NARGES VAHDANI

AI RESEARCH SCIENTIST | MULTIMODAL COMPUTER VISION | REAL-TIME LLM SYSTEMS

CONTACT

Nationality: Canadian **| Work Permit:** L Permit (Swiss Graduate, Job Search Visa)
Phone: 0762700440 **| Email**: nargesvahdani@gmail.com **| Address**: 8952 Zurich, Switzerland
LinkedIn: www.linkedin.com/in/narghotbi/
Website: https://nargesvahdaniweb.netlify.app/
GitHub: https://github.com/nargesghv

SUMMARY

Hands-on AI Automation Engineer specializing in agentic workflows, RAG systems, real-time data integration, and intelligent automation for digital transformation. Experienced in building scalable AI services, integrating LLMs into operational pipelines, and leading innovation projects from ideation to full deployment. Strong cross-functional collaboration skills with a background in cloud engineering, Python development, and modern containerized architectures.

WORK EXPERIENCES

IBM Research – Master thesis and intern , Geospatial & Multimodal AI – Zurich, 2024–2025

- Built Geospatial Studio's Agent Bee intelligent tools focusing on adaptive model tuning, semantic retrieval, and feedback-driven refinement for climate modeling workflows.
- Designed and deployed scalable pipelines for syntactic geospatial SQL data generation using advanced prompt engineering techniques and IBM Granite LLMs, supporting custom fine-tuning when proprietary datasets were unavailable.
- Developed a full pipeline to enable natural language querying of IBM's geospatial database, translating user inputs into GeospatialSQL queries (NL-to-SQL conversion).
- Fine-tuned large language models (LLMs) including IBM Granite and LLaMA 3.2 using QLoRA techniques, and evaluated model performance on geospatial question-answer benchmarks.

Research Assistant – iHomeLab – Lucerne University – Lucerne**,** 2023–2025

- Built RAG-enhanced educational chatbots using LLAMA 3.2, CRAG, and AWS Lambda deployment to improve real-time student support and feedback collection.
- Developed AR-ready real-time object detection systems and smart agricultural Q&A pipelines.
- (AAL4ALL Group) Engineered a weak-signal detection framework using vector similarity search and clustering to enhance ambient assisted living (AAL) sensor data.
- Trained deep learning time-series models on weak sensor signals to predict elderly presence in rooms, applying CNN/RNN architectures for event forecasting.

Data Engineer Intern – Basler & Hofmann – Zurich, 2023–2024

- Developed voxel-based CNN models for point cloud segmentation to support digital twin modeling and infrastructure visualization.
- Built an agentic Q&A pipeline over Azure HR databases, applying LLMs to automate SQL generation and database querying.
- Deployed containerized, production-grade AI integrations into BIM workflows and PyRevit automation tools, enhancing project intelligence and operational efficiency.

Director, Data Engineering – PMO Group – Toronto, 2018–2021

- Led predictive real estate analytics platform development, combining Power BI and SAP for strategic market insights.

PROJECTS

Real-Time Business Insights Platform (GitHub Repo)

- Built real-time streaming platform with Kafka, Azure Cognitive Search, and FastAPI, analyzing live stock/financial signals.
- Integrated Retrieval-Augmented Generation (RAG) workflows and applied LLMOps for performance tracking and latency control.

🏛Educational RAG Chatbot – iHomeLab

- Led deployment of RAG-based chatbot using LLAMA 3.2 and CRAG on AWS Lambda, enhancing automated knowledge access.
- Combined retrieval pipelines, local hosted LLMs, and semantic search for dynamic information retrieval.

Agentic Financial Automation System - Madani Consulting

- Architected an event-driven automation pipeline using Azure Databricks, Kafka, OpenAI Assistants, and LangGraph for processing sensitive financial data securely and efficiently.
- Automated 80% of operational workflows, ensuring compliance and fault-tolerant processing.

Real-Time AR/VR Object Detection Platform

GitHub Repo (https://github.com/nargesghv/AR-VR-Ready-Object-Detection-System)

- Built real-time YOLOv8 + Kafka object detection system with WebSocket-based streaming to Unity/WebXR for AR/VR deployments.
- Developed scalable agentic reasoning pipelines using LangChain to enhance user interactivity.

EDUCATION

Master of Science in Data Science

HSLU (Lucerne University of Applied Sciences) | 2022-2025

Bachelor of Engineering in Electrical Engineering (Automation & Control Systems)

IKIU | 2007- 2011

AWARDS AND CERTIFICATION

Python Programming Certificate (2020)
EDUCBA Python Institute, Toronto, Canada

Certificate in AWS Cloud Architect (2018)
Metro College of Technology, Toronto, Canada

Professional Diploma in Interior Architecture (2012)
George Brown College, Toronto, Canada

SKILLS

- AI & Machine Learning: LangChain, LLMs, RAG Pipelines, Hugging Face, RLHF, Transformers, PyTorch, TensorFlow
- Computer Vision: YOLOv8, OpenCV, SLAM, 3D Reconstruction, Detection/Segmentation, Unity, WebXR
- Agent-Based Systems & Chatbots: LangGraph, OpenAI Agents, CRAG, Streamlit, FastAPI, Cognitive Agents
- Data Engineering: Kafka, Airflow, Docker, PostgreSQL, NoSQL, REST APIs, GCP Integration
- Consulting & Workshops: Client workshops, rapid prototyping, AI solution design, strategic support
- Generative AI & LLMs: LLaMA 3.1, IBM Granite, Hugging Face Transformers, LangChain, OpenAI Assistants, QLoRA, RLHF (light), Prompt Engineering
- Multimodal AI Systems: RAG Pipelines, Text-to-SQL, Geospatial Reasoning, Image-to-Text, BIM + NLP Integration
- Data & Experimentation: Synthetic Dataset Generation, Semantic Filtering, Benchmark Creation, Evaluation Pipelines
- Engineering Tools: PyTorch, TensorFlow, FastAPI, Kafka, Docker, PostgreSQL/PostGIS, Airflow, Azure, Databricks
- Research Translation: Scalable Inference, Tool Use Agents, Real-Time Deployment, Semantic Indexing, QA Assistant

LANGUAGES

- **English:** Full professional proficiency
- **Persian:** Native