Joshua Himmens

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ATLAS Deep Learning Research Student at TRIUMF
Undergraduate Engineering Physics Student at The University of British Columbia

Experience

ATLAS Deep Learning Research Student

TRIUMF | Summer 2024

- 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

UBC Orbit Satellite Team | 2024 - Present

- 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.
- Presented to ESA in Belgium on project status.
- Developed mission testing, function testing, and acceptance testing procedures.

Embedded Firmware Developer

UBC Orbit Satellite Team | 2023 - Present

- Programmed device drivers, electrical ground support equipment (EGSE).
- Developed the ALEASAT Avionics Test Bench (FlatSat).
- Worked on the ALEASAT onboard computer for launch in Q1 2026.

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

Achievements

- **92% (A+)** average in Engineering at UBC.
- **European Space Agency "Fly Your Satellite 4!"** participant at ESEC-GALAXIA, a program providing launch for a CubeSat team along with test opportunities. Presented to ESA on the ALEASAT project and ran vibration and thermal test campaigns.
- **"Quantum School for Young Students"** participant at the University of Waterloo and Institute for Quantum Computing.

- **B2 French proficiency** (B1 DELF certified).
- **Public speaker** on children's rights and youth engagement, with audiences ranging from 100-1000 people.

Publications

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

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 for exceptional research in the field of physics.

Tom Lawson award for embodying the spirit of Canadian debate | 2023
Awarded for embodying the spirit of Canadian debate.

Alberta Premier's Citizenship Award for outstanding community service | 2023
Awarded for outstanding community service.

Calgary Flames Foundation Community Involvement Scholarship | 2023
Awarded for community involvement.

Julia Turnbull Leadership Award for exceptional community service | 2023
Awarded for exceptional community service.

Ted Rogers Entrance Scholarship for academic achievement | 2023
Awarded for academic achievement.