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
- Recipient of the Alexander Graham Bell Canada Graduate Scholarship and a Department Scholar Designation
- 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

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

MDA, Richmond BC, Canada

Software Engineer **January 2021–Present**

- Designing top to bottom software solutions within a distributed multi-processor environment for airborne radar applications
- Utilizing C++ to implement these solutions in both Linux and VxWorks RTOS environments

University of British Columbia, Vancouver BC, Canada

Graduate Research Assistant **September 2018–December 2020**

- Worked in the Control Engineering Laboratory within the Department of Mechanical Engineering
- Developed software in python to preprocess, sort, and learn from large data sets related to solar energy and human energy consumption for control applications
- Developed software in MATLAB to facilitate control simulations with applications to solar energy

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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 to aid 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
- 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
- Assisted in the development of the team's Mars rover, which competed at the 2017 University Rover Challenge in Utah

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
- 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; Effective communication skills tailored to leadership in a group setting
- **Computer Programs/Programming:** Proficient in C++, C, Python, Matlab, Git, Julia, Verilog , Microsoft Office Suite, LabVIEW, and Arduino
- **Languages:** English, French
- **Interests:** Snowboarding, touring, camping, hiking, canoe/kayak tripping, hockey, basketball, rock music, fictional novels

PUBLICATIONS

- **An iterative learning approach to economic model predictive control for an integrated solar thermal system**
    - Published in IFAC-PapersOnLine through Elsevier in April, 2021
    - available online at: *https://www.sciencedirect.com/science/article/pii/S2405896320325532*
- **Control of an integrated solar thermal system based on intelligent iterative learning for hot water demand**
    - My master's thesis, published through the UBC library in August, 2020
    - available online at: *https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0394371*