Personal details

👤 Mustafa Galip AYHAN

✉️ ayhanmustafagalip@gmail.com

📞 +90 530 388 3903

🏠 Izmir

⚥ Male

🌐 mustafagalipayhan.com

Skills

Python

C++

.NET/Blazor

JavaScript/TypeScript

Next.js

Node.js

React/Three.js

Git/GitHub

PostgreSQL

Linux

ROS (Robot Operating System)

OpenCV/YOLO

TinyML

Machine Learning

Pixhawk/ArduPilot

LIDAR SLAM

Altium Designer

Custom PCB Design

Physical Prototyping

ESP32/Arduino

Raspberry Pi

UHF RFID

FOC (Field-Oriented Control)

Electrical Integration

Mustafa Galip AYHAN

Profile

I build autonomous systems, design cryptographic protocols, ship production software, and fabricate custom hardware. From engineering the propulsion for a 500kg autonomous UGV to deploying commercial full-stack web applications, I operate seamlessly across the entire hardware-software spectrum. If it can be engineered, I build it end-to-end.

Projects

Tiger Unmanned Ground Vehicle (UGV) **2024 - Present**
TEKNOFEST & NATO SPS
- Designed and fabricated a 500kg autonomous tank with a custom 10kW BLDC powertrain modeled in Ansys Maxwell. Engineered the autonomy stack using ROS and multi-sensor fusion for dynamic obstacle avoidance. Developed the full Next.js/Node.js ground control station, configured the Pixhawk 2.4.8 controller for autonomy and created communication via WiFi and MAVLink.

KUZGUN Autonomous Fighter UAV **2024 - Present**
TEKNOFEST
- Architected a combat UAV capable of autonomous dogfighting and -45° precision kamikaze dives. Built a zero-latency AI detection pipeline running on a Jetson Orin Nano using YOLOv11m, ByteTrack, and Horn-Schunck optical flow. Established a triple-redundant communication network (RFD868X, 4G LTE, WiFi) and currently designing a variable sweep wing structural upgrade in SolidWorks.

Portable FOC Motor Controller **2025 - Present**
TUBITAK 1505 & Final Thesis
- Engineered a highly efficient, drop-in Field-Oriented Control (FOC) motor driver utilizing Silicon Carbide (SiC) power transistors. Managed the complete hardware lifecycle: designed the custom PCB in Altium, managed electrical integration, and wrote real-time Clarke/Park transform algorithms in C++.

Terra Genesis Agricultural Ground Robot **2024 - 2025**
TEKNOFEST
- Developed an autonomous robotic platform to navigate rough terrain, utilizing a ROS navigation stack and LiDAR obstacle mapping. Designed the mechanical planting and watering system in SolidWorks/Ansys. Built a custom mobile application communicating via GSM for live GPS tracking and remote waypoint management.

TURNA (Spy) VTOL Surveillance UAV **2024 - 2025**
TEKNOFEST Team Captain
- Designed a 23kg stealth VTOL UAV with embedded thrusters and telescopic landing gear. Engineered custom propulsion motors using electromagnetic FEA in Ansys Maxwell and optimized in-flight motor power via an onboard TinyML regression model. Implemented a dual-layer RSA/ECDH encrypted telemetry link and a YOLOv10 AI detection pipeline with KCF visual tracking.

Lattice Field Synchronization (Post-Quantum Cryptography) **Present**
Research
Designed a Shor's Algorithm-immune key exchange protocol utilizing spatial pinning control across a 30,000-dimensional chaotic phase space. Built a custom physics engine and a full-stack Three.js/WebSocket visualization tool to render the real-time synchronization of quantum chaotic oscillators.

Olimpik Arena Management System **2026**
Shipped Commercial Software & Infrastructure

SolidWorks CAD

Ansys MotorCAD

Ansys Electromagnetics (Maxwell)

OpenVSP

AutoCAD

SHA-256 / Hashing

RSA / ECDH

Coupled Map Lattices

Languages

Turkish

English

German

Hobbies

■ Astro-photography

■ Hiking

■ Reading

■ Boxing

■ Playing Guitar and Violin

Qualities

■ First-Principles Systems Thinking

■ Cross-Domain Technology Agnosticism

■ End-to-End Execution & Bias for Action

■ High-Stakes Precision

■ Multidisciplinary Technical Leadership

Built and deployed a comprehensive full-stack platform (React, Node.js, PostgreSQL) and companion mobile app to manage member registration, attendance analytics, and revenue tracking for a sports complex.

Corporate Web Platforms (Prodek İnşaat & Queen Akademi)   **2026**
Shipped Commercial Software & Infrastructure
Designed and deployed fully responsive commercial websites featuring custom Three.js 3D particle animations, dynamic project galleries, and consultation booking systems.

Employment

Intern   **2025 - 2025**
Desapark Software Information Consulting Industry and Trade Inc., Izmir
- **IoT & Hardware Integration:** Developed functional UHF RFID asset tracking solutions utilizing Impinj Speedway R420 enterprise readers. Handled both physical reader setup and software stack integration.
- **Full-Stack Application Development:** Built a responsive C# Blazor web application to visualize and monitor real-time asset data, significantly enhancing operational efficiency and tracking within industrial environments.

Founder   **2022 - Present**
Mustafa Galip Ayhan Sole Proprietorship, Izmir
- **Commercial Software & Web Development:** Architected and deployed full-stack web applications for real-world clients, including comprehensive management systems and custom Three.js corporate websites.
- **Industrial & Enterprise Solutions:** Developed secure web-based communication networks for factories and deployed an actively used C++ image processing system for industrial quality control. Delivered tailored software tools to e-pin vendors, featuring complex inventory tracking, API integrations, and e-pin generation automation.
- **Infrastructure Management:** Independently configured and maintain a custom Ubuntu Linux server to host production applications, backend APIs, and databases.
- **E-Commerce Operations:** Managed a profitable independent e-commerce operation across a personal website and major platforms including Trendyol and Hepsiburada.

Organizations

Founder Member IDU Engineering Projects Development Club   **2024**

Education

Undergraduate Education   **2022 - Present**
Democracy University, Izmir
Student at Izmir Democracy University, Department of Electrical - Electronics Engineering

References

Ahmet BUHARALIOGLU
Desapark Software Information Consulting Industry and Trade Inc. / CEO, Izmir
+90 532 214 87 35, info@desapark.com

Asst. Prof. Dilek ARSLAN
Izmir Democracy University / Vice Dean Faculty of Engineering
+90 537 209 14 52, dilek.arslan@uzem.idu.edu.tr