

ABDELRAHMAN ELMORSI

Control & Automation Engineer | PLC & Industrial Protocols, Embedded C++, Python
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Control & Automation Engineering student at YTÜ (expected graduation June 2027) building industrial and embedded systems end to end: Siemens S7-1200 hardware-in-the-loop testbeds over Modbus TCP and OPC UA, C++ servo-control firmware, EMG signal processing, and the Python services and dashboards around them. Leads engineering at SmartSites, an AI construction-site monitoring platform running vision inference at the edge.

EXPERIENCE

SmartSites

Istanbul, Türkiye (Hybrid)

Software Engineering Team Lead

Sep 2026 – Present

Software Engineer

Jul 2026 – Sep 2026

- Lead engineering for an AI construction-site monitoring platform: edge computer-vision inference, Python/FastAPI services, and mobile-first dashboards used on site.
- Developed OpenCV/XGBoost edge inference and validated predictions against hand-counted ground truth; connected vision outputs to BIM quantity-takeoff workflows.
- Implemented project-scoped role-based access control and load-tested backend read paths. Backend test suite exceeds 1,000 tests.

ManteeQ

Co-Founder & Technical Lead

Apr 2026 – Present

- Building an Arabic pronunciation coach with Wav2Vec forced alignment, Python/WebSocket services, and a React Native frontend for phonetic feedback.
- Selected for the ETKİM Yıldızları Acceleration Program to develop the MVP and optimize inference for edge deployment.

Turing

Remote

AI Quality Analyst (Contract)

May 2026 – Present

- Evaluate LLM outputs for factual grounding, logical consistency, and Turkish cultural relevance. Design multi-turn prompts over retrieval datasets and document RAG evaluation failures.

SELECTED PROJECTS

ICS Security & Anomaly Detection via Digital Twins

Graduation project

- Wrapped a Python physics simulation of a water-treatment process in Modbus TCP and ran it hardware-in-the-loop with a physical Siemens S7-1200 PLC: under 20 ms round-trip in test runs.
- Edge intrusion detection (Random Forest + Isolation Forest) reached sub-500 ms time-to-detection, with SHAP explaining flagged traffic. Benchmarked five unsupervised models across four IEC 62443-aligned attack scenarios; best F1 71.6% on simulated $\pm 2.5\sigma$ sensor spoofing.
- Built a Next.js/Three.js 3D digital twin streaming live telemetry over Modbus TCP and OPC UA.

Robot Arm Ecosystem

YTÜ Yıldız Kaşifleri grant

- Wrote C++ (PlatformIO) servo firmware for a 5-DOF arm with a serial angle protocol, emergency stop and idle timeout.
- Filtered BITalino EMG signals (50 Hz notch, 20-400 Hz bandpass) for a Random Forest gesture classifier that reached 94% accuracy in test runs; added MediaPipe hand tracking and Whisper speech control.

EDUCATION

Yıldız Technical University

Istanbul, Türkiye

B.Sc. Control & Automation Engineering

Oct 2023 – Jun 2027 (expected)

TECHNICAL SKILLS

Control & automation: Siemens S7-1200 PLC, Modbus TCP, OPC UA, hardware-in-the-loop testing, MATLAB/Simulink, control systems, kinematics, IEC 62443

Embedded & signals: C++ (PlatformIO), Arduino, ESP32/BLE, serial protocols, NumPy/SciPy filtering, EMG acquisition

Software & ML: Python, FastAPI, TypeScript, Next.js, React Native, PostgreSQL, Docker; scikit-learn, OpenCV, XGBoost, PyTorch

Languages: Arabic - native; English - C1; Turkish - B2

LEADERSHIP & AWARDS

- YTU Arab Students Union: Technical Founder (Aug 2025 - Sep 2026). YTÜ International Students Club: Secretary General & Web Lead (May 2024 - Jun 2025); led 50+ volunteers.
- TEKNOFEST 2025 finalist. MathWorks Hackathon: 2nd (May 2026). BEST: 3rd (Apr 2026). SKYDAYS CTF: 6th (2025), 9th (2024).