Hooman **Ramezani**

Deep Learning, Vision & NLP

hooman125@gmail.com
linkedin.com/in/hoomanramezani
github.com/HoomanRamezani
hoomanramezani.com

EDUCATION

University of Toronto, MASc, Mechanical Engineering, Artificial Intelligence — **EXPECTED JAN 2025**

- **Thesis:** Tuning LLM and ViT models to consolidate multimodal clinical data for lung cancer decision support system
- **Relevant Coursework**: Deep Learning Theory, Cloud Data-Analytics, Generative Models, Deep Learning Fundamentals

University of Waterloo, BASc, Systems Design Engineering — **SEPT 2018 - APRIL 2023**

- **Relevant Coursework**: Intro. Deep Learning, Intro. Machine Learning, Pattern Recognition, Computational Neuroscience

EXPERIENCE

Machine Learning Engineer | *Advanced Micro Devices* — **MAY. 2022 - AUG. 2022**

- Optimized DL models for **accelerated inference** (throughput / latency) on AMD **CPUs** utilizing **pruning** and **quantization**
- Built **BERT NLP** pipeline for sentiment analysis, trained with **Few-Shot** techniques, with **80%** faster predictions for users
- Engineered **Spark** and **Hadoop** pipeline for multi-terabyte cloud dataset, achieving **50%** processing time reduction

Deep Learning Developer (Vision) | *DarwinAI* — **SEPT. 2021 - DEC. 2021**

- Delivered vision model for diagnosis of Liber Fibrosis to **Pfizer** team which reduced examination time by **40%** for medical practitioners, utilizing **PyTorch CNN / ViT** + custom data augmentations to produce sensitive and accurate model
- Communicated closely with customers in **manufacturing** and **healthcare** to curate custom deep learning solutions
- Optimized **YOLO / ViT** computer vision pipeline with **CUDA GPU optimization** (prefetch, parallel processing, cache)

Deep Learning Developer (Vision) | *Applied Brain Research* — **JAN. 2021 - APRIL 2021**

- Developed end-to-end pipeline for **drone object-detection** model to identify surface defects on complex structures
- Built **Unreal Engine 4** simulation for data generation mitigating shortage of real-world data, paired with **OpenCV** masking
- Achieved **94%** accuracy using **RCNN** to process video frames tracking **temporal data** with **LSTM** and LMU architecture

Other

Backend Developer	@	Baron Biosystems	(May 2020)	- Manipulated data models with MongoDB + PHP
Android Developer	@	reebee Inc.	(Sept 2019)	- End-to-end feature deployment on android app.
QA Developer	@	SAP Canada	(Jan 2019)	- Built automated regression test-suite for web app.

RESEARCH

Lung Metastases Tumour Board Decision-Making | *morLAB University of Toronto* — **JULY 2023 - PRESENT**

- Developing a multimodal treatment decision support system for lung cancer patients in partnership Princess Margaret
- Feeding **ViT** tokens into medical **LLM** to achieve **multi-modal** lung-CT (vision) and clinical notes (text) understanding
- Built automated lung CT-scan segmentation system for unlabelled data, achieving **90%** DiceC, fine-tuning meta SAM

Robot Grasp Detection | *URA* | *UW Vision and Image Processing Lab* — **OCT 2022 - MAY 2023**

- Research design of 3D DL Model to output **optimal grasping points** of robotic hand from LiDAR camera PointCloud data
- Implementation to be utilized in a robotic arm to quickly analyze objects and decide how to them pick up, developing **Grasp Proposition Network** and **data loader** as a customized architecture within model

Aging In Place | *URA* | *UW Vision and Image Processing Lab* — **NOV 2021 - APRIL 2022**

- Built nutrition model to classify food and provide its' nutritional content, with **NVIDIA Omniverse** dataset synthesis

PROJECTS

AutoDiffentiation Deep Learning Library - Built Python package with Numpy for autodifferention, can be imported into any file and perform gradient descent on given neural network

Nailed-It - Placed 2nd at UofT HackXPlore for development of AI-powered tool for early-diagnosis of oxygen-deprivation illnesses through analysis of nails