Austin Huang

athuang@uwaterloo.ca
austinhuang.netlify.app

US and Canadian Dual Citizen

Education

University of Waterloo – BASc in Mechanical Engineering, 90% Cumulative Average — Expected Apr 2023

Skills

- **Tools:** SolidWorks Design and Simulation (CSWA), AutoCAD, C++, MATLAB
- **Manufacturing Processes:** CNC mill, lathe, waterjet, injection molding, 3D printing, laser cutter

Experience

Robotics Research Assistant – The Hospital for Sick Children (SickKids) — Sept 2021 – Dec 2021

- Led the design and characterized the performance of an ultrasonic cutting instrument for the Da Vinci surgical robot using SolidWorks to achieve functional requirements for open and endoscopic cranial surgery operations
- Supported physicians with designed and in-house manufactured test fixtures to meet custom requirements for clinical research experiments

Mechanical Designer – Vision Spatial Technologies — Jan 2021 – Apr 2021

- Designed deployment system for a ski-resort monitoring device from initial design constraints to functioning prototype
- Prototyped deployment system parts using an FDM 3D printer and adapted designs for injection molding by introducing positive/negative draft angles and cutouts/ribs to achieve constant part thickness while maintaining functional strength
- Validated design of a waterproof O-ring face seal for LED matrix lens cover using SolidWorks FEA
- Analyzed the steady state thermal performance of electrical enclosure using data modelling in Excel; proposed thermal solutions to maintain internal temperature requirements at up to 30° hotter operating temperatures

Maintenance Assistant – Colortech — Jan 2019 – Apr 2019

- Designed stackable A36 steel weldments for product containers in AutoCAD and oversaw the production of 16 units that were manufactured at in-house machine shop
- Developed floor plans of plant layout in AutoCAD to plan installation of 12 ft x 20 ft plastic extrusion machine

Student Design Teams

Robotic Arm Subteam Lead – University of Waterloo Robotics Team – University Rover Challenge — May 2021 – Present

- Developed a ground-up design for a 6 DoF static-arm-manipulator to support a 5kg load at 1m max reach
- Manufactured 6 DoF robotic arm in-house to experimentally measure peak and nominal loading conditions for each robotic arm joint; constructed arm using brushed DC motors, planetary gearboxes, belt drives, encoders, and custom machined, laser cut and 3D printed parts
- Coordinated with vendors and sponsors to design and integrate BLDC actuators that met mass, torque, speed, backlash and budget constraints

Mechanical Team Member – University of Waterloo Robotics Team – University Rover Challenge — Sept 2020 – Apr 2021

- Designed an enclosure using 5052-H32 aluminum with various finishes to electrically insulate internal components
- Retrofitted on-axis, magnetic absolute encoders into 5 DoF robotic arm
- Drafted drawings for CNC machined, waterjet, and laser-cut aluminum parts for in-house and outsourced machining

Personal Projects

Cycloidal Gearbox — May 2021 – Present

- Designed single-stage cycloidal gearbox with a 1:39 reduction ratio
- Tested small-scale 1:15 3D printed prototype to assess component tolerances, gearbox backlash, critical wearing locations and backdrivability