



## 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

Zirak

Turin

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**.
- Architected 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 multispectral 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

Technische Universität Darmstadt | CROSSING

Darmstadt

08/2023 – 11/2024

- Designed and architected 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

Part AI Research Center

Tehran

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](#)

AROL S.p.a | Politecnico di Torino | A. Farahani, D. Aiello

Turin

02/2023 – 07/2023

### Kuka-V1 Robot Anomaly Detection Using Transformer and Graph Attention Models | [GitHub](#) | [Report](#)

Politecnico di Torino | A. Farahani, M. Davari, R. Hedayatmehr, O. Ormachea Hermoza

Turin

02/2023 – 05/2023

### Domain Randomization of Reinforcement Learning policies in robotics | [GitHub](#) | [Report](#)

Politecnico di Torino | A. Farahani, M. Karimi, R. Hedayatmehr

Turin

09/2022 – 01/2023

## Education

### M.Sc. Computer Engineering - Artificial Intelligence & Data Analytics

Politecnico di Torino

Turin

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

University of Science and Technology (IUST)

Tehran

2016 – 2021

- Thesis:** Deep Learning-Based Vehicle Detection and Traffic Flow Analysis (Funded by Megamouj Co.).