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

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.

EDUCATION

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

Thesis: 860+ downloads on DiVA Portal

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