YUCHEN WU

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ACADEMIC HISTORY

MASc in Aerospace Science and Engineering Sept. 2020 - Present
University of Toronto Institute for Aerospace Studies (UTIAS), Canada
Supervisor: Prof. Timothy D. Barfoot
Thesis: *VT&R3: Generalizing the Visual Teach & Repeat Navigation Framework*

BASc in Engineering Science (Robotics) Sept. 2015 - Apr. 2020
University of Toronto, Canada
CGPA: 3.93 / 4.0, graduated with High Honours
Supervisor: Prof. Florian Shkurti and Prof. Jonathan Kelly
Thesis: *Combining Reinforcement Learning and Imitation Learning through Reward Shaping for Continuous Control*

EMPLOYMENT HISTORY

Intel Corporation, Toronto, Canada May 2018 - May 2019
Software Engineer Intern
Product: *Intel HLS Compiler* and *Intel FPGA SDK for OpenCL*

- Intel HLS Compiler: a high-level synthesis (HLS) tool that takes in untimed C++ code and generates production-quality register transfer level (RTL) code optimized for Intel FPGAs
- Intel FPGA SDK for OpenCL: development environment that enables software developers to accelerate applications by targeting heterogeneous platforms with Intel CPUs and FPGAs.

SKILLS

Communication	Mandarin, English
Programming	C/C++, Python, JavaScript, Java
Software/Libraries	MATLAB, Robot Operating System (ROS), MuJoCo, OpenCV, PyTorch, TensorFlow

PUBLICATIONS

Picking Up Speed: Continuous-Time Lidar-Only Odometry using Doppler Velocity Measurements
Yuchen Wu, David J. Yoon, Keenan Burnett, Soeren Kammel, Yi Chen, Heethesh Vhavle, Timothy D. Barfoot
Submitted to *IEEE Robotics and Automation Letters*

Are We Ready for Radar to Replace Lidar in All-Weather Mapping and Localization?
Keenan Burnett*, **Yuchen Wu***, David J. Yoon, Angela P. Schoellig, Timothy D. Barfoot
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2022

Boreas: A Multi-Season Autonomous Driving Dataset
Keenan Burnett, David J. Yoon, **Yuchen Wu**, Andrew Zou Li, Haowei Zhang, Shichen Lu, Jingxing Qian, Wei-Kang Tseng, Andrew Lambert, Keith Y.K. Leung, Angela P. Schoellig, Timothy D. Barfoot
Accepted by *International Journal of Robotics Research (IJRR)*

Shaping Rewards for Reinforcement Learning with Imperfect Demonstrations using Generative Models
Yuchen Wu, Melissa Mozifian, Florian Shkurti
IEEE International Conference on Robotics and Automation (ICRA), 2021

OPEN-SOURCE PROJECTS

Visual Teach and Repeat 3 (VT&R3) https://github.com/utiasASRL/vtr3

- An end-to-end navigation system for long-range and long-term mobile robot path following using a lidar, radar, or camera as the primary sensor.

AWARDS

Vector Scholarship in AI, Vector Institute 2020

CRA Outstanding Undergraduate Researchers Honorable Mentions 2020

University of Toronto Dean's Honours List 2015 - 2020

University of Toronto Excellence Awards (UTEA) 2019

Garnet W. Mckee - Lachlan Gilchrist Scholarship, UofT 2017

STUDENT ACTIVITIES

UofT aUToronto Team, Student Advisor, Sept. 2021 - Jun. 2022

- 1st place overall in the first competition of the four-year SAE AutoDrive Challenge Series II.

ROB310 Mathematics for Robotics, Teaching Assistant Fall 2021

University of Toronto, Research Assistant May 2019 - Sept. 2019

- Supervisor: Prof. Florian Shkurti at the Department of Computer Science
- Worked on reinforcement and imitation learning for control.

UofT Machine Intelligence Student Team, Academic Lead Sept. 2018 - May 2019

- Built a machine learning community for undergrad students.
- Organized MIST101, a workshop on machine learning fundamentals.

University of Toronto, Research Assistant May 2017 - Sept. 2017

- Supervisor: Prof. Jianwen Zhu at the Department of Electrical and Computer Engineering
- Worked on accelerating the training and inference of deep CNN on multi-core CPU.

National University of Singapore, Research Assistant May 2016 - July 2016

- Supervisor: Prof. Shailendra Joshi at the Department of Mechanical Engineering
- Worked on computational modeling and analysis of nano/micro lattice structure.