Clayton Haight

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University of Waterloo 3.9/4.0 GPA
BASc – Mechatronics Engineering, 2024

Skills

Design: (6+ years) Solidworks CSWP Cert., Inventor, AutoCAD, FEA, Beam Analysis, 30+ projects
DFM: (5 years) Design for CNC, Lathe, Mill, Sheetmetal, 3D Printing, Welding
DFA: (5 years) Integration of subassemblies, ensuring ease of assembly and repairability
Drafting: (4 years) Annotated drawing and drafting, experience in designing with GD&T
Software: (1 year) Experience in object-oriented programming in C++, RobotC, Python

Experience

Hunter Douglas
Brampton, ON
Jan – Apr 2020

Industrial Engineer
- Applied LEAN and 6S principles to increase efficiency by 2% across a department by rearranging the layout of manufacturing in AutoCAD
- Lead a large multiweek project moving around machines while keeping the factory running by meticulously organizing using scrum meetings and GANTT charts
- Designed fixtures and jigs to aid workers and reduce wasted time

FIRST Robotics Competition
Mississauga, ON
2014 – 2019

Mentor & Captain
- Designed parts and sub-assemblies of 6 competitive robots using Solidworks
- Ensured manufacturability in all my designs through industrial machines such as laser cutters, press brake, CNC mills and lathes
- Mentored and managed a team of 40+ people, while making sure everyone was included
- Coordinated smaller sub-teams through standup meetings and standard documentation, ensuring communication was clear on all decisions

Mississauga Sailing Club
Mississauga, ON
Jan – Feb 2019

Mechanical Designer
- Designed a dual-purpose trailer to lift ~500lb docks and moving a ~400lb mast crane
- Conceived and implemented a system to rotate docks after lifting them out of the water

Projects
See Portfolio Attached

CNC Router
- Designed and built a 24"x30" CNC out of aluminum and steel tubing using Solidworks
- Structural 3D printed pieces were designed to eventually be replaced with aluminum parts milled on the CNC
- Capable of cutting wood, plastic, and aluminum with tight tolerances up to 0.002in
- Researched and implemented an epoxy sand mixture to dampen vibrations throughout machine
- Studied topology optimization and FEA to optimize strength and rigidity throughout the design

COVID 19 Ventilator
- Designed and built a fully functioning ventilator prototype over the course of 10 days, evaluated by doctors at the Ottawa General Hospital
- Included design constraints concerning material safety and sterilization techniques from concept to final product
- Implemented features found in high end ventilators such as adjustable PEEP, safety alarms, and a touchscreen UI powered by an app on a low-cost Android tablet

4 Axis Origami CNC
- For my first-year mechatronics project I designed, assembled and helped write code for an origami creasing CNC machine with 4 axes
- Utilized vacuum table to hold down paper on foam, while a sharp wheel rolled over it to form crease lines
- Employed 3 lead screw axes for XYZ movement, and a ring gear for a 4th axis to rotate the creasing wheel.
- Studied and tuned PID loops to constantly adjust the X and Y position to ensure linear travel of the end effector

3D Printed Brushless Motor
- Used iron infused filament to 3D print a magnetic stator and custom wound it with copper magnet wire
- Analyzed circuitry with an oscilloscope to overcome multiple discrepancies and increase the efficiency
- Conducted FEA analysis to optimize the inertia of the out-runner body while maintaining strength

Awards

First Robotics Competition	– NASA Engineering Inspiration Winner	3,690 Teams
First Robotics Competition	– Provincial District Winner	200 Teams
Lorne Park Secondary	– Technological Design Award	250 People
Gauss Math Competition	– Perfect Score (Tied for 1st place)	~80,000 People

Honors

First Robotics	Interviewed by Solidworks
Kickstarter	Successful Funding of Project
Waterloo	Engineering Entrance Scholarship
Waterloo	Presidents Scholarship