

EDUCATION

- **University of Toronto** Toronto, Canada
MSc in Computer Science; GPA: 3.75/4 *September 2021 – August 2023*
Supervisors: Prof. Gennady Pekhimenko and Prof. Nandita Vijaykumar
 - Courses: Neural Networks and Deep Learning, Computer Graphics, Applications in Parallel Programming
- **University of Tehran** Tehran, Iran
BSc in Electrical Engineering (Area: Control Theory); GPA: 17.68/20 *September 2016 – June 2021*
Minor in Computer Engineering; GPA: 17.18/20 *September 2019 – June 2021*
Supervisor: Prof. Vahid Shah-Mansouri
 - Courses: Data Structures, Design and Analysis of Algorithms, Artificial Intelligence, Advanced Programming, Linear Algebra, Statistical Inference, Engineering Probability and Statistics

WORK EXPERIENCE

- **Computer Vision and AI Research Engineer** EAIGLE Inc.
R&D Team *June 2023 - Present*
 - To enhance customer safety at Walmart stores, I delivered spill detection using object detection, and emergency exit blockage detection through floor segmentation.
 - Exploited YOLOv6 and UNet models for object detection and segmentation tasks; implemented model modifications, data preparation, training, and inference using TensorFlow, PyTorch, and OpenCV.
 - Spill detection and emergency exit blockage detection demonstrated a remarkable accuracy of **98%** when analyzing live camera frames from a Walmart store.
 - Developed a robust training manager framework, unifying data preprocessing, analysis, and vision model training tools, streamlining workflow efficiency.

TECHNICAL SKILLS

- **Programming:** C/C++, Python (PyTorch, TensorFlow, Scikit-Learn, Pandas), OpenCV, CUDA, SQL
- **Cloud Services:** Amazon Web Service (AWS)

RESEARCH EXPERIENCE

- **Graduate Research Assistant** University of Toronto
Supervisors: Prof. Gennady Pekhimenko and Prof. Nandita Vijaykumar *September 2021 - August 2023*
 - Developed a method to improve the inference time of large deep learning models while preserving the privacy of the architecture.
 - Utilized Graph RNNs and Graph Neural Networks to preserve the privacy of the model's topology.
 - The proposed framework preserves the topology of models, and we have shown that there is a low trade-off between preserving the topology and optimizing.
- **Undergraduate Research Assistant** University of Tehran
Supervisor: Prof. Vahid Shah-Mansouri *June 2020 - December 2020*
 - Conducted a study on the prediction of network traffic patterns to enhance the quality of service (QoS) of a network.
 - Compared two prediction methods: our new approach based on Reinforcement Learning and the conventional method based on Time Series Prediction (ARIMA & ARMA).
- **Undergraduate Research Assistant** University of Toronto
Supervisor: Prof. Yashar Ganjali *September 2020–November 2020*
 - Conducted a study on the impact of the correlation between flows for resource provisioning.
 - Exploited correlation in network traffic for a Reinforcement Learning model of network applications.
- **Undergraduate Research Assistant** University of Tehran
Supervisor: Prof. Vahid Shah-Mansouri *April 2019–June 2019*
 - Implemented and compared the confidence-based and answer-based crowd-sourcing methods.

PUBLICATIONS

- Y. Gao, **M. Haghifam**, R. Tu, C. Giannoula, G. Pekhimenko, N. Vijaykumar, “Proteus: Preserving Model Confidentiality during Graph Optimizations.” Under submission in MLSys 2024.
- S. Nili Ahmadabadi, **M. Haghifam**, V. Shah-Mansouri, S. Ershadmanesh, “Design and Evaluation of Crowd-sourcing Platforms Based on Users’ Confidence Judgments.” Under review in Scientific Reports journal.

SELECTED COURSE PROJECTS

- **Distributed Training for Neural ODE:**
 - Designed a distributed training algorithm for training ODEs for classification tasks.
 - Used Deep Generative Models for multi-scale time-series prediction.
- **Efficient Random Attention Methods:**
 - Used random permutation for sampling to speedup the training process.
 - Compared full versus random attention mechanisms.
- **UTrello:**
 - Implemented a project management tool using object-oriented design in C++.

HONORS AND AWARDS

- Received full graduate fellowship at the University of Toronto
- Ranked among the top 15% in the Electrical Engineering major out of 120 undergraduate students
- Ranked in the top 0.3% in Iran’s Nationwide University Entrance Exam

TEACHING EXPERIENCE

- **Teaching Assistant, University of Toronto:** Data Structures and Analysis, Foundations of Computer Science
- **Teaching Assistant, University of Tehran:** Computer Networks, Engineering Mathematics, Introduction to Computing Systems and Programming, Electronics1, Electrical Circuits Lab

CONFERENCE REVIEWER EXPERIENCE

- **MLSys 2023:** Artifact and paper code evaluator
- **EuroSys 2022:** Paper reviewer

VOLUNTEERING EXPERIENCE

- **Clean Code Workshop Conductor**
 - *Karyar College* *January 2022 and July 2023*
 - Delivered two-hour workshops to unprivileged talented individuals on how to write clean codes.
- **Python Teaching Assistant**
 - *Karyar College* *May 2021 - September 2021*
 - Guided a group of unprivileged talented individuals in weekly virtual sessions to teach Python.
 - Developed personalized learning plans for each student.
- **Event Organizer**
 - *Bahar Charity* *July 2022 - October 2022*
 - Organized events to raise awareness about education and empowerment of unprivileged groups.