# RICHARD HU

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# EDUCATION

## University of Toronto – Mechanical EngineeringSeptember 2013 – April

## *Bachelor of Applied Science*

Graduated with honours. Mechatronics & Bioengineering Stream, Robotics and Mechatronics Minor. GPA (3.81/4.00)

# AWARDS & SCHOLARSHIPS

* Shell Canada Limited Engineering Scholarship (2015)
* University of Toronto Excellence Award (2015)
* Dean’s Honour List (All Years)
* U of T Engineering Competition Junior Design “Best Innovation Award” and “Best Prototype Award” (2015)

# WORK EXPERIENCE

## Conavi Medical, Toronto May 2016 – August 2017

## *Mechanical Design Intern (16 months)*

* Prepared and lead 3 major technical design reviews of a development phase intravascular catheter project with senior leadership. This lead to **accelerated project progress** and successful exist of development phase.
* Single-handedly established an adaptable inventory system with full traceability for over 140 medical components for the intravascular catheter project. This **significantly** **improved plannability of major milestones**, verification and validation activities and guaranteed reliability of FDA submission document.
* Successfully conducted engineering design testing in clean room environment, and designed components critical to patient safety using **jig design**, **statistical analysis**, **tolerance analysis**, **MATLAB** and **SolidWorks**. Designed critical mechanical component in Catheter based on design testing results.

# RELEVANT PROJECTS

## Autonomous Maze Navigation Rover Design September 2017 – December 2017

## *Software & Systems Developer*

* **Developed a deliberate/reactive hybrid control architecture** that governed an autonomous rover to maneuvering through a maze, performing obstacle avoidance, localization, path-finding, pick up and payload delivery to designated location.
* Implemented 2D histogram localization, ultrasound obstacle detection and avoidance, A\* path planning algorithm using **MATLAB** and **Arduino** programming.

## Open Architecture Quadcopter Capstone Design September 2017 – April 2018

## *Project Manager & Mechanical Designer*

* Took charge of overall project direction, planning, client coordination. This involved using **Gantt Chart** to plan project schedule and critical path, proactively engage with team members to assess design progress, coordinate with client and supervisor to ensure client interest is well represented in the design.
* Designed mechanical features of a quadcopter using **SolidWorks** and prototyped the designed parts with **3D printer** to conduct verification testing. Analyzed structural integrity of component under impact using **ANSYS Explicit dynamics** tool.
* Ensured **team alignment** by engaging in **clear communication** with the members, **identifying shared values**, and building trust. Created **a synergistic team environment**, with continuously increasing member dedication and motivation.

# CURRENT PROJECTS

## Pico-Scale Hydro Turbine Design Thesis January 2018 – Present

## *Researcher*

* Used **SolidWorks** and **ANSYS** CFX simulation result to design and build a variable guide vane mechanism for a self-powered pico‑hydro turbine for a startup company that is in collaboration with University of Toronto Water and Energy Research Lab.

## Autonomous Turtle Bot January 2018 – April 2018

## *Software Developer*

* Used **Robot Operating System (ROS)** and **C++** to implement deliberate/reactive hybrid control architecture on a TurtleBot2 to explore and map an unknown environment.
* Used **OpenCV** and **Adaptive Monte Carlo Localization** to search for an conduct image identification in a known environment.

# EXTRACURRICULARS

### **Mechanical & Industrial Engineering Mentorship Program** September 2017 – Present

## *Mentor*

* Coached junior engineering students on establishing study goals, obtaining research opportunities and building skills through extracurricular.

**New Start**Toronto, August 2014 – September 2015

## *Tutor*

* Instructed a group of students ranging from high school, to 2nd year U of T students on Physics, Chemistry and Calculus.
* Counseled students in defining study goals and formulating personal study methods.

# SKILLS & INTEREST

**Software:** SolidWorks (Certified SOLIDWORKS Associate), Arduino, MATLAB & Simulink, Robot Operating System (ROS), Machining, Microsoft Excel, C, C++, ANSYS Explicit Dynamics.

**Soft Skills:** Leadership, Coaching, Project management, Outcome Oriented, Strong work ethic, Multitasking

**Language:** Fluent in English and Mandarin

**Interest:** Travelling (Currently planning a trip to Japan), Board Games, Skiing, Skating, Cooking, Food