

Gavin (Yushi) Guan

yushi.guan@mail.utoronto.ca

gavinguan95.github.io

Education

- Ph.D., University of Toronto** *September 2021 – Present*
Department of Computer Science
- Master of Engineering, University of Toronto** *September 2018 – June 2021*
Department of Electrical and Computer Engineering *CGPA 3.97/4.0*
- Bachelor of Applied Science, University of Toronto** *September 2013 - June 2018*
Program of Engineering Science, Robotics *Graduated with High Honours, CGPA 3.76/4.0*

Publications

- EventTrack: Improving Visual Object Tracking with Event-based Motion Prediction** 2022
Work in Progress
- Generative Adversarial Network-based Synthetic Seizure Dataset Augmentation** [\[link\]](#) 2021
10th International IEEE EMBS Conference on Neural Engineering (NER)
Author(s): Yushi Guan, Jamie Koerner, Taufik A. Valiante, Roman Genov, Gerard O Leary

Work Experiences

- Machine Learning Compiler Engineer**, Tenstorrent, Toronto *February 2021 – August 2021*
- Improved software framework for training accuracy evaluation. Comparison of Tenstorrent stack with PyTorch CPU reference groundtruth
 - Implemented compiler support for PyTorch inplace operations and Adagrad Optimizer
- Deep Learning Acceleration Engineer**, Intel, Toronto *July 2018 – January 2021*
- Implemented graph compiler support for General Matrix-Matrix Multiplication (Gemm) and Attention mechanism on Intel FPGAs via utilizing Convolution Engines on chip
 - Evaluated memory prefetch scheduling via graph topology based data-prefetching scheme
- Graphics Card Test Automation Intern**, AMD, Markham *May 2016 - August 2017*
- Implemented command broadcasting, test platform reboot, file transferring, and other features for a graphics card test automation tool in C++ to reduce manual testing effort
 - Developed a Python program to parse txt, YML, and XML test results into SQL database

Research Experiences

- Ph.D. Researcher** *September 2021 - Present*
Supervised by Prof. Nandita Vijaykumar, Department of CS, University of Toronto
- Accuracy and inference speed improvement for computer vision algorithms leveraging new input modalities such as event cameras and LiDAR
 - Improved training and acceleration of deep spiking neural networks
- Graduate Researcher** *September 2020 – April 2021*
Supervised by Prof. Roman Genov, Department of ECE, University of Toronto
- Interdisciplinary research project involving life science and computer science
 - Generative Adversarial Network-based Synthetic Seizure Dataset Augmentation, *International IEEE/EMBS Conference on Neural Engineering* [\[link\]](#)
- Engineering Science Undergraduate Thesis** *September 2017 – April 2018*
Supervised by Prof. Angela Schoellig, University of Toronto Institute for Aerospace Studies (UTIAS)
- Thesis Topic: Road Path Planning for Autonomous Vehicles with Improved Intersection Considerations

International Research Exchange*May 2015 - August 2015*

Supervised by Dr. Peter Fox, University of Liverpool, United Kingdom

- Project: Automatic Reprogramming of Stratasy Chips for Filter Reloading

Projects**Personal Project – Deep Learning Chart-based Automated Trading****End to End ASR System with Automatic Punctuation Insertion** [[PDF](#)]**Visual Question Answer Generation using Visual-Linguistic Transformer** [[PDF](#)]**Road Path Planning for Autonomous Vehicles with Improved Intersection Considerations** [[PDF](#)]**Adversarial Defense and Detection using Quantized NNs with Inference Time Dropout** [[PDF](#)]**Services****Web Chair***FastPath2022 – A Micro Workshop**October 2022*

- Creation and maintenance of the website for FathPath 2022 Workshop

TA Experiences**CSC401/2511 Natural Language Computing, TA**

- Preparing assignment instructions and clarifications for classical and NN-based NLP.
- Assignment and exam marking.

CSC108 Introduction to Computer Programming, Lecture TA

- Answering student's questions and leading discussion groups for students in lectures
- Office hours for assignment help; Exam marking

Extracurricular Activities**Mentor**, UofT Engineering Alumni Mentorship Program*September 2021 – Present*

- Meeting with graduate and undergraduate students for career advices
- Mentor for resume workshops

Member & Designer, UofT AutoDrive Team*August 2017 – December 2018*

- Autonomous vehicle design, team achieved 1st place in North American AutoDrive Challenge
- Software implementation for Stereo Camera ROS integration, mapping and navigation sub-challenge

Subcommittee Executive, Skule Badminton Club*September 2015 – April 2016*

- Supervised badminton court hours and arranged game schedule for members
- Promoted club at club fairs, recruited over 300 members during the year as a club in total

First House Representative & Photographer, Innis College Yearbook*September 2013 - April 2014***Mt Douglas Peer Tutors**, Mt Douglas Secondary*September 2012 – June 2013***Mt Douglas Leadership Program**, Mt Douglas Secondary*January 2012 – June 2013***Competition and Awards****Winner, UTEK Senior Design**

University of Toronto Engineering Competition (UTEK)

January 2016

- Achieved 1st place amongst 20 teams, designed an infrared remote-controlled robot car

3rd Place (of 50), AER201 Engineering Science Design Competition*January 2015 – April 2015***International Research Exchange Fund**, University of Toronto*May 2015***Entrance Scholarship**, University of Toronto*September 2013*
