

ESRA VAR

Senior Machine Learning Engineer

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PROFESSIONAL SUMMARY

Senior Machine Learning Engineer with 7+ years of experience designing and deploying production-grade AI systems in public-sector and defense industry environments. Deep expertise in computer vision, vision-language models, LLM applications, multimodal AI. Proven track record delivering large-scale AI solutions from research to deployment, with hands-on experience in MLOps, model evaluation, and cross-functional team collaboration.

EXPERIENCE

Senior Machine Learning Engineer | TÜBİTAK | 2019 – March 2026

- Designed, developed, and deployed computer vision, deep learning, and multimodal AI solutions for multiple national-scale public sector projects across defense, broadcasting, and retail domains.
- Partnered with government stakeholders, domain experts, and end users to conduct requirement analysis, feasibility studies, and AI solution design for large-scale public-sector systems.
- Collaborated with multidisciplinary teams of software engineers, data scientists, researchers, and government institutions to translate operational requirements into production-ready AI solutions.
- Led model optimization, containerized deployment workflows, and MLOps practices using Docker, Git, and CI/CD pipelines.
- Delivered AI solutions from research and prototyping through deployment and operational validation across multiple concurrent national projects.

Research Assistant | Işık University | 2012 – 2019

- Conducted academic research in computer engineering, contributing to university projects in machine learning, computer vision, and AI-related domains.
- Supported graduate-level instruction and mentored undergraduate students in AI and programming courses.
- Contributed to the development of MSc and PhD-level research alongside faculty advisors.

SELECTED PROJECTS

Market Fiyatı — National Retail Price Monitoring Platform | TÜBİTAK BİLGEM | Live Product

- Developed a multimodal LLM (Vision–Language model) validation pipeline to automatically verify the consistency of product images, titles, brands, package size, and other product metadata for the national retail price monitoring platform aggregating daily product data from seven major retail chains. Worked with domain experts to understand product verification workflows and designed an AI-assisted validation pipeline, reducing manual review effort by over 50% while enabling reliable large-scale retail data processing.

App Store: apps.apple.com/tr/app/market-fiyat%C4%B1/id6741807014

Cingöz — Deepfake Detection Platform | SSB (Presidency of Defence Industries) | TÜBİTAK BİLGEM — Project Organizer

- As AI-generated synthetic media becomes increasingly realistic, reliable deepfake detection has become a critical national security requirement. Designed and operated a 4-stage national deepfake detection competition (SSB / TÜBİTAK BİLGEM), collaborating with multidisciplinary teams to define evaluation protocols, benchmark scenarios, performance metrics, and validation workflows. Evaluated submissions from industry and academia across 40 biometric criteria, selecting the top-performing algorithm per criterion for integration into a modular ensemble detection system and developed alternative in-house algorithms when submitted solutions did not meet required performance thresholds.

- Built a deepfake test dataset from scratch (real video manipulation, GAN/Diffusion-based synthesis, multi-source annotation); the resulting system dynamically selects relevant criteria per input and produces a final authenticity verdict for national security use.

Official Announcement (SSB):

<https://www.ssb.gov.tr/duyuru/sahte-goruntu-tespit-yontemleri-gelistirmesi-yarismasi-basliyor-basvuru-suresi-uzatildi-1fswyl>

SKAAS IV — National Broadcast Monitoring & Digital Archiving Platform | TÜBİTAK BİLGEM | RTÜK (Radio and Television Supreme Council)

- Contributed to Turkey's most comprehensive national broadcast monitoring system (nearly 200 local and regional TV channels, 7/24) by participating in discovery workshops with RTÜK domain experts to analyze operational workflows and define AI use cases. with RTÜK domain experts to analyze operational workflows and define AI use cases for a national broadcast monitoring platform.
- Developed AI modules including face recognition, object detection, speech-to-text, OCR, advertisement analysis, and scene change detection for automated monitoring.

Official Project Page (RTÜK): <rtuk.gov.tr/digital-recording-and-archiving-system-skaas/3877/en>

AI Meeting Intelligence Platform | Personal Project | 2026

- Built an end-to-end LLM-powered meeting intelligence platform: speech-to-text, automated note generation, RAG-based Q&A, vector search pipelines, multi-model orchestration (OpenAI, Claude, Gemini), and containerized deployment.

GitHub: github.com/esravar/ai-meeting-intelligence

Agentic AI Portfolio Platform | Bootcamp Project | 2026

- Collaborated on the development of an AI-powered full-stack portfolio platform during an Agentic AI bootcamp. Contributed to an agent-based architecture integrating frontend, backend, and a Retrieval-Augmented Generation (RAG) chatbot capable of answering questions about website content.

Technologies: React, Vite, Tailwind CSS, Node.js, TypeScript, Zod, AI Agents.

GitHub: github.com/esravar/archis-ai-bootcamp-portfolio-project

EDUCATION

PhD, Computer Engineering — Işık University | 2015 – 2019 (Qualifying Exam completed; degree not conferred)

MSc, Computer Engineering — Işık University | 2012 – 2015

BSc, Computer Engineering — Başkent University | 2006 – 2010

TECHNICAL SKILLS

Programming: Python, SQL

Frameworks & Libraries: PyTorch, TensorFlow, Keras, LangChain, Hugging Face Transformers

LLM & Generative AI: RAG, Agentic AI, LLM Agents, Prompt Engineering, Function Calling, Tool Calling, OpenAI API, Claude API, Gemini API

Computer Vision: Vision Models, Vision-Language Models, Deepfake Detection, Image Classification, Synthetic Data Generation, Dataset Curation & Annotation

AI Development Tools: Cursor, Claude Code, Antigravity AI

Databases: PostgreSQL, MySQL, ChromaDB (Vector DB)

MLOps & DevOps: Docker, Git, GitHub, CI/CD Pipelines

Languages: Turkish (Native), English (Professional)

HONORS & RECOGNITION

Mentor Recognition — SAYZEK Academic Thesis Program | July 2025

Mentor — Defense Industry Artificial Intelligence Talent Cluster

SSB (Presidency of Defence Industries) & YÖK (Higher Education Council)