YUCHEN WU

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https://cheneyuwu.github.io/

ACADEMIC HISTORY

MASc in Aerospace Science and Engineering   September 2020 - November 2022
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)   September 2015 - April 2020
University of Toronto, Canada
CGPA: 3.94 / 4.0 (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

Nuro, Toronto, Canada   November 2022 - Present
Software Engineer
Working on autonomous vehicle software for localization, mapping and sensor calibration.

Intel Corporation, Toronto, Canada   May 2018 - May 2019
Software Engineer Intern
Worked on *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	Chinese (Mandarin), English
Programming	C/C++, Python, JavaScript, Java
Software/Libraries	MATLAB, Robot Operating System (ROS), MuJoCo, OpenCV, PyTorch, TensorFlow

PUBLICATIONS

Along Similar Lines: Local Obstacle Avoidance for Long-term Autonomous Path Following
Jordy Sehn, **Yuchen Wu**, Timothy D. Barfoot
Submitted to *IEEE International Conference on Robotics and Automation (ICRA)*, 2023

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
IEEE Robotics and Automation Letters (RA-L), 2023

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 Robotics and Automation Letters (RA-L), 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,   September 2021 - June 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 - September 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   September 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 - September 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.