

# 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, 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

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

## PUBLICATIONS

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### 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

Accepted to *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

Submitted to *International Journal of Robotics Research (IJRR)*

### Shaping Rewards for Reinforcement Learning with Imperfect Demonstrations using Generative Models

**Yuchen Wu**, Malissa Mozifian Florian Shkurti

*IEEE International Conference on Robotics and Automation (ICRA)*, 2021

## 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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<b>Vector Scholarship in AI</b> , Vector Institute	2020
<b>CRA Outstanding Undergraduate Researchers Honorable Mentions</b>	2020
<b>University of Toronto Dean's Honours List</b>	2015 - 2020
<b>University of Toronto Excellence Awards (UTEA)</b>	2019
<b>Garnet W. Mckee - Lachlan Gilchrist Scholarship</b> , UofT	2017

## STUDENT ACTIVITIES

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<b>UofT aUToronto Team</b> , Student Advisor,	Sept. 2021 - Jun. 2022
<ul style="list-style-type: none"><li>• 1st place overall in the first competition of the four-year SAE AutoDrive Challenge Series II.</li></ul>	
<b>ROB310 Mathematics for Robotics</b> , Teaching Assistant	Fall 2021
<b>University of Toronto</b> , Research Assistant	May 2019 - Sept. 2019
<ul style="list-style-type: none"><li>• Supervisor: Prof. Florian Shkurti at the Department of Computer Science</li><li>• Worked on reinforcement and imitation learning for control.</li></ul>	
<b>UofT Machine Intelligence Student Team</b> , Academic Lead	Sept. 2018 - May 2019
<ul style="list-style-type: none"><li>• Built a machine learning community for undergrad students.</li><li>• Organized MIST101, a workshop on machine learning fundamentals.</li></ul>	
<b>University of Toronto</b> , Research Assistant	May 2017 - Sept. 2017
<ul style="list-style-type: none"><li>• Supervisor: Prof. Jianwen Zhu at the Department of Electrical and Computer Engineering</li><li>• Worked on accelerating the training and inference of deep CNN on multi-core CPU.</li></ul>	
<b>National University of Singapore</b> , Research Assistant	May 2016 - July 2016
<ul style="list-style-type: none"><li>• Supervisor: Prof. Shailendra Joshi at the Department of Mechanical Engineering</li><li>• Worked on computational modeling and analysis of nano/micro lattice structure.</li></ul>	