Kerem Efe SEZEK

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Summary

Computer Engineering student focusing on embedded systems and low-level software development. Completed internships at Repkon (vibration-based anomaly detection) and the T3 Foundation Deneyap Kart Unit (VTOL UAV development with ArduPilot on the T3 Gemstone O1 board), and currently volunteering as a developer in the T3 Gemstone O1 ecosystem. Hands-on experience in STM32 and ESP32 firmware development, peripheral integration and system architecture design through TEKNOFEST projects. Focused on developing high-performance electronic subsystems for autonomous systems.

Education

Firat University Aug. 2023 – Present
Bachelor of Computer Engineering (Final Year, Expected Graduation: June 2027) *Elazig, Turkey*

- Highlighted Coursework: Embedded System Programming, Microprocessors, Internet of Things, Computer Organization and Architecture, Digital Design, Signals and Systems, Database Management Systems.

Technical Skills

Programming Languages: C, C++, Python, C#, Java, SQL
Embedded Systems: STM32, ESP32 / Deneyap Kart, Arduino, FreeRTOS, Raspberry Pi / Embedded Linux, ArduPilot / Mission Planner
Communication Protocols: UART, I2C, SPI, TCP/IP
Tools: STM32CubeIDE, STM32CubeMX, Altium Designer, Proteus, LTSpice, Fritzing, Git, Visual Studio, SSMS

Experience and Volunteering

T3 Gemstone O1 Ecosystem Present
Volunteer Developer *Remote*

- Contributing as a volunteer developer to the T3 Gemstone O1 development board ecosystem.

Repkon Makina ve Kalip San. ve Tic. A.S. Aug. 2026
Intern Engineer (Embedded Systems) *Istanbul, Turkey*

- Compared development boards for a vibration-based anomaly detection project and selected the board that best fit the project requirements.
- Researched MEMS accelerometers for vibration sensing and worked on anomaly detection using sensor data.
- Developed an application on Raspberry Pi 5 that supports 12 MEMS sensors and visualizes their data, ready for use by the company.

T3 Foundation – Deneyap Kart Unit Jun. 2026 – Jul. 2026
Intern Engineer (Embedded Systems and Hardware) *Istanbul, Turkey*

- Took part in building a VTOL UAV and supported its migration from Pixhawk to the T3 Gemstone O1 board: ArduPilot bring-up on the board, Mission Planner calibration, and ESC/receiver integration.
- Contributed to a Deneyap Kart v2 mapping robot using a FreeRTOS dual-core architecture, TCP remote control, OTA updates, and ultrasonic and IMU sensor integration; fixed critical bugs caused by connection and dual-core WiFi conflicts.
- Made Deneyap Kart designs usable in Fritzing and contributed to technical documentation.
- Also performed hardware tests on 489 T3 Gemstone O1 boards and carried out firmware loading through a master-slave UART bridge.

Ipek Yolu International Youth and Children's Center Nov. 2024 – Present
Student Engineer - Entrepreneurship Incubation Unit *Elazig, Turkey*

- Contributing to development, testing, and hardware-software integration processes in embedded system projects.
- Organizing technical workshops and social impact-oriented events for students.
- Providing technical mentorship on circuit fundamentals and microcontroller logic in robotics projects.

Firat University IT and Education Society (FUBET) Feb. 2024 – Aug. 2024
Event Coordinator (Volunteer) *Elazig, Turkey*

- Coordinated technology-focused career summits and monitored university-industry collaboration processes.
- Managed operational processes for on-campus technical seminars and workshops.

Projects

Underwater Rocket Team (TEKNOFEST) | *Team Captain, System Architecture Design* 2024 – Present

- Serving as Team Captain for the TEKNOFEST competition; managing strategic planning, budget management, and interdisciplinary coordination processes.
- Configuring system architecture and electronic component selection for the competition prototype.
- Developing modules for sensor data processing and internal system communication processes.
- Designing power management, battery, and emergency systems within project requirements.

Air Defense Systems Team (TEKNOFEST) | *Electronic System Design* 2024 – Present

- Conducting conceptual design and architectural planning for surface-based defense system prototypes.
- Performing focal point optimization to increase targeting precision in laser-based modules.
- Defining electronic hardware requirements for compatibility between system components.
- Integrating power management, cabling, emergency, and laser systems.

AI-Based Image Understanding for Mini Reconnaissance Robots | *Graduation Project* 2026 – 2027

- Applied to the SAYZEK-ATP 2026-2027 and HAVELSAN SUIT programs with a graduation project proposal on interpreting images from mini reconnaissance robots using artificial intelligence.
- Planning to implement the project on the T3 Gemstone O1 board to evaluate this Turkish-made board's capabilities for the task.

Factory Mesh IoT Monitoring System | *ESP-based, University Course Project* 2026

- Designing an in-factory ESP mesh network that monitors temperature, humidity, vibration, and operating hours.

Pipeline Anomaly Detection During Floods | *STM32, Raspberry Pi* 2026

- Developing a detection system for above-ground water pipelines against branch and debris loads during floods, using STM32, vibration sensing, a camera, and Raspberry Pi.

UniGuide AI | *Team Project, Computer Engineering Design Course* 2026

- Working in a team on a document assistant that answers questions about Firat University regulations.

Certificates and Training

Defense Industry Campus - Elazig: Defense Industry Academy (2026)
IBM CyberStart: Kodluyoruz & IBM SkillsBuild (2024)
C# Programming 101: Istanbul Education Academy (2024)
Game Development and Design: CODE 23 FIRAT (2024)
Clomosy: Mobile Application Development Achievement Certificate (2024)

Additional Information

Languages: Turkish (Native), English (Upper Intermediate, B2)
Interests: Autonomous Systems, Defense Industry, Robotics, Embedded Software