



NARGES VAHDANI

Phone: +41762700440 | Email: nargesvahdani@gmail.com | Nationality : Canadian
Address: Sadlenweg 10, Zurich , 8055
LinkedIn: [Linkedin](#) | Website: [nargesvahdaniweb.netlify](https://nargesvahdaniweb.netlify.com) | GitHub: [GitHub](#)

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IT Helpdesk : [Helpdesk Agent](#), Image Analysis: [Live Demo](#)

I'm a versatile and results-driven professional bridging Data Science, AI/ML Engineering, Full-Stack Development, and DevOps/Cloud Architecture. I specialize in Large Language Models (LLMs), multi-agent systems, and Retrieval-Augmented Generation (RAG) pipelines designing intelligent systems that turn data into real impact. My expertise spans end-to-end AI product development, from data engineering and fine-tuning to deployment, MLOps, and real-time analytics.

I'm driven by the challenge of transforming complex data and AI problems into clear, reliable, and human-centered solutions. At IBM Research, I built conversational AI pipelines that turned technical complexity into clarity and speed and I've been hooked ever since. I thrive where innovation meets execution, working fast, collaborating deeply, and pushing boundaries. I'm excited to bring that same energy and expertise to create the next generation of breakthrough AI solutions that truly make a difference.

Education

Master of Science in Data Science | Sep2022 – Feb 2025

Lucerne University of Applied Sciences _ Lucerne

Bachelor of Electrical Engineering | Sep 2007– Jan 2011 (Automation & Control Systems)

IKIU_ Iran

Awards and Certification

Python Programming Certificate (2020)

EDUCBA Python Institute, Toronto, Canada

Certificate in AWS Cloud Architect (2018)

Metro College of Technology, Toronto, Canada

Key Achievements

IBM Research: Implemented a Natural-Language Conversational GIS and an LLM-driven geospatial database pipeline at IBM Research, reducing data-extraction errors by 30% and doubling query speed, enabling intuitive chat-based interaction with complex spatial and relational data.

Lucerne iHomeLab: Deployed AI chatbots for student support (~40% response times) and agronomic Q&A, and built a real-time occupancy-prediction pipeline for senior-care facilities—boosting monitoring accuracy and informing safer building designs.

Basler & Hofmann: Enhanced the Digital Twin platform's reliability and visualization for faster scenario planning; implemented a secure, conversational HR Q&A layer; and automated Revit mapping with PyRevit—cutting model preparation times by 60%.

PMO Group: Built a complete AWS-based ETL pipeline and Power BI dashboard to forecast sale prices and highlight high-demand neighborhoods, driving smarter investment decisions.

Work Experiences

Machine Learning Engineer (Project Based / Freelance) – Ekona.ai – Basel

AUG 2025 - PRESENT

- Built a full-stack multi-agent system orchestrated with Lang Graph, leveraging LLMs and graph-based RAG for high-precision retrieval and reasoning.

Master thesis and Intern , Multidimensional Database – IBM Research – Zurich

SEP 2024 – FEB 2025

- Collaborated on IBM's Agent Bee team, integrating agentic tools for dynamic prompt refinement, real-time model tuning, and semantic dataset selection using vector, graph-based retrieval, and Multi Agent RAG(Lang Graph).
- Collaborated with IBM Research Zurich to enhance LLM understanding of geospatial NL-to-SQL, building a custom dataset via Evol-Instruct, Chain-of-Thought, and adaptive RAG prompting for schema-aware SQL generation.
- Applied QLoRA fine-tuning and integrated a GraphRAG retrieval layer to improve query accuracy and efficiency on IBM's complex multi-table geospatial database.

Research Assistant – iHomeLab – Lucerne University – Lucerne

MAR 2023 – FEB 2025

- Addressed farmers' need for real-time technical support: Built a RAG-powered educational chatbot (LLAMA 3.1 & CRAG) using AWS Lambda and S3 to enable on-demand Q&A and feedback in the agriculture domain, resulting in measurable improvements in crop management and production quality.
- Improved weak-signal detection for Ambient Assisted Living: Engineered a framework combining vector similarity search and clustering to enhance noisy AAL sensor data, then trained CNN/RNN time-series models to predict elderly presence in rooms.

Data Engineer Intern – Basler & Hofmann – Zurich

APR 2023 – MAY 2024

- Enhanced B&H Digital Twin Quality: Developed voxel-based CNN models for point cloud segmentation to label each point.
- Accelerated HR Data Retrieval: Built an agentic Q&A pipeline over HR databases by applying LLMs for automated SQL generation and querying.
- Streamlined Revit Workflows with AI: Architected a hybrid PyRevit + LLM pipeline for rule-based model validation and task automation.

Director, Data Engineering – PMO Group(Business Analysis) – Toronto, Canada

SEP 2018 – JAN 2021

- Built a predictive real estate analytics platform integrating Power BI and SAP, delivering market insights to executives.
- Deployed a real-time app using fine-tuned regression models, kafka and GA4 to forecast housing prices across Toronto neighborhoods.

Projects (Github : <https://github.com/nargesghv>)

AI Weblog generatorMulti-agent (<https://ai-powered-blog-generator.netlify.app/>)

Tech: Lang graph, RAG, Multi agent, Groq, OpenAPI Fast API, React

Synthetic Data Generation Pipeline for Enterprise AI (NLtoSQL Team IBM Research)

Tech: Large Language Models (LLMs), Prompt Engineering, Advanced Prompt Engineering

Realtime Multi-Agent Conversational System using LangGraph and MCP

Tech: LangChain, LangGraph, MCP, LLM, Python, Tool Augmentation, Asynchronous Programming, OpenAI, DALL·E, Matplotlib, Prompt Engineering, Agent Design, Server-Sent Events, Conversational AI, Generative AI, Multi-Agent Systems

GraphRAG Legal Contract Intelligence

Tech: LangChain, Neo4j, FastAPI, Cypher, Pydantic

DriftAlert: Real-Time AI-Powered Schema Monitoring System

Tech: GPT-4o, LangChain Agents, PostgreSQL, Kafka, Guardrails, Pydantic, JSON

Full stack LangGraph AI Document Classifier

Tech: LangGraph, GPT-4, FastAPI, React, Tailwind, SQLite, Streamlit

SmartRAG – Real-Time Retrieval-Augmented Dataset Assistant

Tech: FastAPI, OpenAI GPT-4, LangChain, Pinecone, Neo4j, React, Tailwind CSS, IBM Cloud Functions

Real-Time Business Insights Platform

Tech: Python, Kafka, Azure Cognitive Search, Ollama LLM, FastAPI, LLMops

Real Estate Forecasting Platform

Tech: XGBoost, FAISS, FastAPI, Azure Blob, Azure SQL, Power BI

Real-Time Image Classification System

Tech: TensorFlow, CNN, Kafka, FastAPI, Docker, OpenCV, UI/UX

MachiStages of Menopause – Health Education Project

Tech: Gradient Boosting, Linear Regression, Synthetic Data, Feature Importance

AI-driven Travel App

Tech: Next.js, TypeScript, Tailwind CSS, React Hook Form, NextAuth.js, Zustand, Axios, Node.js, Amadeus SDK, Booking.com API, Viator API, OpenAI GPT-4, Stripe, Adyen, Jest, Cypress, GitHub Actions, Vercel, AWS, JSON.

Skills

- **AI/ML:** GPT-4, LLaMA, Hugging Face, PyTorch, TensorFlow, Scikit-learn, RLHF, QLoRA, Wav2Vec2
- **GenAI & Agents:** LangChain, LangGraph, OpenAI Assistants API, RAG, GraphRAG, Prompt Engineering
- **Computer Vision:** YOLOv8, OpenCV, 3D Reconstruction, SLAM, Image-to-Text, WebXR, Unity3D
- **Data Engineering:** Kafka, Airflow, FastAPI, Docker, Kubernetes, PostgreSQL, MongoDB, DBT
- **MLOps & Deployment:** CI/CD (GitHub Actions), Azure, GCP (Vertex AI, BigQuery), AWS (SageMaker)
- **Analytics & BI:** Power BI, Streamlit, SQL, Experiment Design, A/B Testing, Feature Importance
- **NLP & Search:** Text-to-SQL, Semantic Search, pgvector, Neo4j, Cypher, LangChain Tools
- **Software Dev:** REST APIs, Pydantic, JSON, Jupyter, React (basic integration)

Soft Skills | Hobbies & Interests | Languages

- **Soft Skills:** Creative & Innovative, Positive Attitude & Empathy, People-Oriented & Relationship-Builder, Team Player & Adaptable, Strong Sense of Responsibility, Unwavering Work Ethic, Energetic & Heartfelt.
- **Hobbies :** Sports (Beach volleyball, skiing, Hiking in the Swiss Alps), Painting, sculpting, Watching great films; reading books; listening to podcasts on astronomy, philosophy, quantum physics, evolution
- **Languages:** English(Fluent), Farsi(Native), German(Basic (A1) — actively improving)