Salar Hosseini

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Education

M.Sc. in Computer Science, University of Toronto *Sept. 2021 – Dec. 2022 (Exp.)*
Machine Learning and Computer Vision, Supervised by Prof. Florian Shkurti

B.A.Sc. in Engineering Science, University of Toronto *Sept. 2016 – May 2021*
Robotics Major, Artificial Intelligence Minor, Professional Experience Year (2020) *CGPA: 3.96*

Technical Skills

- **Programming Languages:** Python, C/C++, Java, MATLAB, Verilog (FPGA), ARM Assembly
- **Software Libraries:** NumPy, PyTorch, OpenCV, scikit-learn, Pandas, Matplotlib, ROS, Qt, SYCL, HLS
- **Development Tools:** Linux, Git, Perforce, Makefile, CMake, Android Studio, Quartus

Professional Experience

Machine Learning Researcher | University of Toronto *May 2020 – Aug. 2021*
Robot Vision & Learning (RVL) Lab, Self-Supervised Learning with Iterative Clustering for Video Retrieval

- Designed a **self-supervised** similarity learning framework using **PyTorch** for identifying videos with similar human actions by iteratively clustering and contrasting embeddings from a 3D convolutional network.
- **Surpassed** the state-of-the-art (self-supervised) top-1 retrieval accuracy on the UCF101 dataset.
- Research supported by a NSERC USRA Award in Computer Science.

Software Engineering Intern | Intel Corporation *May 2019 – May 2020*
High Level Design Compiler Team

- Researched and implemented a FPGA-optimized sorting **algorithm in C++** for processing large data sets.
- Increased average throughput of HLS designs by 10% by optimizing latency parameterization using **C++**.
- Developed and presented (to 40 engineers) a GUI showcasing live FPGA acceleration of a flagship design.

Research Assistant | University of Toronto *Jan. 2019 – April 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.
- Performed **unsupervised clustering** on point cloud data to distinguish objects in the mapped scene.

Undergraduate Researcher | University of Toronto *May 2018 – Aug. 2018*
Modelics Lab, Accelerated Modeling of 3D Integrated Circuits, in Collaboration with AMD

- Accelerated an electromagnetic solver by 3x by researching and adapting a 2D surface partitioning algorithm in **C++** to 3D mesh models of integrated circuits.
- Implemented a **graphical user interface** for visualizing 3D mesh models and electromagnetic fields.
- Research supported by a NSERC USRA Award in Electrical and Computer Engineering.

Extracurricular and Personal Projects

aUToronto Self-Driving Car Team | Object Detection Team *Aug. 2018 – April 2019*

- Created a **ROS** framework for the CNN detection and visualization of objects in self-driving images.
- Accelerated FPGA-inference for the SSD300 **object detection network** using the OpenVINO API (in **C++**).

PC Companion: Productivity App for Android | Project Manager *July 2017 – Sept. 2017*

- Led 3 undergraduate students to create a mobile interface for managing Windows programs over Wi-Fi.
- Designed the Android **OOP framework**, user interface, PC connection routine, and services using **Java**.

Awards

Ontario Graduate Scholarship – Merit-based award supporting Master's degree *July 2021*
Vector Scholarship in A.I. – 1/80 students in Ontario, merit-based award for Master's studies in A.I. *May 2021*
Engineering Science Award of Excellence – 1/25 students in Eng. Sci., for academic achievement *March 2021*