

EKREM TURAN FIRAT

Undergraduate Researcher | Ankara, Turkey

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I am an undergraduate student in Electrical and Electronics Engineering and I work as an undergraduate researcher at METU PowerLab. My main research and work area is power electronics and the design of advanced hardware for this field.

Experiences

METU Power Lab

Undergraduate Student

February 2025 – Ongoing

ODTU, Ankara, Türkiye

- Working on the design of power electronics systems such as TI C2000-controlled low-inductance motor drivers for TUBITAK and industrial institutions.

AGH Power Electronics Laboratory

Undergraduate Student as an Erasmus Student

November 2025 – February 2026

AGH, Krakow, Poland

- A GaN-based High-Frequency Synchronous Buck Converter is being designed for student use in educational laboratories.

IEEE SCU Student Branch

Committee Chairman

November 2024 – September 2025

Sivas, Türkiye

- Chairman of the PELS (Power Electronic Society) Committee.
- Participated in international symposiums.

Robolink Teknoloji

Electronics Design Intern

June 2023 – August 2023

OSTIM, Ankara, Türkiye

- ESP32 Based Laser CNC motherboard design was done during the internship. PCB design made with Altium Circuit Studio is 4-layered and passive power protection circuits, USB to TTL, Stepper motor drivers etc. circuits were worked on.

Robolink Teknoloji

Electronics Design Intern

March 2022 – August 2022

OSTIM, Ankara, Türkiye

- Stepper Motor Independent Control design was made. The PCB design made with EAGLE is based on a 2-layer board. The aim is to independently produce the pulse signal needed by the driver.
- ESP32 Development board was designed to determine the accuracy of the in-house design processes.

Education

Cumhuriyet University

Bachelor of Science, Electrical & Electronics Engineering

September 2024 - Ongoing

Sivas, Türkiye

AGH University of Krakow

Erasmus, Electrical Engineering

October 2025 – March 2026

Krakow, Poland

Cezeri Yesil Technical High School

Technical Diploma, Electrical & Electronics

September 2020 – June 2024

Ankara, Türkiye

Projects

AGH Power Electronics Laboratory

GaN-Based High-Frequency Switched DC-DC Synchronous Buck Converter

AGH, Krakow, Poland

December 2025 – Ongoing

- This experimental setup is designed for students to observe how changes in electrical parameters affect changes in other parameters during laboratory classes.

METU Power Lab

Mini Motor with Integrated Driver

ODTU, Ankara, Türkiye

January 2026 - Ongoing

- PCB Motor project featuring a coin sized internal motor driver.

PL Driver Cycloid Board Design

August 2025 - Ongoing

- Embedded Motor Driver Design for a PCB Motor with a Cycloidal Gear Design, As part of the TUBITAK 1001 project, I am working on the design of a 250-watt, low-phase induction TI C2000 series DSP-controlled miniature motor driver.

PL Driver Evaluation Board Design

February 2025 – July 2025

- As part of the TUBITAK 1001 project, I participated in the hardware design of a 500W up to 2kW motor driver with extensive communication protocols and peripheral connectivity. This project's hardware has a 8 Layer advanced PCB.

Robolink Teknoloji

OSTIM, Ankara, Türkiye

ESP32 Based Laser CNC Motherboard

June 2023 – August 2023

- I designed PCBs for ESP32 based Laser CNCs compatible with GRBL software on 4 layer PCBs.

[ESP32 Developing Board](#)

August 2022

- I was involved in the design of the ESP32 development board designed for testing ESP32 based applications on a 2 Layer PCB within the company.

[Stepper Motor Driver](#)

March 2022 – July 2022

- I designed a PCB for stepper motor control and testing on a 2-Layer PCB without requiring software or an external controller.

Scholarships & Awards

TUBITAK

April 2025 – Ongoing

1001 Program Undergraduate Researcher Scholarship

Memberships & Organizations

IEEE PELS

December 2024 – Ongoing

Student Member

Skills

PCB Design	Altium, KiCad, EAGLE, Proteus, Circuit Studio
3D Design	Fusion 360, SolidWorks
Simulation	LTspice

Languages

Turkish	Mother Tongue
English	B2
Polish	A1
German	