WILLIAM WARD
Engineering Physics Student

EDUCATION

2018-2023

B.Eng. Engineering Physics
McMaster University

Co-op program
GPA: 3.95 / 4

SKILLS

Embedded C & C++
Python
Java
C# & .NET
MATLAB
Linux
Git
Analog Electronics
Digital Electronics
Oscilloscope Usage
Multimeter Usage
Autodesk Inventor
PCB Design
I2C/SPI/UART
FreeRTOS
Soldering
3D Printing
Hot Air Rework
Fusion360
NI Multisim
Zemax OpticStudio
EasyEDA
Confluence + JIRA
MSSQL
Numerical Data Analysis

AWARDS

Eagle Scout Award
Boy Scouts of America
2017

NSERC USRA
McMaster University Biophotonics Research Group
2019

CONTACT

Hamilton, Ontario
+1 365-366-8453
liam.ward144@gmail.com
My Profile Site

WORK EXPERIENCE

Embedded Software Specialist — Aug 21 - Present
McMaster Interdisciplinary Satellite Team (NEUDOSE)

Developing embedded software using the Gomspace SDK & custom libraries / packages to control the satellite's On-Board Computer

- Successfully integrated CubeSat Space Protocol (CSP) communication architecture with 3 existing sub-services
- Collaborated with a team of 7 software specialists on a team repository using Git

Co-op Research & Development Scientist — Sep 20 - Sep 21
Mesomat

Collaborated with other engineers on 32 software packages, 15 electrical systems and 2 electromechanical systems for Mesomat.

- Designed 15 unique PCBs utilized by Mesomat's data acquisition platform and robotic production line system
- Spearheaded performance analysis of 2 unique event detection algorithms with Python
- Designed & built an automated electromechanical production robot on a $5k budget
- Increased the reliability & efficiency of the sensor production process by 50%
- Introduced & improved firmware for 2 custom controllers; enhanced the data acquisition platform with more precise and cost-effective electronic designs
- Developed desktop application for software version control, decreasing software distribution time by 25% for the management team
- Used C# to implement a real time signal processing algorithm for event detection
- Utilized Git for version control of 32 different collaborative software projects
- Cultivated oscilloscope skills by debugging embedded systems at the hardware level
- Improved robustness of existing production robotic system before overhauling the entire system; reduced downtime by 40%
- Overhauled a lacking client interface by developing a software distribution web application

Undergraduate Research Assistant — May 20 - Aug 20
McMaster Biophotonics Research Group

Conceived and implemented a graphical user interface to interact with an existing controller infrastructure for an ultra-fast fiber optic laser micro machining station

Orbital Simulation Specialist — Dec 19 - Sep 20
McMaster Interdisciplinary Satellite Team (NEUDOSE)

Assisted in development of orbital models of the satellite in order to implement attitude determination and control using Passive Magnetic Attitude Control

- Applied an existing attitude determination algorithm to develop an embedded C package for attitude determination on the OBC (the On-Board Computer on the satellite)
- Produced a python script to process and format 24 hours worth of attitude data for analysis in STK - an industry standard aerospace simulation software

COURSES

- Electronics: Non-Linear & Active Components
- Electronics: Embedded Systems
- Computational Multi-Physics
- Signals & Systems
- Physical Optics
- Numerical Methods
- Solid State Devices
- Data Structures, Algorithms & Discrete Mathematics
- Semiconductor Junction Devices
- Mathematical Physics I & II
- Analog & Digital Circuits
- Quantum Mechanics
- Electromagnetism
- Thermal System Design

TEACHING EXPERIENCE

Support Teaching Assistant 2019 - Present
Integrated Biomedical Engineering - McMaster University

Spent 3 years assisting students in a laboratory environment, encouraging further development of computing, computer-aided design & professional communication skills

Instructional Teaching Assistant Sep 20 - Apr 21
Integrated Biomedical Engineering - McMaster University

Prepared & delivered labs to teach first-year engineering students the basics of computer-aided design and programming on a weekly basis

Course Developer May 19 - Aug 19
Integrated Biomedical Engineering - McMaster University

Created and updated Integrated Biomedical Engineering & Health Science lab content for 24 labs focused on CAD & Coding

- Generated a supplementary database of 66 Python Video Tutorials and associated educational slides in the interest of enhanced learning
- Generated lesson plans spanning the entire academic year to encourage a problem-based learning approach to relevant engineering challenges

ACADEMIC PROJECTS

Ultrasonic Range Finder Dec 2021
Non-Linear Electronics

- Cooperated with a team of other engineers to successfully design and build an ultrasonic range finder
- Succeeded in building a device with an accuracy to within 1 cm up to 99 cm
- Constructed the device using 40 base-level analog and digital components such as amplifiers & logic gates

Preheat Thruster Optimization Mar 2020
Computational Multi-physics

Optimized the design of a spacecraft thruster heating system; Utilized background in heat transfer physics to construct a simulation model for design verification

Sequential Logic Design Mar 2020
Analog & Digital Circuits

Synthesized a sequential logic circuit; Built and simulated the circuit in National Instruments Multisim for design verification