Trevor McCourt

Candidate for BASc, Mechanical Engineering

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SKILLS AND QUALIFICATIONS

- Expert 3D modeller, specifically in SolidWorks, with a multitude of experience in both component and industrial assembly design
- Familiar with many commonly used engineering solid analysis methods, including standard static analysis, FEA, and CFD using the SolidWorks platform
- Experienced Drafter, with professional experience in detailed engineering drawing creation, who is proficient with both AutoCAD and MicroStation
- Versed in different prototyping and fabrication methods, including 3D printing, composite mould making, and light machining
- Excels in a multi-disciplinary environment; familiar with programming languages and electrical engineering concepts as a result of multi-faceted professional experiences
- Excellent technical troubleshooting and problem-solving skills, with an intuition gained through the enjoyment of hands on mechanical work
- Highly organized with time management skills developed through continuous teamwork

PROFESSIONAL EXPERIENCE

Toronto Transit Commission
Toronto, Ontario
May 2016- September 2016

Assistant Designer- Automatic Train Control (DCS + CBI)

- Designed assemblies and components related to the installation of Digital Control Systems equipment that are currently in use in both the existing YUS line and the upcoming Spadina Extension
- Performed static analysis on assemblies, calculated internal stresses, designed parts to meet standard TTC safety factors
- Developed engineering drawings with detail and precision that were peer reviewed, approved and issued for construction
- Created million dollar power cable layout from circuit drawings and personally collected survey data that are currently being implemented in the Wilson Yard re-signaling and expansion project

University of Waterloo Aerial Robotics Group
Waterloo, Ontario
September 2015- Present

Mechanical Design Team Lead

- Used SolidWorks to design and manufacture a brushless gimbal to interface with pre-existing components on an autonomous aircraft; used successfully in 2015 unmanned systems Canada competition
- Created a 3D assembly of the 2015 aircraft for systems integration purposes
- Developed node.js based ground station application for smooth UAV control
- Created 3 conceptual designs for VTOL aircraft landing gear with varying feature sets. Performed analysis on and prepared the final design for fabrication
- In the process of designing and testing wing mounting systems for both fixed and rotational operation of VTOL aircraft
- Communicated team goals and progress to members during team meetings

PERSONAL PROJECTS (SEE  FOR MORE)

Bicycle Frame Design

- Designed and modeled an anatomically correct classic geometry carbon road bike frame based on principles found in *Lugged Bicycle Frame Construction* by Marc-Andre Chimonas
- Used CFD and FEA to verify the structural and aerodynamic properties of the frame and cockpit
- Designed the frame to be compatible with modern Shimano components

Bicycle Restoration

- Bought 1989 Norco Monterey in disrepair and rebuilt the bike to its original state using solely original parts

Hybrid Aircraft

- Designed, analyzed, and manufactured a helium based hybrid aircraft
- Experienced working with quadcopter components
- Performed material and structural analysis

Custom Multi-Rotor

- Handpicked and assembled components to make up a fully autonomous quadcopter
- Handmade wires, soldered joints

Everyday Design

- Ongoing design and prototyping of components/assemblies that serve to improve my quality of life
- Examples include cooling chamber for laptop, pebble watch charging station,
- Magnetic clamp to hold bike handlebars straight during maintenance

Li-Fi Transceiver

- Developed software to be used on embedded systems to facilitate the transfer of data over the visible light spectrum
- Experienced cross-platform interaction- Java C interface
- Successfully transmitted 85% of an image over visual light

University of Toronto Space Design

- Created long-term plan that outlined the process of mining near earth asteroids
- Researched and calculated maximum payloads and orbital trajectories
- Used AutoCAD to create 3D models of rocket and lander prototypes

EDUCATION

University of Waterloo

Candidate For Bachelor of Applied Science, Honors, Mechanical Engineering

Academically ranked 9th/211

September 2015-Present

PERSONAL ACHIEVEMENTS

- Extremely positive academic standing, with a CGPA of 3.95
- Bronze Medal, 3 years in a row, University of Toronto Metro Science Fair
- Strong in academic competitions (top 5% SIN physics exam, top 6% Avagadro chemistry exam, etc.)
- Silver Medal Overall, University of Toronto Space Design Competition
- Silver Medal, OFSSA Archery
- Top First Year Cadet, 330 Squadron, Royal Canadian Air Cadets

INTERESTS

- Road Cycling
- Bicycle Mechanics
- Electronics, especially custom PCs
- Trumpet
- Archery, recreational hockey
- Pick up hockey and baseball