Baran Erol

Software Engineer

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SUMMARY

Software Engineering graduate from TED University with experience in backend development, AI systems, and cloud-native applications. Hands-on experience building Retrieval-Augmented Generation (RAG) pipelines, multi-agent AI architectures, authentication and authorization systems, and containerized deployments using Docker and Kubernetes. Proficient in Python, PHP/Laravel, Java, JavaScript, PostgreSQL, MySQL, and RESTful APIs.

PROFESSIONAL EXPERIENCE

HAVELSAN, Modelling and Sensor Technologies Team, *Software Engineer Intern* 07/2025 – 09/2025 | Ankara, Türkiye

Developed a secure, containerized Identity and Access Management (IAM) system for a Real-Time Location System (RTLS) using FastAPI, React, OpenLDAP, Docker, and Kubernetes. Implemented stateless RBAC across 3 user roles using encrypted JWT/JWE tokens, designed and developed 30+ secure REST API endpoints for authentication and authorization. Containerized and orchestrated the application with Kubernetes using Deployments, Services, Secrets, and ConfigMaps to deliver a secure and scalable deployment. Supported embedded software development through Arduino-based firmware development, system integration, and field testing.

UBIT Bilgi Teknolojileri, *Software Engineer Intern* 06/2023 – 07/2023 | İstanbul, Türkiye

Developed a responsive academic productivity platform for Bahçeşehir University students using Laravel (PHP), HTML5, CSS3, JavaScript, and Tailwind CSS. Designed relational database schemas, implemented secure session-based authentication, and developed dynamic multi-category note filtering to improve organization and accessibility of academic materials.

EDUCATION

Bachelor of Science in Software Engineering, *TED University* 09/2022 – 06/2026 | Ankara, Türkiye

GPA: 3.31 / 4.00 | Graduated with Honors | Full Merit Scholarship (100%) | Program Taught Entirely in English

SKILLS

Programming Languages: Python, Java, C, C++, C#, JavaScript (ES6+), TypeScript, PHP, Go (Golang), SQL, HTML5/CSS3
AI, Machine Learning & RAG: Multi-Agent System Architectures, Retrieval-Augmented Generation (RAG), LLM Integration (Gemini 2.5 Flash / Gemini AI), Vector Search & Storage (ChromaDB, FAISS)
Frameworks & Core Technologies: FastAPI, React, Laravel (MVC), Docker, REST API, MapLibre
DevOPS, Cloud & Cryptography (IAM): OpenLDAP, LDAP Directory Services, Role-Based Access Control (RBAC), JSON Web Tokens (JWT), JSON Web Encryption (JWE), Docker, Kubernetes (K8s), Git, Linux, Docker Compose, Postman
Databases and Storage: MySQL, Relational Database Design, Database Migrations & Seeding, Vector Databases (ChromaDB), TimescaleDB
Software Engineering: Object-Oriented Programming (OOP), Data Structures and Algorithms, RESTful API Design, Software Design Patterns, Authentication & Authorization (JWT, RBAC, LDAP), Containerization & Orchestration, CI/CD, Unit Testing, Agile Development
Soft Skills: Problem Solving, Team Collaboration, Agile/Scrum Collaboration, Technical Documentation, Analytical Thinking, Communication, Adaptability, Time Management

PROJECTS

FleetPulse, *Open-Source Telematics and Fleet Tracking Web Application* 08/2026 – 08/2026

- Developed a real-time fleet tracking dashboard utilizing React and TypeScript, integrating MapLibre with simulated telemetry data for live vehicle monitoring.
- Engineered a scalable backend architecture and database schema with Supabase, ensuring robust data retrieval and a responsive frontend experience.
- Implemented comprehensive risk analytics, designing dynamic trend charts and risk cards to visualize driver safety metrics and operational efficiency.
- Tech Stack: React, TypeScript, Supabase, Vite, Tailwind CSS, MapLibre.
- **GitHub:** https://github.com/FawkesFeu/FleetPulse

MusicRAG, *Domain-Specific RAG Pipeline for the Music Industry* 08/2026 – 08/2026

- Architected a specialized Retrieval-Augmented Generation (RAG) platform using Next.js and Node.js to analyze and search complex music industry contracts.
- Built a containerized multi-service backend with Docker, featuring document chunking, semantic search, and cross-encoder reranking to maximize retrieval accuracy.
- Integrated an evaluation suite to benchmark query performance and enable citation tracing within a secure full-stack monorepo environment.
- Tech Stack: Next.js, Node.js, RAG, Docker, Monorepo (pnpm).
- **GitHub:** https://github.com/FawkesFeu/MusicRAG

Hypothetica, *A Multi-Agent System for AI-Powered Originality Assessment, Graduation Project* 09/2025 – Present

- Co-developed a full-stack multi-agent RAG system for research originality evaluation; co-authored paper accepted at IEEE IISEC 2026.
- Engineered a hybrid retrieval pipeline using ChromaDB, FAISS, and E5 Embeddings, implementing cross-encoder reranking to filter candidate sources from 20 down to the top 5.
- Designed a two-layer assessment architecture using FastAPI and React, integrating Docling for structured PDF parsing and running 5 independent LLM evaluations per paper.
- Tech Stack: Python, FastAPI, React, Google Gemini, ChromaDB, FAISS, Multi-Agent RAG.
- **GitHub:** https://github.com/HarunHudaiTan/Hypothetica

AI-Based Domestic Relocation Assistant for Türkiye 07/2025 – 09/2025

- Co-engineered a modular multi-agent RAG pipeline using Python and Google Gemini for localized cost-of-living analysis; published at IEEE UBMK 2025.
- Developed automated web scraping agents with Crawl4AI for real-time market data extraction, utilizing ChromaDB for high-performance semantic search and regional matching.
- Optimized LLM temperature hyperparameters, system prompts, and vector retrieval to reduce average end-to-end report generation time to just 84 seconds.
- Tech Stack: Python, Google Gemini, RAG, ChromaDB, Crawl4AI, Multi-Agent Architecture.
- **GitHub:** https://github.com/FawkesFeu/AI-Powered-Regional-Cost-of-Living-Advisor-For-Turkey

PUBLICATIONS

Hypothetica: A Multi-Agent System for AI-Powered Originality Assessment 10/03/2026

5th IEEE International Informatics & Software Engineering Conference (IISEC 2026)

- https://ieeexplore.ieee.org/document/11418474

AI-Based Domestic Relocation Assistant for Türkiye 24/10/2025

2025 10th International Conference on Computer Science and Engineering (UBMK).

- https://ieeexplore.ieee.org/document/11206933

REFERENCES

Ahmet Gökhan Göze, *Senior Software Engineer, Modeling and Sensor Technologies Team Manager,* HAVELSAN
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