

Mustafa Yusuf Sertkaya

AI Researcher & Engineer

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A researcher who builds, an engineer who researches. M.Sc. student in Computer Engineering at Hacettepe University, working on vision-language alignment and cross-modal learning. 5+ years of independent experience shipping AI systems and production web applications to real users.

EDUCATION

Hacettepe University — M.Sc. Computer Engineering

Sep 2024 – Jun 2027
(expected)

GPA: 3.87 · [Thesis](#): TIReID — cross-modal alignment, contrastive learning, transformer architectures

Ankara University — B.Eng. Computer Engineering

Sep 2016 – Jun 2021

GPA: 3.90 · [2nd in Faculty of Engineering](#) · ALES: 81 · YDS: 77

EXPERIENCE

Freelance AI & Full-Stack Developer · Self-employed

Jun 2021 – Present

- Built RAG-based search and retrieval systems with hybrid pipeline (RRF fusion); fine-tuned LLMs and VLMs using LoRA for translation and classification tasks.
- Shipped production applications integrating OpenAI and Gemini APIs (image-to-code generation, AI mentor tools).
- Built and maintained web/mobile platforms using React, TypeScript, Next.js, Firebase, Python and Flask; CI/CD via GitHub Actions; published packages on npm; packaged Android apps via TWA.

Aselsan — HBT Division · Systems Engineer Intern

Jul – Aug 2020, Ankara

- Studied large-scale network routing protocols (OSPF, BGP); validated a BGP implementation against its RFC specification.

Diagen Animal Health · Web Developer Intern

Jul 2018, Ankara

- Developed an Employee Management System end-to-end in a 4-person team (MSSQL, ASP.NET MVC, JavaScript, Bootstrap).

RESEARCH

Text-to-Image Person Re-Identification (TIReID) · M.Sc. Thesis · Ongoing

Cross-modal alignment between natural language descriptions and image databases. Developing attribute-aware contrastive learning methods on transformer-based vision-language architectures. Evaluated on CUHK-PEDES, ICFG-PEDES and RSTPReid benchmarks.

[Stack](#): PyTorch · [Hugging Face Transformers](#) · Python

PROJECTS

UAVCAN Attack Detection System · github.com/mysertkaya/Fake-UAV

ML-based intrusion detection for UAV communication networks (UAVCAN protocol). Detects flooding, fuzzing and replay attacks using Random Forest and custom MLP (3-layer, BatchNorm + Dropout). Cascade and parallel detection modes; Gradio web interface.

[Stack](#): PyTorch · [scikit-learn](#) · [pandas](#) · [Gradio](#)

AI-Generated Image Detection · github.com/mysertkaya/AI-Generated-Image-Detection · [HuggingFace Space](#)

Fine-tuned Qwen2.5-VL-7B-Instruct with LoRA/Unsloth (4-bit quantization) to classify real vs. AI-generated images. Two training pipelines: standard SFT and robust method with JPEG compression simulation, data augmentation and Focal Loss. ~99% validation accuracy.

[Stack](#): PyTorch · [Unsloth](#) · [Qwen2.5-VL](#) · [Gradio](#)

AI-Generated Text Detection · github.com/mysertkaya/AI-Generated-Text-Detection

Implements DetectGPT algorithm (universal AI text detection) and a GLTR-inspired token probability method. Gradio deployment interface.

Stack: [PyTorch](#) · [Transformers](#) · [Gradio](#)

UiGPT · [github.com/yusuf0x73](#)

Converts UI wireframe images to production-ready code (Bootstrap, Tailwind, React) using OpenAI vision API with built-in cost/quality optimization.

Stack: [React 18](#) · [TypeScript](#) · [Vite](#) · [OpenAI API](#)

CTFMentorGPT · [github.com/yusuf0x73](#)

Socratic AI mentor for CTF competitions — guides users with hints rather than direct answers. Dual-model architecture (GPT-4-turbo + GPT-3.5-turbo).

Stack: [Ionic React](#) · [TypeScript](#) · [OpenAI API](#)

Collaborative Platform App · [hatimdagit.com](#) · 200k+ active users/year

Real-time collaborative task distribution platform with active user tracking. CI/CD pipeline, TWA Android packaging, Google Play.

Stack: [React](#) · [TypeScript](#) · [Redux](#) · [Firebase](#) · [GitHub Actions](#)

License Plate Recognition System · B.Eng. Capstone Project

Real-time plate detection and OCR using SSD object detection model and OpenCV.

Stack: [Python](#) · [PyTorch](#) · [OpenCV](#)

→ For 40+ additional projects and open-source packages: [github.com/yusuf0x73](#) · [github.com/mysertkaya](#)

SKILLS

AI / ML	PyTorch · Transformers (BERT, ViT, CLIP, Qwen2.5-VL) · LLM · VLM · Contrastive Learning · LoRA & Fine-Tuning · RAG & FAISS · Unsloth · Hugging Face · Gemini / OpenAI API
Web	React · TypeScript · Next.js · Firebase · Python · Flask · FastAPI · ASP.NET MVC · NestJS
Databases	MSSQL · MySQL · PostgreSQL · NoSQL · Elasticsearch
Languages	Python · TypeScript · JavaScript · C · C++ · C# · Java
Infrastructure	Docker · GitHub Actions · Linux · Vast.ai · Google Colab
Security	TryHackMe · Hacker101 · PortSwigger Academy · OSINT Tooling

LANGUAGES

Turkish	Native
English	Professional Working · YDS: 77