



Ali Mobini

Software Engineer | Embedded · Backend · Data

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🇳🇱 Dutch orientation-year residence permit — authorised to work in the NL, no work permit or sponsorship required

Profile

Applied Computer Science graduate (Saxion, GPA 7.9/10) with 4+ years of combined professional and applied-research experience across embedded Linux, backend development and data-driven systems. I am comfortable owning a system end to end — from firmware and sensor drivers, through APIs and data pipelines, to the dashboard someone actually looks at. My background also spans computer and mechanical engineering, which helps me work on problems that sit between disciplines. Recent results include a **30% reduction in false safety alarms**, **60% less system downtime**, and **40% faster model deployment**, plus a peer-reviewed publication at ICT.OPEN 2025.

Technical Skills

Languages: Python, C, C++, C# / .NET, Java, SQL, Bash, VHDL

Backend & APIs: .NET Core, Flask, REST, WebSockets, TCP/IP, multithreading & concurrency, JWT / OAuth 2.0, SQL Server, PostgreSQL

Data & ML: Docker, Apache Airflow, MLflow, InfluxDB, Grafana, XGBoost, Kalman filtering, Bayesian inference

Embedded & IoT: Embedded Linux (SystemD, udev, journalctl), FreeRTOS, ESP32, MQTT, UART / SPI / I²C, GNSS / RTK

Ways of working: Agile / Scrum, Git, CI/CD, V-Model, unit & integration testing, technical documentation, stakeholder communication

Professional Experience

Junior Researcher — Embedded & Data Systems | AMI Research Group, Saxion University

08/2023 – 08/2025

- **Took system startup reliability to 100% and cut downtime by over 60%** by diagnosing SystemD boot failures through journalctl, introducing udev rules for deterministic device paths, and restructuring the platform into isolated services with automatic recovery.
- **Reduced false safety alarms by 30%** on a GNSS geofence system for excavators by designing a Bayesian probabilistic decision framework in Python that combined Kalman filtering with spatial-uncertainty PDF/CDF estimation.
- **Improved positional accuracy to roughly 20 cm** by integrating RTK corrections over UART and network services, bringing horizontal dilution of precision down from ~ 0.5 to ~ 0.2 .
- **Enabled real-time remote monitoring** by building a multithreaded Python streaming service exposing TCP and WebSocket interfaces, using message queues for thread safety.
- **Published and presented** the probabilistic framework at **ICT.OPEN 2025**, working in two-week sprints with the engineering consultancy Witteveen+Bos as project partner.

Software Developer | MTN Irancell, Arak Service Center

06/2019 – 07/2021

- **Increased operational efficiency by 25% and reached 100% reporting accuracy** by replacing manual accounting workflows with Python/Selenium automation.
- **Delivered an internal accounting and staff-monitoring platform** in C#/.NET with SQL Server, OAuth 2.0 / JWT authentication and role-based access control, exposed to Android and web clients through REST APIs.
- **Hardened the platform** against SQL injection and XSS, and shipped a companion Android client in Java for real-time access.

Technical Support Supervisor | MTN Irancell, Arak Service Center

04/2017 – 06/2019

- **Improved team response times by 30%** by supervising, onboarding and coaching customer service representatives while handling escalated mobile and network issues.

Key Projects

Hardware-Backed Security for EU Digital Product Passports | Bachelor's Thesis — Embedded C, FreeRTOS, ARM TrustZone, Python

- **Built an end-to-end root of trust** on the NXP FRDM-RW612 (Cortex-M33 + TrustZone TEE + EdgeLock secure element) so that device private keys are generated in hardware and never leave it, meeting EU NIS2, ESPR and EN 303 645 requirements.
- **Secured the full data path** with ECDSA P-256 signing, SHA-256 integrity hashing, per-payload ECDH + AES-256-CBC encryption and TLS 1.3, implemented on FreeRTOS with mbedTLS / PSA Crypto.
- **Created a tamper-evident audit trail** via a Python Flask backend performing signature verification, nonce-based replay detection and hash-chain checks, anchoring verified payloads to the IOTA distributed ledger.

End-to-End MLOps Pipeline for Environmental Sensor Data | Python, Docker, Airflow, MLflow, Grafana, InfluxDB

- **Cut model deployment time by 40% at an RMSE of 0.15** by containerising the full lifecycle — ingestion, preprocessing, training (XGBoost, Chronos), evaluation and release — and orchestrating it with Airflow and MLflow under CI/CD.

- **Made predictions accessible to non-technical users** through an n8n chatbot interface served over a REST API, backed by Grafana/InfluxDB monitoring.

Scalable E-Commerce Platform | .NET Core, SQL Server, JWT, REST

- **Sustained 500+ concurrent simulated transactions with zero data loss** under stress testing, using an MVVM structure with dependency injection, JWT authentication and role-based admin controls.

Real-Time Edge AI: Face Tracking & Logo Detection | Python, MobileNetV2, OpenCV, embedded hardware

- **Reached 98.7% face-recognition and 91.2% logo-detection accuracy** on resource-constrained hardware using MobileNetV2 transfer learning with mixed-precision training, and a synthetic data pipeline that generated 1,000 balanced samples to overcome dataset scarcity.

Additional Projects

Procedural Language Compiler — built from scratch with ANTLR / LEX / YACC — lexical and syntactic analysis, control structures and arithmetic, running 10–20% faster than the baseline implementation.

Autonomous RC Vehicle (team lead, 6 people) — C/C++ on microcontrollers with LIDAR and time-of-flight sensing and PID control; 98% path accuracy with obstacle avoidance and adaptive hill climbing.

Custom Linux Kernel Driver — character driver in C for embedded sensors; race conditions and memory errors resolved through systematic GDB debugging.

FPGA ALU, VGA Controller & NIOS II Soft-Core — VHDL and Embedded C in Intel Quartus — stable 1080p@60 Hz VGA output and UART text rendering.

Smart Health Wearable & Weather Station IoT — ESP32 fall detection at 90% accuracy with OTA updates; MQTT sensor network into Azure IoT Hub with a live dashboard.

Cinejo — a consumer application I am building end to end (backend service and client); the core algorithm is kept private ahead of release.

Publication

“A Probabilistic Approach for a Robust Safety Warning System: The GeoSaFence Solution”

Presented at ICT.OPEN 2025 — the Dutch national ICT research conference. Co-authored during my research placement at the AMI Research Group, Saxion University of Applied Sciences.

Education

Saxion University of Applied Sciences, Enschede, Netherlands 09/2022 – 08/2026
Bachelor of Applied Computer Science (graduated) GPA: 7.9 / 10

- Minor in Embedded Systems (FPGA/VHDL, Linux kernel drivers, RTOS); thesis on hardware-backed IoT security.

Azad University (IAU), Iran 09/2015 – 07/2022
Computer Engineering (6 of 8 semesters) and Mechanical Engineering (7 of 8 semesters) — a multidisciplinary foundation spanning software, electronics and mechanics.

Certifications: C# Programming | Android Development Pack | CCNP Switch | SQL Server Database Development

Languages

Persian (Native) | **English** (Fluent, C1 — full working proficiency) | **French** (A2) | **Dutch** (A1, actively learning)