench-level debugging during bring-up.

Artificial Intelligence Intern (Remote) – *Code Alpha* Aug 2024 – Sep 2024
Remote

- Developed and trained CNN and MLP models using TensorFlow and PyTorch for image classification and other tasks.

Technical Skills

Programming Languages: C, C++, Python, ARM Assembly, VHDL, Verilog
Microcontrollers & Platforms: STM32, PIC18F, AVR, ESP32, Raspberry Pi, Zybo Z7-10, Basys-3 FPGA
Communication Protocols: UART, SPI, I^2C,CAN, BLE
Operating Systems: Bare-metal, FreeRTOS, Embedded Linux (basic)
Development Tools: Xilinx Vivado/Vitis, STM32CubeIDE, Altium Designer, MATLAB/Simulink, Git/GitHub

Projects

Flexural Testing Machine (Control PCB + Firmware)

- Designed a 4-layer Altium control PCB and developed STM32 firmware to automate catheter kink testing: stepper/servo motion control, load-cell force acquisition, and real-time results display via touch HMI with safety interlocks.
- *Tools:* Altium Designer, STM32 (Embedded C), Timers/PWM, I2C (Load Cell ADC), UART (DWIN HMI), USB-UART

Industrial Radio (Solar-Powered Wireless AC Current Monitor)

- Developed a solar-powered wireless AC current monitoring device using a Rogowski coil interface and ESP32, transmitting measured current data over LoRa (optional GSM) for remote monitoring in harsh industrial environments.
- *Tools:* Altium Designer, ESP32, Analog Front-End (Integrator), LoRa/RSF95 (SPI), Power Management (Solar/LiPo), UART (GSM/GPS)

Industrial Sensor Data Logger (STM32)

- Built a simple STM32 data logger that samples sensors via ADC/I2C on a timer schedule, timestamps readings, and streams data over UART or stores it locally, using interrupts for reliable non-blocking acquisition.
- *Tools:* STM32CubeIDE, Embedded C, ADC, I2C, UART, Timers, Interrupts

Additional Information

Languages: English (Professional Working Proficiency), French (Basic Proficiency)

Availability: 5–6 month internship starting February/March 2026; open to relocation within France.