

# BENJAMIN DUO

MECHATRONICS ENGINEERING - MANAGEMENT SCIENCE OPTION  
University of Waterloo (Cumulative GPA of 3.60)

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## SKILLS

### Computer Aided Design

- AutoCAD
- SolidWorks
- Siemens NX 11/12

### Manufacturing

- GD&T
- Aluminum Extrusions
- CNC Machining
- DFM/DFA
- Sheet Metal Design
- Injection Molding

### Prototyping

- Machining
- 3D-printing
- Mill & Lathe

### Electrical

- PCB Design
- Schematic Drawing
- Soldering
- Oscilloscope
- Circuit Analysis

### Interpersonal

- Leadership
- Problem Solving
- Critical/Creative Thinking
- Fast Learner
- Time Management

## RELEVANT COURSES

- Thermodynamics & Heat Transfer
- Fluid Dynamics
- Kinematics & Dynamics of Machines
- Electromechanical Design
- System Models 1
- Mechanics of Deformable Solids

## INTERESTS

- Ultimate Frisbee
- Badminton
- Volleyball
- Painting/Art
- Piano
- Guitar

## EXPERIENCE

### Electrical Engineering Coop | Nova Institute

June 2020 – Aug 2020

- Researched circuit characteristics and behaviour of dielectric elastomer generators (DEGs) from certified papers.
- **Designed original circuits** from the research to find an unpatented solution for DEG priming and harvesting.
- Troubleshooted errors from experiments and designed a new test fixture in **SolidWorks** to reduce problems.

### Mechatronics Engineering Intern | KPM Power Inc.

Sept 2019 – Dec 2019

- Designed multiple battery packs in **SolidWorks** to contain cells and components with constraints from forklift battery standards and regulations.
- Led a project to extract CAN data from batteries and display it on a PHP webpage through a MySQL database.
- Created **schematics, PCBs**, cables, and **3D-prints** for clients with a strict deadline.

### Manufacturing Test Engineer | Miovision

Jan 2019 – Apr 2019

- Improved the manufacturing process of the scout camera by **reducing production time by 50%** and **saved \$10,000 in costs per year**.
- Created fixtures and made professional engineering drawings to eliminate product damage during manufacturing and testing using **SolidWorks**.
- Designed and **3D printed** fixture prototypes, PCB cases, and display products.
- Reviewed and refined Miovision's Non-Conforming Report process to increase the flow of documents, information, and NCR labeled products.

### Hardware Engineer | Environment & Climate Change Canada

May 2018 – Aug 2018

- **Designed PCBs** to test the software of a sensor by simulating the inputs of varying sized cloud particles at different rates.
- Characterized circuit behaviour with an oscilloscope to verify circuit design.
- Manufactured mounts to endure extreme temperatures for weather sensors.

## PROJECTS & EXTRACURRICULARS

### University of Waterloo Alternative Fuels Team

Jan 2018 – Aug 2019

- Modeled an interfacing device to navigate the car's computer in **NX11**.
- Created mounts for fuel filter pumps and HV junction boxes and cameras.
- Researched car architecture and power/torque requirements of motors with a specific gear ratio and battery power to properly select car components.

### University of Waterloo Robotics

Sept 2017 – Apr 2019

- Designed a robot to follow a grayscale line while using a photoresistor to detect different shades to play different music notes.
- Programmed a ROS node to overlay directions on top of a live camera feed by subscribing to camera and localization node topics.

### Tab Reading & Guitar Playing Robot

Oct 2017 – Nov 2017

- Programmed and calibrated a fretting mechanism in C++ and C to guarantee correct fret location and timing with strumming mechanism.
- Designed and built the calibration hardware, fret mechanism, hard stops for the strummer and the robot's base.

more projects on my site at [benjaminduo.com](http://benjaminduo.com)