

KAYRAHAN AKGÜN

Electrical & Computer Engineering Applicant

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SUMMARY

Grade 12 student applying for Electrical and Computer Engineering, with research experience modeling neural microelectrodes at ETH Zurich and the University of Zurich. Develops engineering projects in signal processing, machine learning and embedded systems.

EDUCATION

TED Ankara College Foundation High School

Grade 12 | Graduation expected 2027
Selected for the competitive Science Scholar Development Program (BİY)
GPA 98.38 / 100
Class Rank 4 / 397

TESTING

SAT Superscore 1520

ERW 730 | Math 790

IELTS Academic 8.0 / 9

R 9 | L 8.5 | W 7.5 | S 7

AP EXAMS

Calculus BC — 5

Computer Science A — 5

Physics C: E&M — 5

2027 planned: Physics C: Mechanics,
Chemistry, Statistics

TECHNICAL TOOLKIT

Python · C# · Java · MATLAB

COMSOL Multiphysics

PyTorch · Geant4 · Unity

Arduino IDE · Fusion 360

LANGUAGES

Turkish — Native

English — C1

German — B1

RESEARCH AND ENGINEERING

Research Intern, Institute of Neuroinformatics

ETH Zurich & University of Zurich | Neurotechnology Group | Jun–Aug 2026

During a 10-week research internship, built finite element models in COMSOL and analyzed results in MATLAB to study neural microelectrodes in tissue, comparing different geometries and materials, including PEDOT variants.

Analyzed electric fields, current density, transient voltage and frequency-domain impedance.

Generated multiple scientific figures (e.g. I-V curves) for a final report; presented the findings at a research group meeting at the conclusion of the internship.

Team Leader, CERN BL4S Proposal

Jan–Mar 2026

Led a student team developing a muon-radiography experiment based on Multiple Coulomb Scattering. Used Geant4 simulations, Point of Closest Approach reconstruction and machine learning models including Random Forest, Gradient Boosting, and a 5-layer CNN for material classification; submitted the proposal to CERN BL4S.

Project Leader, TÜBİTAK High School Research Project

Sep–Dec 2025

Designed and prototyped a soft-bodied underwater vehicle targeting neutral buoyancy within a \$300 budget, using Fusion 360, an ESP32 microcontroller and an L298N motor driver. Conducted pool tests of buoyancy and propulsion.

TECHNICAL EXPERIENCE

Embedded Digital Signal Processing Intern, Akdoğan

Ankara, Türkiye | Jul 20–31, 2026

Developed a voice-command recognition prototype for unmanned aerial and ground vehicles (UAVs/UGVs), designed for offline, low-power operation. Implemented an MFCC/DTW baseline and a four-layer CNN in PyTorch, trained with the Adam optimizer and weighted cross-entropy loss, with noise reduction, silence detection, and a graphical user interface.

Published the project as open-source code. [GitHub portfolio](#)

Test Engineering Intern, TUALCOM

Ankara, Türkiye | Jun 29–Jul 3, 2026

Gained hands-on experience with RF unit testing, measurement procedures, system testing, interface communication and PCB assembly, using test equipment such as oscilloscopes, spectrum analyzers, and network analyzers.

HONORS

Top 0.39% nationally in the 2023 Turkish High School Entrance Exam (approximately 1 million candidates); full merit scholarship.
Annual Certificate of High Achievement and Honor Certificate.

METHODS

Finite element modeling
Impedance analysis
MFCC · DTW · CNNs
PoCA reconstruction
Embedded systems

ACADEMIC INTERESTS

Neurotechnology
Signal processing
Embedded systems

OTHER ACTIVITIES

Biology Day: evolution (2026)
Social Sciences Day: transportation in the 1970s (2025)
Aviation Club

INTERESTS

Piano · Table tennis
Chess · Swimming

LEADERSHIP AND ACTIVITIES

Founder and Mentor, Mathematics Olympiad Team

TED Ankara College Foundation High School | Oct 2025–Present

Founded the team and helped grow it to approximately 30 members. Organize weekly training sessions and mentor younger students in mathematical reasoning and Olympiad problem solving.

Team Captain, Game Development Team

Dec 2025–Feb 2026

Led a four-person team in Unity-based Game Jam competitions, coordinating roles, planning, programming, design and final presentations.

Climate Education Video Project

May 2025

Collaborated with a TED Ankara College student group on an educational video about methane and climate change, submitted internationally to the Office for Climate Education.

Contributor, TED Ankara College Pusula Magazine

Sep 2024

Published a historical research article on Turkish-Jewish relations from the Ottoman Empire to the Republic of Türkiye.

Basketball Player and Team Captain

2023–2025

Trained four days a week and played as a licensed player for two teams. Captained the first team; played as a team member on the second team, which placed second in a local tournament.

ACADEMIC ENRICHMENT

CERN International Masterclass

Middle East Technical University | Ankara, Türkiye | Feb 18, 2026

Analyzed real particle-collision data and explored experimental particle physics.

Bilkent University High School Summer Program

Ankara, Türkiye | Jul 2025

Completed a two-week academic program with courses in mechatronics, Python programming, game theory and finance.

Biotechnology Workshop

Ankara University Biotechnology Institute | Ankara, Türkiye | Jan 20–21, 2025

Completed hands-on training in PCR, gel electrophoresis and cell culture techniques.