TREVOR MCCOURT

3B, BASc Mechanical Engineering, University of Waterloo, Option in AI

SUMMARY OF SKILLS

- **Robotics + Sensing:** Experience in developing algorithms that control/ interpret the interactions of machines with the physical world. Familiar with applied controls, sensing, DSP, image processing, and computer vision. Familiar with OpenCV
- **Programming:** 7+ years of experience writing code in C-like languages, most recently python
- **Machining:** 8 months experience in an R&D machine shop. Tormach milling, waterjet, and manual mill and lathe work
- **Engineering Analysis:** Experience applying the principles of engineering science and statistics to solve physical problems
- **Manufacturing Methods:** Specific experience with various plastic processing methods, including injection molding, thermoforming, and die cutting. Have created parts and molds. Experience in sheet metal and machined part design
- **Prototyping:** Experienced in engineering physical devices to solve problems using fabrication skill along with MCAD and ECAD

EXPERIENCE

Formlabs	Hardware Sys. Engineering	Somerville, MA	Apr'18-Curr

- **Surface Defect Scanner**: Conceptualized and implemented an application specific structured light 3D scanner capable of measuring the profile of a nominally flat surface to a one-micron resolution in 3D space, capable of automatically locating features of interest and reporting their position, magnitude, and 3D shape. System was based around a camera and linear stage and was several orders magnitude cheaper than a similarly capable commercial system. The system is fully automated and allowed for the comfortable production of a critical component for current and future products and is being used as a tool by other engineers on an ongoing basis.
- **Sensing**: implemented a sensor in a consumer product. Validated several sensor characteristics in an automated way, allowing for efficient large sample sizes and tight confidence intervals on device characteristics. Developed various prototype and factory calibration routines. Implemented the sensor into the operation of the device, improving performance
- **In-Line Printer Performance Characterization:** Developed a vision system for characterizing factory test prints. System is fully automated and will allow for various print defects to be computationally traced back to probable causes

Zaber Technologies	Mechanical Engineering	Vancouver, BC	Aug'17-Dec'17

- **Optical Encoder Centering**: Developed machine capable of moving the geometric centroid of an optical encoder to within 5 microns of its rotational center. Used camera to record edge of grating and derived algorithm for locating centroid. Created algorithm that dynamically compensated for the elasticity of the glue used to adhere encoders, increasing movement repeatability
- **In-Line Stiffness Testing:** Designed and fabricated a machine capable of automatically testing the stiffness and rolling resistance of a linear stage type product. Device was capable of detecting the start and end of the tested stages, increasing ease of use. Machine was accurate and achieved ±5% repeatability 95% of the time. Control written in python
- **Thermoforming**: Created the company's first production-ready piece of thermoformed packaging. Developed a mathematical model that estimated the force induced during impact and estimated the required rib dimensions. Created molds using FDM polycarbonate. Fabricated prototype packaging and found that the developed model accurately predicted 3rd quartile accelerations during impact. Partially automated the manual machine that was purchased to ease development
- **GD&T**: Improved drawings to increase part quality and solve reported production issues

Lava Computer MFG	Mechatronics Engineering	Toronto, ON	Jan'17-Apr'17

- **Plastic Part Design:** Designed parts for injection molding-based mass production. Learned and exercised injection molding DFM practices. Designed clips and living hinges. Brought parts to mass production in quantities ranging from 10-100k /year.
- **Product Development**: Developed a kiosk type product for Samsung tablets in the capacity of a contractor for Smart Cabinets Inc**.** Developed designs optimized for both tool/die and standard press brake fabrication. Communicated with machine shops through prototyping and eventual mass production. Enabled the sale of thousands of boards
- **Software:** Completed the development of a web-based temperature sensor control platform for use on an embedded webserver. Created front-end and middleware using C, js, and a proprietary version of BASIC

PROJECTS/HOBBIES (FOR MORE)

Knifemaking: Design and fabricate fixed and folding knives. Most recent design is a spring assist folder, A2 Blade
Giant FDM Printer: Created a 750x750x750mm FDM 3D printer during Formlabs' 2018 Hackathon. Printed a Form 2 with it
Hydraulic Linear Actuator Extension: Created a device that could be added on to a linear actuator to punch metal
Form PC: Built an IXT,water-cooled gaming computer into a form 1 chassis
Photography

Tj2mccou@edu.uwaterloo.ca
(647)-379-8384
www.trevormccourt.com
linkedin.com/in/mccourttrevor
Valid Driver's License
Canadian Citizen