

# ELİF ABANOZ

Software Engineer | AI Security & Full-Stack Development

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## PROFESSIONAL SUMMARY

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Full-stack software engineer specializing in the intersection of AI and cybersecurity. Hands-on experience across mobile (React Native, Expo, Jetpack Compose), web (Next.js, Java Spring Boot), and cloud (AWS), with a growing portfolio of AI security projects covering adversarial ML robustness, malware detection pipelines, and vulnerability demonstration labs. Proven track record across four internships including cybersecurity at Turkcell and software engineering at Bluesense (Canada). Skilled in building end-to-end products, AI-powered automation, and threat intelligence solutions.

## TECHNICAL SKILLS

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**Languages:** Java, Kotlin, JavaScript/TypeScript, Python, SQL, C

**Mobile Development:** React Native, Expo, Jetpack Compose (Kotlin)

**Web Development:** Next.js, React, TypeScript, Java Spring Boot, FastAPI, REST APIs, WebSockets

**Databases & DevOps:** PostgreSQL, Redis, Docker, Docker Compose, AWS, GitHub Actions (CI/CD)

**Automation & AI/ML:** PyTorch, scikit-learn, LightGBM, SHAP, MLflow, n8n, NumPy, Seaborn, AI-powered automation

**Cybersecurity & AI Security:** Adversarial ML (FGSM, PGD, DeepFool), Adversarial Robustness Toolbox (ART), YARA rules, sandbox analysis, OWASP Top 10, threat intelligence, ethical hacking tools, web scraping

**APIs & Integrations:** Google Places API, REST, third-party integrations

**Methodologies:** Agile, Scrum, Code Review, SRS/SDD Documentation, Design Patterns

**Soft Skills:** Project Management, Leadership, Teamwork, Effective Communication, Critical Thinking, Time Management

## PROFESSIONAL EXPERIENCE

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### Cyber Security & Architecture Intern

July 2025 – October 2025

*Turkcell — Hybrid, Ankara, Türkiye*

- Gained hands-on experience with core cybersecurity tools and techniques.
- Built web scraping and data extraction automation using n8n, Spring, and Next.js to streamline data collection processes.
- Developed AI-powered automation solutions for threat intelligence gathering and reporting.
- Contributed to threat intelligence projects focused on data analysis and proactive cybersecurity monitoring.

### Software Engineer Intern

January 2025 – August 2025

*Bluesense — Canada (Remote)*

- Built a mobile application, Smart Beauty, using Jetpack Compose (Kotlin), enhancing user experience with modern UI components.
- Developed a dynamic website using Next.js, ensuring responsive design and optimal performance.
- Collaborated with the software development team to design, develop, and maintain various projects.

- Participated in code reviews, team meetings, and agile development processes to improve software quality.

### **Undergraduate Teaching Assistant**

October 2024 – June 2025

*Çankaya University — Ankara, Türkiye*

- Supported SENG 101, 106, 205, 271, and 272 courses, focusing on project management, SRS/SDD documentation, coding, and diagram creation.
- Assisted students with algorithm questions in C and Java laboratories, ensuring deeper understanding of core concepts.
- Contributed to the development and implementation of projects and lesson plans to enhance the learning experience.
- Explained assignments and test instructions, improving student comprehension and performance.

### **Founder**

September 2024 – Present

*Selmorica — Ankara, Türkiye*

- Launched and actively operate a Trendyol e-commerce store, managing end-to-end operations from product sourcing to customer communication.
- Developed and maintain the store's supporting website and mobile application, ensuring a cohesive brand experience across channels.
- Lead marketing and brand strategy, combining market research with iterative content and campaign testing.

### **Project Management Intern**

February 2025 – March 2025

*TNC Group*

- Collaborated with cross-functional teams to plan, execute, and monitor projects using project management tools.
- Contributed to project documentation including plans, timelines, and status reports to track progress and identify risks.

### **Software Engineer Intern**

July 2024 – August 2024

*Turkish Ministry of Agriculture and Forestry / ZB Software Company — Ankara, Türkiye*

- Gained hands-on experience with industry-specific procedures, systems, and technologies.
- Worked on real-world projects, enhancing problem-solving and coding skills.
- Collaborated with cross-functional teams to streamline project workflows.
- Applied software engineering principles to develop and optimize applications.

### **Mentor**

February 2023 – June 2023

*Kodluyoruz*

- Guided students through Python data analysis projects using NumPy and Seaborn, building their practical coding skills.
- Encouraged critical thinking and problem-solving through hands-on learning experiences and collaborative activities.

## **PROJECTS**

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### **NeuroVoice Speller — Graduation Project: c-VEP Brain–Computer Interface Speller**

- Building a Brain–Computer Interface speller that lets users type letters by gazing at a 6×6 character grid, using code-modulated Visual Evoked Potentials (c-VEP) decoded from EEG signals.
- Designed 36 mutually-independent m-sequences for the grid (cross-correlation reduced from 0.865 to 0.203), enabling reliable per-character classification.

- Implemented the full signal-processing pipeline in Python: EDF trigger extraction, baseline correction, leave-one-trial-out cross-validation, and TRCA (Task-Related Component Analysis) classification.
- Migrated stimulus presentation from Pygame to PsychoPy for frame-accurate timing synchronization, and performed photodiode-based hardware validation (OPT101) to verify trigger latency.
- Tech stack: Python, PsychoPy, NumPy/SciPy, MNE-Python, TRCA algorithm, 32-channel Mitsar EEG, EDF format, Lab Streaming Layer (LSL).

#### **Adversarial Attack Simulator** — *AI Security / Adversarial ML Robustness Platform*

- Built a platform to run adversarial attacks against deep learning models, measure robustness, and evaluate defense strategies — load a model, attack it, apply defenses, and quantify improvements.
- Implemented three state-of-the-art white-box attacks: FGSM (single-step gradient), PGD (40-step projected gradient descent), and DeepFool (minimum-perturbation boundary).
- Integrated four defense mechanisms: Adversarial Training, JPEG Compression, Spatial Smoothing, and Bit Depth Reduction — with before/after accuracy comparison.
- Designed a REST API with epsilon-sweep analysis, full attack suite runner, and defense comparison endpoints; experiment tracking via MLflow.
- Tech stack: Python, FastAPI, PyTorch, Adversarial Robustness Toolbox (ART), MLflow, Docker, Docker Compose, GitHub Actions (CI).

#### **BugBounty Admin Lab** — *Security-Focused Admin Panel with Dual-Mode Architecture*

- Developed a dual-mode admin panel (VULNERABLE vs SECURE profiles) designed to teach and demonstrate common web vulnerabilities and their mitigations in a controlled environment.
- Implemented authentication, session management, and role-based access control with JWT; SECURE profile includes hardened patterns against OWASP Top 10 (SQLi, XSS, CSRF, IDOR, broken auth).
- Built CI/CD pipeline with GitHub Actions running automated vulnerability tests — VULN tests verify that intentional flaws exist (CI fails if accidentally patched), SECURE tests verify that mitigations hold.
- Tech stack: React 18, TypeScript, Spring Boot 3, PostgreSQL, Redis, Docker, GitHub Actions.

#### **Email Attachment Security Scanner (EASS)** — *Multi-Layer Malware Detection Pipeline*

- Designed a 4-layer email attachment analysis pipeline: static analysis (YARA, magic bytes), sandbox execution, ML classification, and weighted score aggregation producing a final 0–100 risk score.
- Trained PE classifier (LightGBM) and document classifier (Random Forest) with SHAP-based explainability; integrated Google Magika for AI-based file type detection and spoofing mitigation.
- Engineered Docker-based sandbox for isolated execution and monitoring, async Celery task queue, WebSocket-driven real-time scan progress, and VirusTotal caching layer.
- Tech stack: FastAPI, Celery, Redis, PostgreSQL, LightGBM, scikit-learn, SHAP, MLflow, YARA, Docker (sandbox), React + TypeScript, Tailwind CSS.

#### **PawsGuard** — *Animal Care and Adoption Support App*

- Developed a mobile application to protect and support stray animals, featuring feeding point tracking and emergency reporting.
- Implemented adoption management and lost pet announcement modules to connect animals with potential adopters.
- Added community features including a forum and badge system to encourage user engagement.
- Tech stack: React Native, Spring Boot, PostgreSQL, Docker.

#### **ProBee** — *Multi-University Project & Workshop Management System*

- Originally designed to manage graduation projects, expanded into a multi-university platform for workshops, competitions, and project management.
- Implemented role-based functionalities and institutional authentication, ensuring secure access for different user types.

## EDUCATION

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### **Bachelor of Science in Software Engineering**

2021 – 2026

*Çankaya University — Ankara, Türkiye | GPA: 3.15 / 4.00*

**Graduation Project:** NeuroVoice Speller — c-VEP Brain–Computer Interface (see Projects).

## CERTIFICATIONS

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- Foundations of Project Management — Google
- Supervised Machine Learning: Regression and Classification — Stanford University (Coursera)
- Unsupervised Learning, Recommenders, Reinforcement Learning — Stanford University (Coursera)

## LANGUAGES

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Turkish (Native) • English (B2) • German (A2)