Kadir Göksel GÜNDÜZ

AI/ML Engineer & Technical Lead

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MSc Energy Science & Technology (Istanbul Technical University | BSc Computer & AI Engineering

PROFESSIONAL EXPERIENCE

AI Engineer & Team Lead | Seduss Robotics, Istanbul

March 2024 - November 2025

- Leading technical development of specialized **large language model** (LLM) project in **education** technology sector. Managing design of **data collection** strategies, **optimization** of **data processing** procedures, and development of custom database architecture. Coordinating preparation of datasets required for LLM training, **smart API distribution** on **AWS (serverless, EC2)** infrastructure, and performance optimization processes.
- Developed **recursive data extraction** system from educational websites, creating comprehensive **multimedia databases** from various platforms platforms. Built advanced **semantic search** engine using **PostgreSQL** for effective database utilization.
- Engineered comprehensive **data processing workflows** utilizing proprietary fine-tuned TrOCR (**Transformer-OCR**) models to extract and transform tabular and graphical data into structured formats. Architected **automated dataset generation** pipeline by processing Turkish reasoning datasets through **ORPO** and **DPO** training techniques.
- Delivered **SaaS** solution on **AWS infrastructure (EC2, Lambda)** with Gemini API integration and customized database architecture, providing students with **real-time intelligent Q&A systems**. Automated AI model training processes using serverless architecture to ensure operational efficiency.

Generative AI Engineer | Orion Twin, Istanbul

April - August 2025

- Architected **Virtual Try-On** AI system for **Orion Chamber** platform, developing core computer vision and generative models
- Engineered performance optimization through **LoRA (Low-Rank Adaptation)** implementation, architecting **automated fine-tuning pipelines** that significantly improved deployment efficiency and model iteration cycles.
- Engineered production-grade deployment on **AWS EC2** infrastructure with **MongoDB backend** architecture, orchestrating **real-time inference workflows.**

Machine Learning Engineer | Güriş Holding, Ankara

December 2023 - March 2024

- Conducted advanced statistical analysis on wind turbine telemetry data to optimize operational efficiency. Implemented forecasting models using **time series** analysis and **anomaly detection**. Engineered real-time **PowerBI dashboards** for turbine performance monitoring and predictive maintenance insights."
- Architected **domain-specific LLM** for energy sector applications, enabling intelligent optimization of wind turbine operations and supporting strategic digital transformation initiatives.

AI & R&D Engineer | Arvis Technology, Istanbul - Intern

July - September 2022

- Led project team as intern, developing deep learning **voice classification** model for age and gender detection from audio data. Created high-accuracy model based on **spectral features** using **time series** analysis, anomaly detection, and **signal processing** techniques. Additionally, expanded the project by developing **synthetic audio generation** and **voice cloning** models with **TFGAN** (Time and Frequency Domain Based GAN) architecture.
- Developed comprehensive solution for **real-time audio classification** system upon company's special request, independent of internship process. Designed end-to-end pipeline including **raw audio isolation**, **Speech-to-Text conversion**, and **QT interface**.

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PROFESSIONAL SKILLS & PROJECTS

Computer Vision

- Developed **dataset-specific architecture pipeline** capable of creating custom feature selection and neural network components (backbone & head) and loss functions. The developed model achieved 4th place in TEKNOFEST 2022-2023 Healthcare AI Competitions.
- Developed computer vision framework with **YOLO-inspired architecture** for global-scale computer vision applications as a commercial venture. Currently researching **CNN-Transformer** hybrid **vision transformer** architectures to achieve higher accuracy.
- Developed visual interface for **parallel DICOM** processing, pruning, and quantization operations on GPU using **NVIDIA DALI**.

Natural Language Processing & Large Language Models (LLMs)

- Fine-tuned a language model for automated Turkish paragraph question generation aligned with Turkish education standards. The model was **commercially deployed** by the company and is **currently utilized** by contracted educational publisher to generate paragraph questions for the 2025-2026 academic year curriculum.
- Created comprehensive dataset to achieve expected high accuracy in **reasoning** and **QA (question answering)** tasks, using data obtained from various publishers across different subjects. Trained open-source language models using datasets created in ORPO and DPO formats through Unsloth and LoRA methods.
- Performed architectural optimization using evolutionary computation and genetic algorithms to obtain optimal transformer architecture, centered on Reward & Penalty loss functions.
- Conducted hybridization work of different language models using MOE (**Mixture of Experts**) approach for prominence of various tasks across different subjects.

Reinforcement Learning

- Implemented **Forward-Forward** network optimization to **PPO (Proximal Policy Optimisation**) method to minimize computational cost during backpropagation phase.
- Trained industrial robot arm in **Unity** environment using **A2C (Actor Critic)** method for mounting parts on conveyor belt.
- Currently working on article about the use of **Transformer models** in **policy optimization** methods.

CLOUD COMPUTING & DevOps

- Designed microservice architectures using **AWS (EC2, Lambda, SageMaker)** services, implemented **load balancing** and **auto-scaling** structures, **intelligent API** deployment.
- Architected enterprise-grade AI request-response systems using **serverless** architectures, ensuring fault tolerance and sub-second latency SLAs while optimizing operational costs.

GAN Networks

- Worked with **ESRGAN** networks in undergraduate thesis which is a generative AI branch for upscaling low-resolution images to ultra-high resolution. Optimized the model architecturally using **genetic algorithms** to make it suitable and versatile for various use cases.
- Developed **Image-to-Image** model and workflow for subscription-based commercial deployment. The model is currently utilized by Canik Municipality and was acquired by Canikfest.