

Salar Hosseini

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Education

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- M.Sc. in Computer Science, University of Toronto** Sept. 2021 – Jan. 2023
Research Areas: Deep Learning and Computer Vision, Advised by Prof. Florian Shkurti CGPA: 4.00/4.00
- Coursework: Neural Network Training Dynamics, Probabilistic Learning, ML for Mathematical Optimization
- B.A.Sc. in Engineering Science (Robotics), University of Toronto** Sept. 2016 – May 2021
Graduation with High Honours, Artificial Intelligence Minor CGPA: 3.96/4.00
- Coursework: Deep Learning, Computer Vision, Natural Language Processing, Algorithms & Data Structures

Technical Skills

Programming Languages: Python, C++, C, Java, MATLAB, Bash, Latex, Verilog
Libraries & Tools: PyTorch, NumPy, JAX, OpenCV, scikit-learn, SciPy, pandas, Jupyter, Bash, Git, Docker, Slurm, AWS

Professional Experience

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- Machine Learning Research Intern | Samsung AI Center Toronto** Jan. 2023 – Present
Multimodal Situational Awareness Lab
- Developed a novel sampling algorithm using **PyTorch** for increasing the throughput of **spatiotemporal vision transformers** (pretrained as masked autoencoders) while achieving competitive action recognition accuracy.
 - Implemented sampling visualizations by using TensorBoard during pretraining and finetuning on GPU clusters.
- Machine Learning Researcher | University of Toronto** May 2020 – Jan. 2023
Robot Vision & Learning (RVL) Lab
- Proposed a state-of-the-art method for **self-supervised** video representation learning (+15.4% top-1 recall on UCF101 video retrieval) using **PyTorch** by iteratively clustering and contrasting embeddings from a 3D CNN.
 - Published [\[oral paper\]](#) in CVPR 2022 (top 5% of ≈8000 submissions) and **presented to hundreds** of attendees.
 - Generated **adversarial driving scenarios** by adding perturbations using differentiable rendering simulators.
- Software Engineering Intern | Intel Corporation** May 2019 – May 2020
High Level Design Compiler Team
- Researched and implemented a latency-optimized **sorting algorithm** in C++ for processing large data sets.
 - Increased average throughput of HLS algorithms by 10% by optimizing latency parameterization using **C++**.
 - Developed a GUI with Qt to showcase live FPGA acceleration of a flagship design; presented to ≈40 engineers.
- Research Assistant | University of Toronto** Jan. 2019 – Apr. 2019
Virtual Reality Robotics Lab, Mapping and Localization for a Quadrotor Drone
- Integrated the ORB-SLAM2 API to generate **point clouds** from a quadrotor drone's monocular image data.
 - Implemented DBSCAN **unsupervised clustering** on point cloud data to identify objects in the mapped scene.

Extracurricular and Personal Projects

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- Neurotech - University of Toronto | Quadrotor Drone Vision Team** Oct. 2019 – Apr. 2020
- Developed a projectile tracker by using **Python (OpenCV)** for colour thresholding and depth estimation.
 - Simulated the dynamics of a quadcopter by evolving the system state equations using MATLAB.
- aUToronto Self-Driving Car | Object Detection Team** Aug. 2018 – Apr. 2019
- Created a ROS framework to interface visual inputs, CNN inference, and bounding box visualization.
 - Implemented FPGA **inference acceleration** for the SSD300 neural network using the OpenVINO API in **C++**.

Awards

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- Ontario Graduate Scholarship** – Merit-based award supporting master's degree July 2021
- Vector Scholarship in A.I.** – Awarded to ≈80 students in Ontario for master's studies in A.I. May 2021
- Eng. Sci. Award of Excellence** – Awarded to ≈25 students in Eng. Sci. for academic achievement Mar. 2021
- NSERC Undergraduate Research Award** – Computer Science research grant for project at RVL Lab May 2020