

Volkan Doğan

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EDUCATION

M.Sc. in Cognitive Science

Middle East Technical University, 2023

Thesis Title: Deep learning classification of cognitive workload levels from EEG wavelet transform images

B.Sc. in Electrical - Electronics Engineering

Middle East Technical University, 2017

SKILLS

Technical Skills

- Neural networks, model optimization, and deployment
- Image processing and computer vision techniques

Programming Languages

- **Python** – primary language for deep learning, computer vision, and end-to-end pipeline development
- **C++** – real-time deployment, embedded systems, and performance-critical components
- **MATLAB** – signal processing and research prototyping

Frameworks & Libraries

- PyTorch, TensorFlow, Keras
- TensorRT, TVM, ONNX, RKNN
- OpenCV, NumPy
- React Native/Expo, Firebase/GCP

SUMMARY

Senior Computer Vision Engineer with 8+ years of experience building real-time embedded AI systems and high-performance vision pipelines. Primary inventor of a granted **US Patent** (12602797) specializing in 3D reconstruction and multi-camera synchronization. Experienced across the full development lifecycle, from training deep learning models in **Python** to low-level **C++** optimization on constrained hardware, including NVIDIA Jetson, and Rockchip (NPU) platforms. Proven track record deploying resource-efficient, low-latency architectures in production. Recent work extends into multimodal LLM systems, including a shipped mobile product and published adversarial evaluation of commercial vision-language models.

WORK EXPERIENCE

Independent AI Engineer / Fortune Snap

01/2026 – Present

- Built and shipped a multimodal LLM mobile app end to end as sole developer (React Native/Expo, Firebase/GCP serverless backend), live on Google Play
- Designed the inference and token-based usage system, including cost control, App Check security, and streaming API responses
- Owned the full lifecycle from system design and CI/CD to pricing and store submission

Senior Computer Vision/Deep Learning Engineer

Rapsodo Sports

04/2021 - 07/2025 (Promoted to Senior in April 2023) Izmir/Turkey

- Led end-to-end **Python**-based deep learning pipeline development (**PyTorch**, **TensorFlow**, **Keras**), covering data preprocessing, model training, evaluation, and deployment for real-time baseball/softball tracking systems
- Sole owner of 8+ production deep learning models across the baseball product line
- Reduced object detection and segmentation model size by up to 95% and inference latency by up to 90% using INT8 quantization, channel pruning, and custom lightweight backbones, deployed on Jetson and Rockchip NPU targets under real-time constraints.
- Led cross-platform model conversion and optimization using **ONNX**, **TensorRT**, and **RKNN**, enabling deployment on **NVIDIA Jetson** and **Rockchip** edge devices, including custom layer adaptations for compatibility
- Designed and implemented **C++** system-level algorithms for core baseball parameter processing, including high-precision ball tracking, velocity calculation, hitting angles, curveball breaks, and algorithm-based device triggering.
- Designed and built the internal data annotation tool used by the annotation team, covering labeling workflow and review of flagged production cases.
- Processed raw radar data using binned FFT spectrogram analysis to detect ball impact timing and peak velocity in real-time tracking
- Monitored production model quality across millions of monthly customer videos, detecting failure cases through automated output filters (impossible velocities, zero-speed results) and routing them to annotation review to identify systematic issues.

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Development & Deployment

- Linux, Nvidia Jetson (GPU/TPU), Rockchip RKNN
- Model quantization, acceleration, and conversion for embedded and edge devices
- LLM and multimodal API integration (vision-language models, streaming inference)
- Optical design & camera calibration
- Data pipeline automation

Tools & Platforms

- Git, Cursor, LLM-based coding tools
- Jira, Confluence, Office tools

LANGUAGES

- Turkish (Native)
- English (Proficient)
- German (Beginner)

Computer Vision Engineer

Arvento Mobile Systems

01/2020 - 03/2021 (1 year and 3 months) Ankara/Turkey

- Researched and implemented object detection and image segmentation algorithms in Python (PyTorch, TensorFlow, Keras), contributing to autonomous driving perception systems
- Developed a low-latency video and text data streaming solution using GStreamer and MQTT on Nvidia Jetson platforms
- Collaborated with the embedded software team to design and implement device drivers for STM32 chips in C++

Embedded Systems/Computer Vision Engineer

ATARGET

07/2017 – 10/2019 (2 years and 4 months)

Ankara/Turkey

Project : Driver Drowsiness System

- Designed and deployed a real-time driver drowsiness detection system using facial landmark detection and eye gaze estimation, with AI models developed in **Python (TensorFlow, Keras)** and deployed using **TensorRT** for optimized inference
- Performed performance-critical optimizations in **C++**, ensuring low-latency execution on **Xilinx FPGA**-integrated systems

Project : SoDarCAM

- Developed a real-time acoustic imaging (sound camera) system in **C++**, accurately localizing sound sources by synchronizing video input with a digital MEMS microphone array
- Designed the full hardware system using Altium Designer, integrating microphone arrays and imaging components
- Implemented a beamforming algorithm in **C++ (HLS)** and programmed FPGA logic using Verilog (RTL) with the Vivado toolchain

PUBLICATIONS

Akbasli IT, Ozturk B, Serin O, Dogan V, et al. "OCR-Mediated Modality Dominance in Vision-Language Models: Implications for Radiology AI Trustworthiness" *Journal of Medical Imaging* 13(4), 045501, 2026.

Adversarial evaluation of nine commercial VLMs on 600 brain MRIs across ~27,000 inference calls. Showed OCR-readable text embedded in images overrides pixel-level evidence, including under human-imperceptible stealth injection, and that prompt-level defenses give only partial mitigation.

PATENTS

Reconstruction of Body Motion Using a Camera System Based on 3D Joint Heat Maps

Patent No.: US 12602797

Status: Granted (April 14, 2026)

Description: Primary inventor of a method for multi-camera 3D pose estimation using 3D joint heat maps, addressing synchronization and occlusion in multi-sensor capture setups.