Joshua Himmens

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Undergraduate Engineering Physics Student at The University of British Columbia

92% (A+) Average | **English** (Native), **French** (Working Knowledge)

Technical/Research Experience

ATLAS Deep Learning Research Student
TRIUMF
May 2024 - Present
himmens.com/triumf

ATLAS detects particles from the Large Hadron Collider colliding at 99.999999% the speed of light to explore the bounds of physics.

- Developed panoptic segmentation models for the ATLAS detector using the PointNet ML framework with Wandb, TensorFlow, Keras.
- Used CERN's grid computing to parallelize compute across thousands of nodes.
- Worked independently to develop models using cutting edge transfer learning approaches.

Command and Data Handling (CDH) Lead and Firmware Developer
UBC Orbit Satellite Team
October 2023 - Present
himmens.com/orbit

ALEASAT is an earth observation cubesat supported by the European Space Agency and UBC.

- Led the CDH team to develop software to meet mission and testing objectives from ESA (European Space Agency) for the ALEASAT project.
- Managed a team of 10 firmware developers.
- Developed mission testing, function testing, and acceptance testing procedures.
- Programmed device drivers, electrical ground support equipment (EGSE).
- Developed the ALEASAT Avionics Test Bench (FlatSat).

Publications and Presentations

Co-author of **Implementing Low-Cost ADCS for 1U CubeSat: Insights from ALEASAT** to be presented at the International Aeronautical Conference (IAC) in October 2024.

Presented **3D Particle Flow in the ATLAS Calorimeter: How to Train Your Model**, a speed-talk, at the 2024 TRIUMF Science Week

Presented **ALEASAT ESA "Fly Your Satellite!" Training Week Presentation** at the European Space Agency's ESEC-GALAXIA (Transinne Belgium) in 2024 as part of the "Fly Your Satellite 4!" program.

Technical Skills

Machine Learning | Experienced using TensorFlow, Keras, PointNet, Weights and Biases (wandb) for model development.
Embedded Programming | Experienced with FreeRTOS on TMS570 and RP2040.
Quantum Computing | Used Qiskit to simulate quantum algorithms.

Awards

Erich Vogt First Year Summer Research Experience (FYSRE) award | 2024
Awarded to promising students in physics for a 4 month research placement.

Alberta Centennial Award and Alberta Premier's Citizenship Award | 2023
Awarded for outstanding community service. Value: $2000

Calgary Flames Foundation Community Involvement Scholarship | 2023
Awarded for community involvement. Value: $2005

Julia Turnbull Leadership Award for exceptional community service | 2023
Awarded for exceptional community service. Value: $1000

Ted Rogers Entrance Scholarship | 2023
Awarded for academic achievement. Value: $2000

Tom Lawson award for embodying the spirit of Canadian debate | 2023
Awarded for embodying the spirit of Canadian debate. Required a vote of the student delegates at the Canadian National Debate Seminar.

Advocacy and Leadership

Curriculum and Advocacy Director
UBC Engineering Undergraduate Society
2024 - Present

- Worked with the faculty and the undergraduate society to develop multi-year plans for coop-related advocacy.
- Advocated for transparency in coop fee use in line with standards at other institutions.

Advisory Team Member
Child Rights Connect
2021 - 2023

- Provided guidance to UN delegations on communication strategies for high-level rights goals.
- Presented to governments and consulted on international initiatives to support the UN Convention on the Rights of the Child.

Correspondent
Organization of American States
2019 - 2020

- Created and edited content on human and child rights in the Americas.
- Attended the 3rd Pan American Child and Youth Forum in Cartagena, Colombia with the Government of Canada.

Experiences

- **"Quantum School for Young Students"** participant at the University of Waterloo and Institute for Quantum Computing.
- **"Introduction to Quantum Computing"** participant, an 8-month course on quantum computing using IBM's quantum infrastructure.
- **Scientific Computing with Python certification** (300 hours).