

Reyhaneh Ahani

Vancouver, BC (Willing to Relocate)

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Technical Skills

Programming & Tools	Python, Bash, SQL, C/C++, JavaScript, Shell Scripting, Linux
Software Engineering	Object-Oriented Programming, Design Patterns, Testing (unit & regression), Git, CI/CD, Docker, FastAPI, REST API Design, Flask, Weights & Biases, SLURM Job Scheduling, Azure, Spark
DL & ML Frameworks	PyTorch, TensorFlow, JAX, Scikit-Learn, OpenCV, NumPy, Pandas, SciPy, Hugging Face, Gym, LangChain, LangGraph, Pytorch3D, Torch-ac
NLP & AI Techniques	Fine Tuning LLMs, Transformers, Transfer Learning, Model Alignment, Prompt Engineering, Explainable AI, Segmentation, Conventional ML Methods, Bayesian Inference, Statistical Testing

Experience

Multimedia Communication Lab (Simon Fraser University) - Research Assistant

Jan 2025– Present

- Research on monocular depth estimation using vision language models under supervision of Dr. Jie Liang.
- Developed multimodal fusion methods using semantic textual cues to improve depth prediction robustness.

Big Data Hub – Data Analyst

Feb 2025– Present

- Integrated Telus Mobility API to extract large-scale spatiotemporal mobility datasets related to lakes in Alberta, Canada.
- Performed advanced analysis on mobility patterns, visitor counts, and geospatial zones across multiple lake regions using custom shapefile-based filters and polygon buffers.

Metra Consultant Company – Machine Learning Engineer

Jan 2024– Sep 2024

- Built and deployed ML models for optimizing transportation logistics across road and rail networks.
- Created predictive tools for route planning, cost estimation, and efficiency analysis using spatiotemporal data.

IS Laboratory ([Autonomous Driving Control via DL & RL](#)) – Research Assistant

Jan 2021– Sep 2023

- Developed AV navigation components, including Road Sign Recognition, Lane Detection, Driveable Area Segmentation.
- Designed a customized Attention U-Net with Ray Tune for hyperparameter optimization and used RL for decision-making. Achieved high segmentation performance using Dice-Focal composite loss.

Projects

Parameter-Efficient CLIP Adaptation for Monocular Depth Estimation | [GitHub](#)

- Developed a novel, parameter-efficient adaptation strategy for ViT by combining lightweight Mixture-of-Adapters modules with selective fine-tuning of the final backbone layers for depth estimation task.
- Designed a hybrid prediction architecture guided by a global semantic context vector, derived from averaged CLIP text prompt embeddings, to achieve spatially-aware, geometrically-accurate depth estimation.
- Achieved SOTA results on the NYU Depth V2 benchmark, significantly outperforming prior VLM-based methods while using substantially fewer trainable parameters. (Prepare for Publication)

LLAMA3 RAG Chat-Bot | [GitHub](#)

- Designed and implemented a LLAMA3-based RAG chatbot using LangChain and LangGraph with a modular workflow.
- Integrated hybrid document retrieval (BM25 + FAISS) with HuggingFace embeddings, adding relevance filtering and fallback mechanisms for robust query handling across diverse query types and out-of-domain scenarios

WavePatch: Efficient 3D Point Cloud Compression via Wavelets and Patches | [GitHub](#)

- Designed a hybrid encoder with WeConv layers and a latent-domain wavelet autoencoder for point cloud compression.
- Implemented full compression, decompression and evaluation pipelines for model's performance on the ModelNet40.

Robust Cross-Lingual Fact-Checking | [GitHub](#)

- Fine-tuned XLM-RoBERTa with LoRA for multi-lingual fact verification on X-Fact, improving robustness via adversarial training and gradient sensitivity analysis under multilingual noise like cross-label vulnerability patterns.
- Designed an evidence-based fact-checking pipeline combining FLAN-T5, Wikipedia API, and Sentence-Transformers for retrieval and summarization, with query reformulation and paragraph reranking modules.

Education

Master of Computer Engineering - Simon Fraser University | **GPA: 4.08/4.30**

Jan 2025 – Jan 2027

Bachelor of Electrical Engineering/Minor in Computer Engineering – Amirkabir University of Technology | **GPA: 3.94/4**

Sep 2019 – Sep 2023