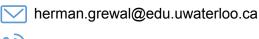
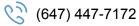
Herman Grewal

Fourth Year Mechatronics Engineering







hermangrewal.github.io

SKILLS

Tools:

CATIA V5, ENOVIA, ANSYS AIM, SolidWorks, AutoCAD

Software:

MATLAB, Simulink, C, C++, VBA

Hardware:

Oscilloscopes, Arduino, FPGA, PLC

Practical:

Soldering, 3D Printing, Laser Cutting, Woodshop

EDUCATION

Bachelor of Applied Science Honours (Co-op)

Mechatronics Engineering University of Waterloo 2014 - 2019

Academically Ranked in Top 10% GPA: 3.92/4.00

Relevant Courses: Electromechanical Machine Design, Thermodynamics & Heat Transfer, Numerical Methods, Dynamics of Machines, Mechanics of Deformable Solids, Materials

AWARDS

Richard Matzeg Memorial Scholarship

University of Waterloo Oct. 2017

Dean's Honour List

University of Waterloo Apr. 2017

President's Research Award (x2)

University of Waterloo May 2016 Sep. 2015

Aspiring Engineer Scholarship

Professional Engineers Ontario

Jan. 2015

President's Scholarship of Distinction

University of Waterloo Aug. 2014

WORK EXPERIENCE

Module Product Designer & Draftsman

Pratt & Whitney Canada, Mississauga, ON Sep. - Dec. 2016, Jan. 2018 - Current

- » Drafted engineering drawings for compressor components using CATIA
- » Created CAD models and conducted tolerance stack ups for production purposes
- » Revised detail drawings to reflect manufacturing/assembly capabilities (DFM/DFA)
- » Applied GD&T to detail drawings to lower cost & minimize scrap
- » Conducted part geometry analysis and prepared presentations for design groups
- » Utilized routes and objects in ENOVIA for part progression to production level

Technical Illustrator

Pratt & Whitney Canada, Mississauga, ON

Apr. - Aug. 2017

- » Created assemblies in CATIA for illustrations in service bulletins and parts catalogues
- » Visited shop floor to inspect parts and verify assembly procedures
- » Utilized ENOVIA to search for engineering documents to verify procedures and parts
- » Annotated graphics for technical writers using S1000D standards and best practices
- » Communicated with supplier/partner company liaisons to resolve issues quickly
- » Instructed and verified work completed by overseas team

Weights Analyst

Pratt & Whitney Canada, Mississauga, ON May - Aug. 2015, Jan. - Apr. 2016

- » Completed a 40 hour CATIA V5 course by Mecanica Solution
- » Performed weight analysis of engine parts and assemblies using CATIA models
- » Conducted rotor burst analysis and inertia calculations for critical rotating parts
- » Customized Excel worksheets for data collection of historical engine weight data
- » Created risk analysis models and statistical analysis of weight data
- » Presented findings for manufacturing weight scatter to advance design group
- » Created custom macros in VBA for analysis and functionality of data in Excel
- » Completed PW308 Engine Assembly Course for hands on experience and familiarity with part functions and assembly procedures

RESEARCH

Prostate Cancer Image Processing Algorithm Analysis

University of Waterloo, Waterloo, ON

Sept. 2016 - April 2017

- » Developed graphic user interface using MATLAB GUIDE
- » Processed MRI images to dynamically execute multiple algorithms
- » Under supervision of Dr. Alexander Wong in the Vision and Image Processing Lab

Computerized Lung Cancer Analysis

University of Waterloo, Waterloo, ON

Sept. 2015 - Aug. 2016

- » Developed edge detection algorithm for lung cancer analysis
- » Utilized MATLAB to process CT scan images and perform statistical analysis
- » Abstract publication at Imaging Network Ontario Symposium 2016, "Single-Click Lung Nodule Contouring Method Using a Hierarchical Conditional Random Field"
- » Worked in conjunction with Sunnybrook Research Institute
- » Under supervision of Dr. Alexander Wong in the Vision and Image Processing Lab

PROJECT SUMMARY

Remotely Operated Underwater Vehicle (ROUV)

University of Waterloo, Waterloo, ON, CAN

Sep. - Dec. 2017

- » Acted as mechanical lead and project manager for autonomous ROUV project
- » Designed PVC pipe frame, 3D printed propeller covers, sensor supports & motor mounts
- » Conducted simulated & empirical testing to verify & compare design alternatives
- » Utilized diverse tools & materials including drill press, Dremel tool, 3D printer, soldering iron, marine weld & epoxy
- » Communicated with electrical and software team members to streamline product integration

o Audio Player

University of Waterloo, Waterloo, ON, CAN

Feb. - Mar. 2017

- » Programmed audio player in C using FPGA board
- » Utilized SD card to read audio file in chunks to write data to stereo buffers
- » Designed user friendly design with multiple button functionality using interrupts
- » Built using multiple programs including Altera Toolchain, QSYS, Quartus & NIOS build tools

Bridge Design

University of Waterloo, Waterloo, ON, CAN

May - Aug. 2016

- » Created simplified 2D finite element solver in MATLAB for rapid design evaluations
- » Conducted extensive testing on balsa wood sample to empirically determine parameters
- » Performed finite element analysis using ANSYS AIM and SolidWorks models
- » Utilized power tools for rapid prototyping & laser cut final bridge parts
- » Worked with limited resources and completed project in accordance with defined schedule
- » Presented final bridge design with justification of design choices in symposium

Line Following Robot

University of Waterloo, Waterloo, ON, CAN

May - Aug. 2016

- » Programmed and constructed line following robot on custom PCB board
- » Characterized motors & constructed light sensors using IR LEDs and photodiodes
- » Utilized oscilloscope to test and verify component operation
- » Integrated multiple sensors including optical encoders, thermistors & hall effect sensors to direct action coded in C
- » Calculated values for circuits & soldered components

(iii) Temperature Sensor Design

University of Waterloo, Waterloo, ON, CAN

Nov. 2015

- » Utilized thermistor for raw temperature readings
- » Processed & calibrated data using Arduino
- » Programmed LED display interface with corrected temperature readings with 1°C accuracy

Symptom Tracker and Analysis Project

Hack4Health, Waterloo, ON, CAN

Sep. 2015

- » Designed GUI for multiple sclerosis patient survey of symptoms rated from 1 -10
- » Data collected & stored in relational database using user friendly features coded in SQL
- » Statistical analysis of data to detect negative trends in symptoms
- » Coded macro in VBA to automatically send warning emails to family members/caretakers
- » Finalist at Hack4Health competition

Gumball Sorting Robot

University of Waterloo, Waterloo, ON, CAN

Oct. - Nov. 2014

- » Designed and constructed structurally sound robot that sorts gumballs by colour
- » Integrated multiple sensors & motors with Lego blocks & coded software in C
- » Calculated & displayed efficiency rate, time elapsed & any error messages