Jacob Morrison

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EDUCATION

Master of Applied Science, University of British Columbia, Vancouver BC, Canada

September 2018 - August 2020

- Thesis based master's degree through the Mechatronics branch of the Department of Mechanical Engineering with a focus on control theory and machine learning
- Worked in the Control Engineering Laboratory under the supervision of Dr. Ryozo Nagamune
- Perfect Cumulative GPA of 4.33/4.33, Received degree with distinction
- Awarded department scholar designation
- Recipient of the Alexander Graham Bell Canada Graduate Scholarship
- Presented research work at world's most renowned control conference, the 2020 International Federation of Automatic Control World Congress
- Awarded best presentation award at the 2020 BC Universities Systems and Control Conference
- Publications:
    - An iterative learning approach to economic model predictive control for an integrated solar thermal system *(Approved and awaiting publication in IFAC-PapersOnLine)*
    - An intelligent grouping based iterative learning approach to economic model predictive control *(Currently under review with the Journal of Process Control)*

Bachelor of Applied Science, Queen's University, Kingston ON, Canada

September 2013 - April 2017

- Major in Engineering Physics
- Cumulative GPA – 4.13/4.3, First Class Honours
- Awarded Dean's Scholar Designation in 2014, 2015, 2016, and 2017
- Awarded Principal's Scholarship in 2013 and 2014
- Awarded H. Arnold Cowan scholarship in 2016

EMPLOYMENT AND RELEVANT EXPERIENCE

University of British Columbia, Vancouver BC, Canada

Graduate Research Assistant **September 2018–Present**

- Working in the Control Engineering Laboratory within the Department of Mechanical Engineering
- Developing software in MATLAB to facilitate control simulations with applications to solar energy
- Developing software in python to preprocess, sort, and learn from large data sets related to solar energy and human energy consumption for control applications
- Assisting in the setup of various hardware components used for physical control simulations

University of British Columbia, Vancouver BC, Canada

Graduate Teaching Assistant **September 2018–August 2020**

- Led in class and online tutorials, software studio sessions and laboratory sessions for four undergraduate courses focusing on electrical circuit analysis, Matlab and Arduino programming, multivariate calculus, and automatic control

CEA, Paris, France

Research Engineer **September 2017–August 2018**

- Worked as a member of the NEWS-G collaboration to conduct research and development on SPC detectors in the ongoing search for dark matter
- Streamlined and integrated the electronics associated with the operation of an SPC detector to allow a fully portable detector to be developed for use in a broader spectrum of particle physics applications as well as for education and outreach
- Wrote both the data acquisition and data analysis software implemented in the portable detector using python, C, and Verilog/VHDL, and developed the GUI for the portable detector

Queen's Space Engineering Team, Queen's University, Kingston ON, Canada

Chief Financial Officer and Team Member **April 2016–June 2017**

- Worked closely with the design team to procure funding and decide how best to allocate a $70,000 budget
- Travelled to the University Rover Challenge in Utah to prep the team's Mars rover for competition
- At the competition the team performed quite well, finishing 1st out of 5 Canadian schools, 3rd out of 39 North America schools, and 6th overall out of 82 qualifying schools

Queens University, Kingston ON, Canada

Research Assistant in Particle Astrophysics Laboratory **May–August 2016**

- Worked with the NEWS-G collaboration under Dr. Gilles Gerbier to conduct research and development on SPC detectors to aid in the ongoing search for dark matter
- Completed large-scale data analysis using python and C++
- Developed software in python to simulate the theoretical response of alpha particles in an SPC
- Awarded Charles Allan Thompson undergraduate student research award

McMaster University, Hamilton ON, Canada

Research Assistant in Microrobotic Flight Laboratory **May–July 2015**

- Worked under Dr. Matthew Minnick to develop wings for use in microrobotic flight applications
- Interfaced new instrumentation with the lab control system, using python to deliver SCPI command strings
- Developed image processing software in python to analyze input jpeg images of a flapping wing and determine the amplitude of the wing's motion

SKILLS AND INTERESTS

- **Skills:** Strong problem solving and critical thinking skills demonstrated by high academic standing; Effective communication skills tailored to leadership in a group setting
- **Computer Programs/Programming:** Proficient in Matlab, Python, Julia, C++, C, LabVIEW, Arduino, Verilog, SolidWorks, COMSOL Multiphysics, Microsoft Office Suite
- **Languages:** English, French
- **Interests:** Snowboarding, touring, camping, hiking, canoe/kayak tripping, hockey, basketball, rock music, fictional legal novels
- **Volunteering:** Queen's University Science Formal 2016, Queen's University Fix n Clean 2015