

Richard Hu

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Experience

Autonomous System and Biomechanics Lab

Toronto, Ontario

Research

Sept. 2018 - Present

- **Robot Development** Fitted a robot with SLAM, position controller, velocity controller capabilities using stereo camera, and Lidar.
- **Sim-to-Real** Transferred rough terrain navigation model learn using A3C to physical environment by improving simulation fidelity, controller robustness, and applying domain randomization techniques

MIE443 Mechatronics Systems: Design & Integration

Toronto, Ontario

Teaching Assistant

Jan. 2018 - Apr. 2018

- **Tutorial** Prepared and gave lecture for students on robot navigation and SLAM methods
- **Laboratory** Mentored students during their robot development process

Conavi Medical

Toronto, Ontario

Mechanical Design Intern - NOVASight

May. 2016 - Aug. 2017

- **Technical Design Review** Performed 3 major technical design reviews of NOVASIGHT with senior leadership in its R&D phase. Led to accelerated project progress and successful exist of development phase
- **Mechanical Design & Testing** Designed and tested rotary fluid seal component for the cathether that is critical to patient safety using MATLAB and SolidWorks
- **R&D Inventory Management** Established R&D phase inventory management system with full traceability, gaureeted validity of FDA 510K submission documents.

Projects

Autonomous Maze Navigation Rover Design

Toronto, Ontario

Software Development & System Design

Sept. 2017 - Dec. 2017

- Implemented 2D histogram localization, ultrasound obstacle detection, A* path planning algorithm in MATLAB and Arduino
- Architecture to govern autonomous navigation through a maze, localization, path-finding, payload pick-up and delivery

Pico-Scale Hydro Turbine Design

Toronto, Ontario

Mechanical Design

Jan. 2018 - Sept. 2018

- Designed a variable guide vane mechanism for pico-scale hydro turbine using Solidworks and ANSYS CFX
- Built the pico-scale turbine and a test rig

Honors & Awards

2018	Best Undergraduate Poster Presentation , CFD Society of Canada	Winnipeg, Ontario
All Terms	Dean's Honour list , University of Toronto	Toronto, Ontario
2015	University of Toronto Excellence Award , University of Toronto	Toronto, Ontario
2015	Shell Canada Limited Engineering Scholarship , University of Toronto	Toronto, Ontario
2015	Best Innovation Award and Best Prototype Award , U of T Engineering Competition Junior Design	Toronto, Ontario

Education

University of Toronto

Toronto, Canada

Bachelor of Applied Science, Mechanical Engineering, With Distinction - Dean's Honours List

Sept. 2013 - April 2018

Specialization Mechatronics Stream and Bioengineering Stream, Robotics and Mechatronics Minor. GPA (3.81/4.00)

University of Toronto

Toronto, Canada

Master of Applied Science, Mechanical Engineering

Sept. 2019 - April Present

Research Learning based rough terrain navigation for mobile robots research at Autonomous Systems and Biomechanics Lab