RICHARD HU

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EDUCATION

University of Toronto – Mechanical Engineering *September 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