

# 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

<b>Multimedia Communication Lab (Simon Fraser University) - Research Assistant</b>	<i>Jan 2025 – Present</i>
<ul style="list-style-type: none"><li>Research on monocular depth estimation using vision language models under supervision of Dr. Jie Liang.</li><li>Developed multimodal fusion methods using semantic textual cues to improve depth prediction robustness.</li></ul>	
<b>Big Data Hub – Data Analyst</b>	<i>Feb 2025 – Present</i>
<ul style="list-style-type: none"><li>Integrated Telus Mobility API to extract large-scale spatiotemporal mobility datasets related to lakes in Alberta, Canada.</li><li>Performed advanced analysis on mobility patterns, visitor counts, and geospatial zones across multiple lake regions using custom shapefile-based filters and polygon buffers.</li></ul>	
<b>Metra Consultant Company – Machine Learning Engineer</b>	<i>Jan 2024 – Sep 2024</i>
<ul style="list-style-type: none"><li>Built and deployed ML models for optimizing transportation logistics across road and rail networks.</li><li>Created predictive tools for route planning, cost estimation, and efficiency analysis using spatiotemporal data.</li></ul>	
<b>I5 Laboratory (Autonomous Driving Control via DL &amp; RL) – Research Assistant</b>	<i>Jan 2021 – Sep 2023</i>
<ul style="list-style-type: none"><li>Developed AV navigation components, including Road Sign Recognition, Lane Detection, Driveable Area Segmentation.</li><li>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.</li></ul>	

## Projects

<b>Parameter-Efficient CLIP Adaptation for Monocular Depth Estimation</b>   <a href="#">GitHub</a>	
<ul style="list-style-type: none"><li>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.</li><li>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.</li><li>Achieved SOTA results on the NYU Depth V2 benchmark, significantly outperforming prior VLM-based methods while using substantially fewer trainable parameters. (Prepare for Publication)</li></ul>	
<b>LLAMA3 RAG Chat-Bot</b>   <a href="#">GitHub</a>	
<ul style="list-style-type: none"><li>Designed and implemented a LLAMA3-based RAG chatbot using LangChain and LangGraph with a modular workflow.</li><li>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</li></ul>	
<b>WavePatch: Efficient 3D Point Cloud Compression via Wavelets and Patches</b>   <a href="#">GitHub</a>	
<ul style="list-style-type: none"><li>Designed a hybrid encoder with WeConv layers and a latent-domain wavelet autoencoder for point cloud compression.</li><li>Implemented full compression, decompression and evaluation pipelines for model's performance on the ModelNet40.</li></ul>	
<b>Robust Cross-Lingual Fact-Checking</b>   <a href="#">GitHub</a>	
<ul style="list-style-type: none"><li>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.</li><li>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.</li></ul>	

## Education

<b>Master of Computer Engineering</b> - Simon Fraser University   <b>GPA: 4.08/4.30</b>	<i>Jan 2025 – Jan 2027</i>
<b>Bachelor of Electrical Engineering/Minor in Computer Engineering</b> – Amirkabir University of Technology   <b>GPA: 3.94/4</b>	<i>Sep 2019 – Sep 2023</i>