Trevor McCourt

Candidate for BASc, Honors 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 prototyping, specifically 3D printing and light machining
- Experienced Drafter, with professional experience in detailed manual engineering drawing creation, who is proficient with both AutoCAD and MicroStation
- Excels in a multi-disciplinary environment; familiar with many programming languages and electrical engineering concepts as a result of multi-faceted professional experiences
- Proficient with Excel, including the manipulation of csv files and the analysis of experimental data
- 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. Can excel in either a team or individual environment
- Experience in composite manufacturing, specifically in the mold making process

PROFESSIONAL EXPERIENCE

Toronto Transit Commission

Toronto, Ontario

May 2016- September 2016

Assistant Designer- Automatic Train Control (DCS + CBI)

- Designed assemblies and components for use in the installation of digital control systems equipment in both the existing YUS line and the upcoming Spadina Extension
- Developed engineering drawings with detail and precision that were peer reviewed, approved, and sent out for construction
- Created multi-million dollar power cable layouts from circuit drawings and personally collected survey data that are currently being implemented in the Wilson Yard re-signaling and expansion project
- Designed and Analyzed to-be-fabricated mechanical components to ensure safe operation in dynamic conditions

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; gimbal will be used during Unmanned Systems Canada competition this year
- Calculated physical limitations of gimbal to optimize performance
- Took over camera stabilization systems as a team lead at the beginning of second term
- Created a 3D assembly of the current aircraft for systems integration purposes
- Developing node.js based ground station application for smooth UAV control
- Beginning work on VTOL aircraft development

PERSONAL PROJECTS (SEE FOR MORE)

Bicycle Design

- Designed and modeled an anatomically correct classic geometry carbon road bike 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
- Modeled brake calipers with visual reference to Ultegra design

Bicycle Restoration

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

High Speed Hybrid Aircraft

- Designed and manufactured a helium based hybrid aircraft theoretically capable of reaching 50 km/h (motor limitations prevented this speed from actually being reached)
- 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
- Implemented FPV system for an immersive flying experience

Injection Molder Redesign

- Redesigned an injection molding machine for a corporation to compensate for a large amount of error in the molding process
- Modeled all custom components in SolidWorks
- Evaluated thermal and structural properties of materials

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

September 2015-Present

Candidate For Bachelor of Applied Science, Honors, Mechanical Engineering

Academically ranked 9th/211

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