

# SEIF HASSAN

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## EDUCATION

### University of Toronto

Sep 2015 to Jun 2020

Bachelor of Applied Science, Mechanical Engineering, Graduate with Honours

- Cumulative GPA: 3.76/4 (85.73%)
- Streams: Mechatronics, Solid Mechanics and Design
- Certificate in Engineering Business - Rotman School of Management

## PROFESSIONAL EXPERIENCE

### Mechanical Engineering Intern

May 2018 to Aug 2019

*AGS Automotive Systems* | Toronto, Canada

- Led the design and implementation of tooling for use in manufacturing processes; developed 3D CAD models in SolidWorks/Inventor, and implemented a universal design to cut back on cost and material by 75%
- Conducted FEA using ANSYS to analyze failure locations, deflections, and fatigue life cycles on the tooling. Developed drawings and worked with vendors to test and prototype designs from concept to production
- Reduced manufacturing costs by over \$134,000 by redesigning shipping racks; implemented a universal design and improved the packing density
- Packaging Design: Designed cost-effective packaging layouts, redesigned packaging layouts to cut-back on cost and material by optimizing the density. Supported packaging team with cost estimation for future programs
- Created multiple AutoCAD layouts to automate a metal stamping press using industrial robots. The designs improved productivity, and eliminate non-ergonomic manual handling
- Designed multiple concepts on AutoCAD of an automated unloading system for a press line to increase workflow efficiency and reduce costs
- Co-managed over 30 facilities projects by producing AutoCAD drawings, specifications, and consulting with internal and external stakeholders
- Worked on multiple energy-saving projects that resulted in over \$27,000 in annual savings
- Supervised, and mentored 2 incoming interns to transition into the workplace

### Mechanical Engineering Intern

May 2017 to Aug 2017

*Bombardier Aerospace* | Toronto, Canada

- Developed a business intelligence tool using MicroStrategy to reduce resources required to generate monthly fleet performance reports that are distributed to clients
- Optimized the user experience and user interface of web-based dashboards and deployed them to mobile devices; dashboards were used by senior management to monitor the reliability performance of the fleets
- Developed an internal tool on MicroStrategy that allows easier distribution and management of dashboards

## RESEARCH EXPERIENCE

### Research Assistant

*University of Toronto Microrobotics Lab* | Toronto, Canada

Dec 2016 to Apr 2017  
& Sep 2017 to Aug 2018

- Fabricated micro-scale robots that can be used in biomedical applications such as minimally invasive surgeries and targeted drug delivery
- Developed an experiment based on Stokes' Law to measure the density of the micro-scale robots
- Improved the 3D motion control by modifying the material composition to achieve neutral buoyancy
- Optimized the fabrication process by improving its repeatability, reproducibility and achieving a percent error less than 3% to the target density
- Presented results at a department-wide symposium with more than 90 participants

### Research Assistant

*University of Toronto Human Factors and Applied Statistics Lab* | Toronto, Canada

May 2016 to Aug 2016

- Investigated the social-psychological factors of distracted driving behaviour among young drivers by conducting surveys
- Manipulated, analyzed, and presented large datasets from over 100 participants using R and data mining tools
- Discovered that young drivers overestimated their parents' engagement in and approval of distracted driving, which was positively correlated with their own distracted driving behaviour

## POSTER PRESENTATIONS

S. Hassan, M. Salehizadeh and E. Diller, "Fabrication of Near-Neutrally Buoyant Microspheres", Mechanical & Industrial Engineering Graduate Research Symposium, 2018.

## LEADERSHIP & EXTRACURRICULAR ACTIVITIES

### Junior Design Competitor

*University of Toronto Engineering Kompetition*

Jan 2017 and Jan 2016

- Designed, tested, and prototyped in a team of 3 a material handling solution for aggregates and a separate project on a transport solution for structural beams

### Mechanical Team Lead

*University of Toronto Robotics Association – Sumo Bot*

Oct 2015 to Mar 2016

- Worked in a 3-person team to build a sumo battle robot to compete in a robot-sumo competition
- Designed a 3D CAD model in SolidWorks, prototyped, and used various tools to drill, cut and machine sheet metal to build the robot
- Awarded \$150 worth of prizes throughout the year-long competition

## ACADEMIC PROJECTS

### **Autonomous Robot**

Jan 2020 to Apr 2020

*Mechatronics Systems: Design & Integration Course*

- Worked with a team of 5 students to implement an autonomous exploration and mapping algorithm using C++ and ROS. The robot used a biased random walk navigation with static obstacle avoidance
- Implemented a shortest path planning algorithm to locate objects in a static environment. Then used OpenCV to detect features detection and match images on each object

### **UV Phone Sanitizer for Hospitals**

Sep 2019 to Apr 2020

*Capstone Design Course*

- Designed a wall-mountable UV phone sterilizer for CleanSlate UV to reduce hospital-acquired infections and protect patients with compromised immune systems
- Developed and tested a proof of concept by conducting UX studies, pilot studies, building mock-ups, and analyzing components. The solution killed 99.9% of infectious bacteria

### **Circuit Board Surface Temperature Optimization**

Jan 2018 to Apr 2018

*Heat & Mass Transfer Course*

- Conducted experiments and used MATLAB to determine the optimal configuration of heater blocks and heat sinks that minimizes the surface temperature on a circuit board
- Used MATLAB and finite element method to build a 2D model of the temperature distribution on the board

### **Foot Pedal Operated Trash Bin**

Sep 2017 to Dec 2017

*Kinematics and Dynamics of Machines Course*

- Redesigned a foot pedal operated trash bin mechanism to reduce the actuating force and time required for the bin to open
- Prepared a CAD model in SolidWorks to simulate and study the mechanism. Conducted a full kinematic analysis; performed a position, velocity, and acceleration analysis using MATLAB

### **Noise Abatement and Visual Privacy Improvement**

Jan 2016 to Apr 2016

*Engineering Strategies & Practice Course*

- Designed a fence addition for a client to reduce noise from air conditioning units and increase privacy
- Followed an engineering design process, including social, environmental, and cost assessment. Proposed a polymer sheet and laser system to decrease noise by up to 85% and block cameras infringing on privacy

## CERTIFICATIONS

### **Deep Learning – deeplearning.ai**

Jul 2020

*Coursera*

### **Machine Learning – Stanford University**

Jun 2020

*Coursera*

### **Six Sigma Green Belt**

Mar 2020

*Institute of Industrial and Systems Engineers*

<b>Introduction to Welding</b> <i>George Brown College</i>	Nov 2019
<b>Advanced Machining Operations</b> <i>George Brown College</i>	Oct 2019
<b>The Complete AutoCAD 2016 Course</b> <i>Udemy</i>	Apr 2018
<b>Basic Machining Operations</b> <i>George Brown College</i>	Jan 2017
<b>R Programming – John Hopkins University</b> <i>Coursera</i>	May 2016

## AWARDS

<b>Dean's Honours List</b> <i>University of Toronto</i>	Fall 2015, Winter 2016, Fall 2016, Winter 2017, Winter 2018, Fall 2019, Winter 2020
<ul style="list-style-type: none"> <li>Awarded for having a term average of 80% or above</li> </ul>	
<b>Certificate of Recognition</b> <i>University of Toronto Institute for Multidisciplinary Design &amp; Innovation</i>	Oct 2017
<ul style="list-style-type: none"> <li>Awarded for project participation and success</li> </ul>	
<b>President's Entrance Scholar</b> <i>University of Toronto</i>	Mar 2015
<ul style="list-style-type: none"> <li>Awarded for having an entrance average of 92% or above</li> </ul>	

## SKILLS

- **Mechanical Design:** 3D CAD (SolidWorks, Inventor), ANSYS Mechanical (FEA), AutoCAD, Drawings, PSpice
- **Product Design:** Design for Six Sigma, Drafting (GD&T), Design FMEA, DoE, Prototyping
- **Fabrication:** Advanced Machining, Laser cutting, 3D-Printing, Basic Welding, Hands-on tools
- **Programming:** C/C++, R, ROS, MATLAB
- **Lab Work:** Mechanical Testing, Optical Microscopes, Basic Cleanroom Fabrication, Breadboarding and Prototyping Circuits