Clayton **Haight**

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Skills

Design: SolidWorks CSWP, Catia V5, NX, Tolerance Analysis, Material Selection, 30+ projects
DFA/DFM: Design for CNC Mill/Lathe, Sheet Metal, 3D Printing, Welding, Casting, Injection Molding
Drafting: Annotated Drawings, GD&T, BOM
Software: SolidWorks CSWP FEA/CFD/PDM, Ansys FEA, Catia, NX, MATLAB/Simulink, C++, Python

Experience

Neuralink
Fremont, CA
Jan – Apr '22

Mechanical Engineering Intern

- Designed and built automated machines to scale N1 implant and charger manufacturing by a factor of 100x
- Co-led project to move N1 charger manufacturing from HQ to remote manufacturing facility in Austin TX
- Led development of internal charger intended for high scale for HALT and animal charging (XXXX units)
- Spearheaded design of wireless charging coil for next revision of N1 implant

Matician
Palo Alto, CA
May – Aug '21

Mechanical Engineering Intern

- Worked on the cleaning system of an autonomous household cleaning robot, currently at MVP stage
- Led the development of the company's first transition to injection molded parts (2 parts, 24k quantity)
- R&D on sensing the volume of debris collected in the robot, prototyped many different concepts, selected the best and integrated it onto robot (patent pending)
- Constructed and carried out 30+ DOEs, 20+ prototypes, test benches, and jigs to rapidly develop systems

Gastronomous
Oakville, ON
May '20 – Apr '21

Lead Mechanical Engineer

- Designed and constructed prototype of a fully autonomous pasta kitchen with 2 FANUC robots to show off the capabilities of robotics to restaurant companies, utilized pneumatics, servos, and a PLC
- Led product design of an automated char broiler for one of Canada's largest fast-food restaurants
- Designed a linear robot transfer unit for a FANUC LR Mate robot capable of supporting swinging loads and moving at speeds up to 4m/s, all the while being food safe

UW FSAE
Waterloo, ON
Sep '19 - Present

Suspension Team Member

- Redesigned front and rear mode decoupled bell crank assemblies from aluminum to alloy steel resulting in a ~20% size reduction, allowing for better aerodynamics and driver visibility
- Performed kinematic studies in MATLAB to determine optimal bell crank motion ratios and geometry
- Design reviews, tolerance analysis, and clearance studies on 400+ parts in the 2000+ part main assembly

FIRST Robotics Team 1325
Mississauga, ON
'14 – '20

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 brakes, CNC mills, lathes and more
- Mentored and managed a team of 40+ people, making sure everyone had a role in the project

Projects

clayhaight.com for more

Kurt (Curtain Opening Robot)

- Automated curtain winch for the purpose of waking user up naturally with sunlight
- Went through entire venture creation process, identifying problem, solution, market research, product development

Cycloidal Actuator

- Purpose built for robotics applications; the actuator contains a power dense brushless outrunner coupled to a double cycloidal reducer in a small, versatile package
- Achieves 10Nm at 290rpm with almost no backlash, and easily back drivable making it ideal for robotic joints
- Custom machined cycloidal discs and ring gear out of 6061 aluminum on my CNC router

CNC Router

- Designed and built a 24"x30" CNC out of aluminum and steel tubing using SolidWorks
- Structural 3D printed pieces were designed such that they can be replaced with aluminum parts milled on the CNC itself
- Capable of cutting wood, plastic, and aluminum with tight tolerances up to 0.002"
- Leveraged topology optimization and FEA to optimize strength and rigidity throughout the design

Education

University of Waterloo

BASc – Mechatronics Engineering, 2024 (3.9/4.0 GPA)