

# YUCHEN WU

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<https://cheneyuwu.github.io/>

## ACADEMIC HISTORY

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### 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 (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

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### 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

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**Communication** Chinese (Mandarin), English

**Programming** C/C++, Python, JavaScript, Java

**Software/Libraries** MATLAB, Robot Operating System (ROS), MuJoCo, OpenCV, PyTorch, TensorFlow

## PUBLICATIONS

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### 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

Submitted to *IEEE Robotics and Automation Letters (RA-L)*, 2022

### 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)*

## OPEN-SOURCE PROJECTS

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### 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

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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

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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.	