Mohammad Hajjo

LinkedIn | Portfolio

Summary

Results-driven Computer Science Engineer specializing in embedded systems, IoT, and real-time operating systems. Proven track record in developing high-performance applications—from AI-driven handwriting recognition on ESP32 to fault-tolerant distributed systems. Combines deep technical expertise in C/C++ and Python with hands-on experience in hardware diagnostics, component-level repair, and technical instruction. Certified in Agile/Scrum with a focus on system reliability and optimized performance.

Technical Skills

Programming Languages: Java, Python, NetLogo, JavaScript, C, C++, C#, Assembly, MATLAB

Embedded Systems Frameworks: ESP-IDF, FreeRTOS, STM32Cube HAL, Zephyr RTOS, Mbed OS, Micropython

Libraries & Tools: Git, Docker, Visual Studio Code, Linux, SQL, Node.js, Bootstrap, Figma

Concepts: Multithreading, Concurrency, Real-Time Systems, Wireshark, Agile Development, Scrum

EDUCATION

Malmö University — Malmö, Sweden
B.S. of Science in Engineering in Computer Science — Aug 2022 – Jun 2025

Thesis: 860+ downloads on DiVA Portal

Experience

Internship — Sep 2025 – Present
NOBEL TEKNIK — *Malmö, Sweden*

- Repaired and maintained smartphones, tablets, and computers, including both iPhone and Android devices.
- Diagnosed and resolved hardware and software issues efficiently, ensuring high customer satisfaction.
- Performed component-level repairs and soldering to restore hardware functionality without full part replacements.

Teaching Assistant — Aug 2023 – Jun 2024
MALMÖ UNIVERSITY — *Malmö, Sweden*

- Assisted in embedded systems and programming labs, guiding students through coding, debugging, and hardware integration.
- Guided students in electronics, microcontrollers, and system design through individual support and feedback.
- Troubleshot complex hardware/software issues during practical sessions, ensuring smooth lab progress.

Private Tutor — Nov 2023 – Jun 2024
STUDENTEA (org nr: 969792-3028) — *Malmö, Sweden*

- Delivered personalized tutoring in mathematics, physics, and programming, adapting methods to individual learning styles.
- Supported students with test preparation, assignments, and conceptual understanding, leading to improved performance.
- Maintained strong student relationships, resulting in extended contracts and positive feedback.

Supervisor — Jun 2021 – May 2025
ELEDA STADION — *Malmö, Sweden*

- Oversaw kiosk operations during large-scale events, ensuring smooth service for thousands of visitors.
- Managed staff scheduling, task delegation, and on-site problem solving to maintain efficiency and customer satisfaction.
- Coordinated inventory logistics and enforced compliance with food safety and hygiene standards across multiple units.

Projects

Letter Recognition for Handwriting on Embedded System Using a Machine Learning Model Spring 2025
Thesis Project *Python, PyTorch, ESP-IDF, ML*

- Built a real-time handwriting recognition system on ESP32-CAM using a custom-written CNN.
- Optimized model with quantization and data augmentation to meet embedded memory and performance constraints.
- Developed a fully standalone, low-power embedded system with on-device image capture, processing, and display.

Multi-Threaded Chat System Spring 2024
Software Development Project *Java, Networking, Threads, OOP*

- Developed a client-server chat application supporting multiple concurrent users via multithreading and socket programming.
- Implemented message broadcasting, private messaging, and connection management with robust error handling.
- Applied object-oriented design principles to structure communication protocols and thread synchronization.

Firefighter Coordination System Fall 2024
Software Engineering Project *ESP32, C, Embedded Systems, Networking, Threads*

- Designed and implemented a peer-to-peer mesh communication system on ESP32 devices using ESP-NOW.
- Enabled real-time status updates, task assignment, and location sharing across multiple nodes without central infrastructure.
- Optimized communication reliability and latency for large-scale deployments in emergency scenarios.

Distributed Intelligent System Fall 2024
Software Engineering Project *Git, Distributed Systems, Intelligence / ML, Networking, NetLogo*

- Designed and implemented a multi-node system with agents exchanging information over message queues / gRPC, coordinating tasks in a distributed environment.
- Incorporated machine-learning modules for decision making / prediction at edge-nodes with limited compute, balancing load and accuracy.
- Handled fault tolerance: node failures, retries, message ordering, consistency, etc.

Hobby Projects

Automated IC Identification & Validation System Winter 2025
Automated system project *C/C++, Arduino, SPI, UI/UX, Hardware Debugging, QA*

Engineered a high-reliability diagnostic system using Arduino Mega and a ZIF-socket to automate digital IC identification.

Developed a custom Search Algorithm based on pin signatures, significantly reducing lookup time vs. sequential methods.

Programmed high-speed SPI communication for SD card database interfacing and real-time TFT LCD processing.

Implemented ”Validate Mode” for pin-level diagnostics, detecting gate failures often missed by commercial tools.

Designed an interactive GUI with a virtual keyboard to enhance user experience and visual feedback.

IoT-Enabled Smart Plant Watering System Fall 2025
Embedded Systems Project *ESP32, IoT, Sensors, C/C++, Blynk*

- Designed and built an autonomous plant watering system using ESP32 with capacitive soil moisture, temperature, and humidity sensors.
- Controlled a water pump via MOSFET driver based on real-time soil and environmental conditions to prevent overwatering.
- Integrated IoT functionality for remote monitoring and manual control using the Blynk platform.
- Implemented data logging, adaptive watering logic, and power-efficient deep sleep mode for outdoor operation.

Smart Restaurant Management and Ordering System Fall 2025
Full-Stack Mobile Application Project *Flutter, SQLite, UI/UX, PDF Generation*

- Developed an interactive restaurant configuration app allowing users to draw the restaurant layout and assign numbered tables.
- Implemented a menu management system to add, edit, and price menu items dynamically.
- Designed a cashier interface enabling waiters to select tables, take orders, and print detailed receipts.
- Utilized SQLite for persistent storage of layouts, menus, and order history with modular architecture for scalability.

Additional Information

Driving licence: B (Manual)

Forklift licence: Certified operator

Languages: Swedish (native), English (fluent), Arabic (native), Turkish (intermediate)

Certifications:

- C# for .NET Developers
- Agile Development and Scrum
- Google Tools of the Trade: Linux and SQL
- Google Foundations: Data, Data, Everywhere
- Microsoft Secure Access with Azure Active Directory
- Software Engineering: Modeling Software Systems using UML