Volkan Doğan

dogannvolkan@gmail.com

+90 (538)650-1703

linkedin.com/in/doganvolkan

https://www.doganvolkan.com

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

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. Expert in the full development lifecycle—from training deep learning models in **Python** to low-level **C++** optimization on constrained hardware, including NVIDIA Jetson, Xilinx FPGAs, and Rockchip (NPU) platforms. Proven track record in deploying resource-efficient, low-latency architectures for complex production environments.

WORK EXPERIENCE

Senior Computer Vision/Deep Learning Engineer

Rapsodo Sports (Singapore Baseball Team)

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
- Achieved massive model size reduction (up to 95%) and inference latency reduction (up to 90%) for real-time object detection and semantic segmentation models by employing model quantization and utilizing custom, ultra-lightweight architectures.
- Spearheaded 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.
- Enhanced 2D and 3D human pose estimation models in **Python** for accurate pitching analysis, directly improving the precision and reliability of customer-facing performance metrics.
- Maintained and improved production models by performing continuous performance analysis on millions of monthly video inputs, identifying low-accuracy and non-working cases via customer feedback and data pipeline analysis.
- Contributed to multiple PoC projects by rapidly prototyping and validating new deep learning approaches in **Python**, accelerating innovation in performance tracking systems
- Granted **US Patent** (12602797): Developed an innovative **multi-camera 3D motion reconstruction** method utilizing 3D joint heat maps to solve complex data synchronization and pose estimation challenges in constrained environments

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 next-generation 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++**.

Volkan Doğan

Development & Deployment

- Linux, Nvidia Jetson (GPU/TPU), Rockchip RKNN
- Model quantization, acceleration, and conversion for embedded and edge devices
- Optical design & camera calibration
- Radar image analysis
- Data pipeline automation

Tools & Platforms

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

Soft Skills

- Creative problem-solving
- Fast learner
- Strong collaboration and teamwork

LANGUAGES

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

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

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 novel system for high-precision **3D pose estimation and multi-camera data fusion**. Developed a specialized architecture using 3D joint heat maps to reconstruct complex human motion in real-time. Engineered synchronization protocols that significantly improved spatial accuracy and temporal alignment in multi-sensor sports analytics environments.

PROJECTS

Multimodal LLM RAG Application | Sole Developer & Architect | 10/2025 – Present

- AI Architecture: Architecting a low-latency, multimodal RAG pipeline for real-time visual interpretation utilizing Gemini 3.1
- Mobile Development: Engineering a high-performance mobile application (React Native/Expo) with GPU-accelerated graphics and optimized API streaming for users
- Cloud Infrastructure: Designing and maintaining a scalable serverless backend (Firebase/GCP) featuring enterprise-grade security via App Check and Secret Manager.
- Full-Stack Ownership: Managing the complete product lifecycle, from system design and CI/CD pipelines to high-DPI asset optimization and performance monitoring.

PulmoVec - Pediatric Lung Sounds at Home (02/2026)

- Role: Technical Reviewer & Algorithmic Consultant.
- Conducted an in-depth technical audit of the deep learning architectures used for pulmonary vector analysis, ensuring algorithmic robustness and data integrity.
- https://www.kaggle.com/competitions/med-gemma-impact-challenge/writeups/new-writeup-1769207004201