

# Abdelrahman Elmorsi

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Control & Automation Engineering student at YTÜ specializing in AI-driven full-stack development, ICS/OT security, and robotics. Co-Founder & Technical Lead of an EdTech startup, building real-time AI architectures, robust embedded systems, and scaling engineering communities.

## EDUCATION

### Yıldız Technical University (YTÜ)

B.Sc. in Control and Automation Engineering

Istanbul, Türkiye

Oct 2023 – Jun 2027 (Expected)

## TECHNICAL SKILLS

**Core Engineering:** Control Systems, Inverse Kinematics, Embedded Systems, MATLAB, Simulink, Arduino

**Software Development:** Python, C++, JavaScript/TypeScript, Node.js, React, React Native, Next.js, PostgreSQL

**Cloud & Systems:** Cloudflare Workers, Serverless Architectures, KV Storage, WebSockets, Docker

**Cybersecurity:** ICS/OT Security, IEC 62443, Penetration Testing, Wireshark, Nmap, Metasploit, OpenPLC

**AI & Data:** OpenCV, Random Forest, RAG Systems, LangChain, OpenAI API, LLM Alignment, Prompt Engineering

## PROJECTS

- Industrial Anomaly Detection via Digital Twins | Graduation Project**
  - Architected a real-time 3D digital twin dashboard (Next.js, Three.js) ingesting ICS telemetry via Modbus TCP/OPC UA, in compliance with IEC 62443.
  - Benchmarked five unsupervised ML algorithms (incl. PyTorch Autoencoder, OC-SVM) across four cyberattack scenarios, achieving a top 71.6% F1-score in detecting stealthy  $\pm 2.5\sigma$  sensor spoofing attacks.
- Quran Shortly (Browser Rendering Engine) | Independent Project**
  - Engineered a client-side video rendering engine utilizing React and the Canvas API to automate digital content creation.
- Robot Arm Ecosystem (Firmware & Mobile App) | YTÜ Yıldız Kaşifleri Grant**
  - Secured funding to engineer a bio-signal controlled robotic platform with 5-DOF motion control.
  - Trained a Random Forest classifier (94% accuracy) to decode EMG signals into real-time servo commands.
  - Built a React Native app interfacing via a Python/Serial bridge, reducing operation latency to under 100ms.
- Barrier-Free Video Accessibility | TEKNOFEST 2025 Finalist**
  - Architected a real-time system translating spoken content into 3D Sign Language animations.
  - Implemented low-latency audio streaming using WebSockets and high-accuracy speech-to-text pipelines.

## PROFESSIONAL & ENTREPRENEURIAL EXPERIENCE

### Turing

AI Quality Analyst (Contract)

- Evaluating and ranking frontier Large Language Model (LLM) outputs for logical consistency, factual grounding, and Turkish cultural relevance to optimize personalization systems.
- Designing and executing complex multi-turn conversational prompts (1-5 turns) utilizing real-world retrieval datasets to test RAG alignment and contextual accuracy.
- Writing detailed technical rationales in English to document edge cases, linguistic translation errors, and data extraction inconsistencies, directly guiding engineering fine-tuning loops.

### ManteeQ

Co-Founder & Technical Lead

- Architecting an AI-powered Arabic pronunciation coach that delivers sub-500ms real-time phonetic feedback and anatomical visual guidance.
- Leading full-stack development, integrating Wav2Vec acoustic models for forced alignment with a React Native frontend via high-speed WebSockets.
- Selected for the competitive ETKİM Yıldızları Acceleration Program to scale the MVP and optimize inference latency for edge deployment.

## LEADERSHIP & CAMPUS INVOLVEMENT

### YTU Arab Students Union

Community Lead & Technical Founder

- Designed and deployed an AI-powered RAG chatbot to automate academic and administrative student inquiries.
- Founded the Technical Office to digitalize student services, significantly reducing operational overhead.
- Coordinated cross-functional teams spanning student affairs, media, and event operations.

### YTÜ International Students Club

Secretary General & Web Lead

- Led a 50+ volunteer team for 450+ members, and built uokytu.com.tr using Astro, Cloudflare, and Decap CMS.
- Achieved 123k+ search impressions and 1.8k+ organic clicks in under six months through SEO optimization.

## AWARDS & CERTIFICATIONS

- 2nd Place, MathWorks Hackathon** (FitSense AI) | BEST Istanbul Yildiz May 2026
- 3rd Place, Yıldız BEST Engineering Competition** | BEST Istanbul Yildiz Apr 2026
- SKYDAYS CTF:** Placed 6th (2025) & 9th (2024); developed original CTF challenges. 2024 – 2025
- Cybersecurity Training Program** | Core Istanbul (Pen-testing & Linux Admin). Aug 2025