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Turin, Italy (**open to relocation**)

Amadreza Farahani

AI/ML Engineer

Skills

Software Development	Python, C/C++, SQL, Bash, Linux, Git, CI/CD, FastAPI, Docker, Kubernetes, Terraform, Prometheus, Grafana
Machine Learning	NumPy, Pandas, scikit-learn, XGBoost, LightGBM, PyTorch, TensorFlow, HuggingFace, MLflow, Airflow, GANs
Large Language Models	Transformers, RAG, LangChain, LangGraph, vLLM, TorchServe, Milvus, AWS (ECS, Bedrock, SageMaker)

Work Experience

Machine Learning Engineer — *Turin*
Zirak — *11/2024 – Current*

- Supervised a team of two to ship a local cross-platform LLM meeting assistant (Electron, React, **FastAPI**/Node.js) using **RAG**, **LangChain**, **LangGraph**, integrated speaker verification and real-time transcription, deployed via **Kubernetes** and **AWS Bedrock**.
- Architectured an LLM-driven assistant for consultancy and HR departments (**Hugging Face**,**vLLM**/**TorchServe**), integrating **MLflow** and **Grafana**; reduced manual processing by ~50 hours per month and productized the solution for external clients.
- Built a rail-safety computer-vision pipeline (YOLOv8/**PyTorch**) to detect sign defects and segment/track rails from nadir and frontal views.
- Shipped and benchmarked a custom UNet against internal baselines (Random Forest, **XGBoost**, KMeans), raising F1-score by 10% on multi-spectral imagery; orchestrated reproducible training with **Airflow**.
- developed an aquatic-vegetation detection pipeline (**Docker + Kubernetes**,**SageMaker**) using multispectral satellite data, with **Prometheus** observability, reducing human inspection by 80% and compute cost by 35% while maintaining <3% accuracy drift.

Visiting Researcher - Master Thesis — *Darmstadt*
Technische Universität Darmstadt | CROSSING — *08/2023 – 11/2024*

- Designed and architectured a Diffusion **Transformer** (**Python**, **PyTorch**) for voice conversion, trained on distributed **HPC** GPUs, improving speaker similarity by ~9% compared to open source baselines with lower sampling steps, allowing real-time voice conversion.
- Orchestrated the model on **AWS** (Docker + **ECS**) with **MLflow** for experiment tracking and performance monitoring.

AI Engineer — *Tehran*
Part AI Research Center — *11/2018 – 03/2022*

- Developed an Android keyword-spotting app (**Java**), fine-tuned on hard negative samples, reducing false positives by ~30%.
- Built a speaker verification system on **Tensorflow**, fine-tuned on new domains that reduced the Equal Error Rate (EER) by ~2%.
- Engineered **Test-Driven Development (TDD)** for the Persian **ASR** and **NLP** services; authored unit/integration tests to reach 100% coverage and set up Jenkins **CI/CD** to automate builds, tests, and releases.
- Automated a traffic-flow monitoring system (**C++**/**Python**, **OpenCV**, YOLOv3) for vehicle detection, multi-object tracking, and flow estimation, reducing manual review effort (national project).
- Delivered a customer testing dashboard without exposing proprietary data by developing a synthetic machinery data generator (**TensorFlow** + **Flask** + **MongoDB**), packaged with Docker Compose (client/server/DB), runnable examples, and API docs.
- Mentored new joiners on best practices for writing clean and production-ready **Python** code.

Projects

An IoT Synthetic Data Generation Module for Capping Devices | GitHub | Report — *Turin*
AROL S.p.a | Politecnico di Torino | *A. Farahani, D. Aiello* — *02/2023 – 07/2023*

Kuka-V1 Robot Anomaly Detection Using Transformer and Graph Attention Models | GitHub | Report — *Turin*
Politecnico di Torino | *A. Farahani, M. Davari, R. Hedayatmehr, O. Ormachea Hermoza* — *02/2023 – 05/2023*

Domain Randomization of Reinforcement Learning policies in robotics | GitHub | Report — *Turin*
Politecnico di Torino | *A. Farahani, M. Karimi, R. Hedayatmehr* — *09/2022 – 01/2023*

Education

M.Sc. Computer Engineering - Artificial Intelligence & Data Analytics — *Turin*
Politecnico di Torino — *2022 - 2025*

- **Courses:** Advanced Machine Learning, System and Device Programming, Machine Learning in IoT, Data Science
- **Thesis:** RobVC: A Robust zero-shot End-to-End Self Supervised Voice Conversion (Funded by CROSSING Co. in Darmstadt)

B.Sc. Electrical and Computer Engineering - Telecommunications — *Tehran*
University of Science and Technology (IUST) — *2016 – 2021*

- **Courses:** Digital Signal Processing, Linear Algebra, Linear Control Systems, Communications
- **Thesis:** Deep Learning-Based Vehicle Detection and Traffic Flow Analysis (Funded by Megamouj Co.).