Bita
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ABOUT

I'm currently working as a Software Engineer at NTT DATA, where I focus on design and engineering of software modules for 5G Stand Alone Core Networks, Slicing and Automation processes. I recently graduated from Politecnico di Milano with a Telecommunication Engineering Master's, specializing in wireless networks, AI applications in telecom, and optical transport networks. I'm passionate about integrating machine learning with telecommunications to drive innovation and efficiency.

EXPERIENCE

NTT DATA Italia — Software Engineer in Innovative Telco Solutions department

July 2024 - PRESENT

I have worked on team and individual projects. I enjoyed the experience of learning and developing hands on experience across telecom software development, below is a list of some key projects I worked on:

Edge Application Management API:
Designed and built the backend for an edge application management API. My work included creating endpoints to add, retrieve, and delete applications and their instances, as well as to discover available edge cloud zones. I was responsible for implementing these endpoints end-to-end, including defining the business logic, connecting the API to our database and writing the necessary SQL querie. I also developed the data and queue services for the background workflows (using Celery) related to instance operations as well as the authentication handler for API security and ensured clear error handling throughout the system.

Edge Node & Device Handover Automation:
I contributed to a team project on managing edge nodes and mobile CPEs in an automotive 5G scenario. I developed and integrated a plugin into our Network Function management platform to enable dynamic control of CPEs and edge nodes, including state management (locking/unlocking, handover, roaming). My work focused on backend logic leveraging geolocation and network topology data, with SQL-based queries to retrieve and update device, location, and connectivity information in real time.

Migration Code API:
Developed a C# ASP.NET Core web API to automate and standardize the migration code process used in telecommunication service transitions (generating and verifying migration codes). Designed a modular architecture with controllers, models, services, extensions, and filters, encapsulating business logic, data access, and validation. The API integrates with databases and external systems to validate migration codes against business rules. Additionally, I wrote the OpenAPI YAML specification to document all API endpoints, request/response schemas, and error handling, ensuring clear integration standards for clients and partners.

Workflow & Deployment Automation:
I developed automation solutions using Python and Apache Airflow to build workflows for managing applications, datacenters, devices, and services, with modular plugins to keep the code maintainable. I designed and implemented Helm

SKILLS

Programming Languages:
MATLAB, C++, C#, Python (Pandas, Numpy, Scikit-learn, Tensorflow, PyTorch, OpenCV, Matplotlib, Keras)

AI:
Machine Learning, Deep Learning, Reinforcement Learning, Computer Vision & Image Analysis

Tools & Platforms:
Orchestration & Deployment: Kubernetes, Helm, Docker, Apache Airflow, Celery
Monitoring & Analytics: Grafana, Wireshark
Databases & Management: PostgreSQL, DBeaver, Redis
Others: Git/GitHub, Linux (Ubuntu), Net2Plan, TinyOS/TOSSIM

Languages:
English (C1,) Persian (Native), Italian (A2)

charts to automate the deployment and configuration of Kubernetes applications, creating reusable templates for deployments, services, secrets, and configuration files to support consistent and reliable operations across environments.

Data Analytics & Visualization:
Wrote advanced SQL queries for extracting and monitoring telecom data; built dashboards in Grafana to visualize KPIs and support decision-making across distributed systems.

AI for Self-Healing Networks:
Collaborated across teams to contribute to an AI chatbot for fault detection and recovery in manufacturing networks, focusing on design integration and automation workflows.

Reinforcement Learning Retrospective:
Reviewed prior RL-based optimization frameworks for telecom networks, analyzing trade-offs in latency, cost, and load balancing.

BONSAI Lab (Broadband Optical Networks, Security and Advanced Internet), Milan — Research Assistant (Master's thesis, in Collaboration with SM-Optics)

October 2023 - August 2024

Thesis title*: A Configuration-based Chromosome Structure for OTN Board Cost Minimization Using Genetic Algorithm in Optical Metro Networks*

- Developed a configuration-based genetic algorithm in C++ to optimize Optical Transport Network (OTN) equipment in metro networks, achieving up to 61% cost savings. Enhanced scalability and flexibility by eliminating parameter fine-tuning, supporting mixed coherent and non-coherent transmission technologies.
- "*An Overview on Multi-Layer Design of OTN-over-WDM Metro Networks with Low Equipment Cost*", Aryanaz Attarpour; Bita Rahmat Zadeh; Memedhe Ibrahimi; Francesco Musumeci; Andrea Bovio; Andrea Castoldi. Published in IEEE Xplore, 2025.

Petrochemical Industries Design and Engineering Company (PIDEC) , Shiraz — Electrical Engineer intern

Jun 2019 - Sep 2019

Designed electrical systems for oil, gas, and petrochemical plants, including power generation, lighting, protection, communication, and fire alarm systems. Prepared detailed drawings and documents.

EDUCATION

Master of Science in Telecommunication Engineering *(Politecnico di Milano, Milan)*

Feb 2021 - Sep 2024

Bachelor of Science in Electrical Engineering
(Shiraz University, Shiraz)

Sep 2015 - Jul 2020

COURSES:

Outside of university studies:
Reinforcement Learning, *Hugging Face*

Machine Learning, *Google Developers*

Anomaly Detection in Machine Learning, *Percipio*

Machine learning, *Prof. Andrew Ng, Coursera*

Advanced OpenCV with Python, *Pysourse*

Advanced Python Programming, *Faradars*

University studies:
Advanced Digital Signal Processing, *Politecnico di Milano*

Communication Network Design, *Politecnico di Milano*

Mobile Radio Network, *Politecnico di Milano*

Information Theory, *Politecnico di Milano*

Artificial Neural Networks and Deep Learning, *Politecnico di Milano*

Internet of Things, *Politecnico di Milano*

Image Analysis and Computer Vision, *Politecnico di Milano*

Wireless Internet, *Politecnico di Milano*

Deep Learning Workshop, *held by IEEE Shiraz University Student Branch*

VOLUNTEER WORKS:

Member of IEEE Shiraz University Student Branch.

Supported a campus charity initiative by raising funds for local causes.

Organized an informational conference on Electrical Engineering branches to new students.

PROJECTS

Machine Learning, Deep Learning & Computer Vision

Anomaly Detection & Forecasting:

- Developed and benchmarked multiple anomaly detection models (CNN, Decision Trees, SVM, DBSCAN, LOF, Isolation Forest, ensemble) for fraud detection and time-series analysis [Oct 2024].

Neural Networks & Classification:

- Designed and trained neural network classifiers and forecasting models to predict categorical outcomes and multivariate time series [Oct 2021 - Jan 2022].

Computer Vision Applications:

- Accurate vehicle counting using detection (YOLO) and tracking (Kalman filters) in video sequences [Oct 2022 - Feb 2023].
- Explored gaze tracking and pupil detection methods to create a robust system applicable in user interface accessibility and neurological condition diagnosis, such as Autism Spectrum Disorder (ASD) [Dec 2019 - May 2020].

Digital Signal Processing & System Optimization

Video & Audio Processing Optimization:

- Optimized a video processing workstation's throughput via simulation and mathematical modeling [July 2023].
- Developed a MATLAB-based signal processing solution to reduce interference in stereo audio signals, enhancing clarity through adaptive filtering. This project improved audio quality and established a robust framework for real-time noise handling [Jun 2023].

Advanced Signal Processing:

- Developed and refined MIMO system estimation and deconvolution techniques to boost filter response and signal accuracy in noisy environments [Nov 2023 - Dec 2023].

Networking & IoT

Network Design & Simulation:

- Engineered a Private Mobile Radio network using DMR technology with simulation tools for coverage prediction [May 2023].
- Evaluated network performance to optimize routing and spectrum assignments in IP over WDM environments [Oct 2022 - Jan 2023].

IoT Integration & Analysis:

Led projects on traffic analysis using Wireshark, integrated IoT platforms like ThingSpeak, and developed embedded applications using TinyOS with TOSSIM simulation, emphasizing robust project management and security analysis [Feb 2021 - May 2022].