

JUSTIN LAM

MECHATRONICS ENGINEER

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TECHNICAL SKILLS

Mechanical

- 3D Modeling (SolidWorks)
- Product Design
- Rapid Prototyping
- Test Development

Software

- Data Analysis (MATLAB)
- Data Visualization
- Scripting (Python, C, C#, VBA)

Electrical

- Control System Design
 - MCU Programming
 - Signal Processing
 - PCB Assembly
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EDUCATION

University of British Columbia

Bachelor of Applied Science

Mechanical Engineering with Specialization in Mechatronics

September 2011 – April 2016

Western University's French Immersion School

Explore Summer Program, Trois-Pistoles

Five week program for University-level degree-credit courses in French language

July 2011 – August 2011

WORK EXPERIENCE

MistyWest

Mechanical Design Engineer

- Performed detailed mechanical design of various products
- Executed final assembly, testing, and integration of products for delivery to clients
- Developed and analyzed a model for thermal management for an outdoor sheet metal enclosure to mitigate the risk of the electronics overheating
- Communicated with local and offshore suppliers for parts and fabrication
- Reviewed patents and regulatory standards
- Conducted data testing and analysis of air quality by characterizing airborne particulate matter

January 2015 – August 2015

Centre for Hip Health and Mobility

Biomechanical Engineering Research Assistant

- Designed and conducted a user study with orthopaedic surgeons to evaluate the drilling performance of hardware power drills in comparison with commercial surgical and manual hand-crank drills
- Collaborated with orthopaedic surgeons to replicate clinically relevant drilling scenarios
- Designed a mechanical test apparatus to carry out drilling tests and efficiently measure plunge depth
- Developed scripts in ImageJ and Microsoft Excel to automate the image and data analysis of the 546 drilling maneuvers and 1092 hole surfaces
- Determined statistical significance using linear mixed models in SPSS
- Wrote the manuscript to summarize the study findings to be submitted to the Journal of Orthopaedic Trauma for publication

May 2014 – August 2014

MEA Forensic Engineers and Scientists

Research Assistant

- Conducted 1630 helmet impact attenuation tests to measure the effect of age and use on bicycle helmet foam
 - Developed scripts in MATLAB to post-process the impact data and organize information according to existing helmet databases
 - Wrote the Methods section of the research report to be submitted to the Accident Prevention & Analysis Journal
 - Assisted in protocol development of the helmet and foam core impact attenuation tests
 - Constructed a temperature controlled test environment to mitigate the effect of heat on helmet foam during the summer months
 - Modified existing LabView virtual instruments for data acquisition for impact attenuation tests
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May 2013 – December 2013

TECHNICAL PROJECTS

UBC Biomedical Engineering Student Team

January 2013 – April 2015

Mechanical Div. Lead, Senior Member

- Assisted in the design of a biomedical device to address peripheral neuropathy in the lower extremities
- Brainstormed with the Electrical and Software divisions to isolate the core functions and requirements of the device
- Created a device to reroute the sensory input from high pressure areas on the foot to the lower thigh in order to provide patients with tactile feedback while walking

UBC Hovercraft Team Design Project

April 2013

- Designed and constructed a remote controlled hovercraft for a competition of speed, cargo capacity, and maneuverability where we placed 5th out of 20 teams
- Acted as the project manager by ensuring tasks were effectively delegated and being completed on schedule to ensure all requirements of the hovercraft were met and ready for competition day
- Designed the hovercraft's steering system using readily available, lightweight materials to provide easy repairs and to reduce the overall cost and vehicle weight
- Developed testing experiments in order to determine the optimal propeller and fan for forward thrust and lift force
- Modeled hovercraft parts on SolidWorks to ensure all components were compatible and sized correctly according to physical limitations

PERSONAL PROJECTS

Project Haikuza

July 2015

- Developed an interactive, Twitter-based haiku generator using song lyrics in Python on a Raspberry Pi
- Scraped Virgin Radio's broadcast history to populate a spreadsheet song list queue
- Accepted song requests through Twitter and generated a relevant haiku for the requested user
- Found song lyrics from Lyrics Wikia to generate a haiku based on the desired song

Award Winning Bamboo Bicycle

May 2013 – August 2014

- Designed a bicycle frame jig to hold the mitered bamboo poles in position to preserve the geometry while tacking and wrapping the lugs with epoxy and carbon fiber tow
- Modeled the bicycle and frame jig in SolidWorks to create a customized frame geometry
- Joined the bamboo poles by soaking carbon fiber tow in epoxy and wrapping it around the joints in an alternating matrix of fiber layers to provide the necessary frame stiffness

AWARDS

NSERC Industrial Undergraduate Student Research Award

2015

Industrial Undergraduate Student Research Award (IUSRA) to stimulate research in the natural sciences and engineering

1Minute1Slide Presentation Contest Winner

2014

Open to undergraduate and medical students, hosted by the Vancouver Coastal Health Research Initiative

Engineers In Scrubs Undergraduate Research Award

2014

For academic excellence, quality of the project, and fit with the applicant's career aspirations and goals of the EIS program

Scotiabank Half-Marathon - 2nd Place

2012

Under 19 Age Category

BC Hydro's President's Scholarship

2012

For outstanding community leadership and academic achievement

Sir John A. MacDonald Leadership Scholarship

2011

For community involvement

INTERESTS

- Cycling, running, woodworking, programming