

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. Ryoze 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

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>