Skyler Alderson

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Professional Summary

Enthusiastic and detail-oriented recent graduate with a B.Sc. in Physics and Computer Science from the University of British Columbia (GPA 3.90). Adept at developing data analytics tools, physics simulations, and collaborative software systems. Strong background in software development, experimental physics, and teaching. Passionate about astronomy and aerospace, software development, scientific inquiry, and teaching.

Education

University of British Columbia *September 2019 – May 2024* | GPA 3.90

- B.Sc. in Physics and B.Sc. in Computer Science.
- Multiple Dean's List honoree.
- Software Development, Parallel Computing, Data Structures, Database Systems, Web Design.
- Experimental Physics, Statistical Mechanics, Astronomy, Stellar Astrophysics, Solid State.

Research Experience

Undergraduate Academic Assistant

University of British Columbia | Jan 2024 – Apr 2024

- Developed Python scripts for analyzing student-submitted code patterns.
- Led semi-structured interviews; performed thematic analysis of transcripts and surveys.
- Contributed to a research project aimed at improving physics labratory pedagogy.

Advanced Undergraduate Laboratory Work

University of British Columbia | 2022 – 2023

- Created a pair of mutually coupled loop-gap resonators to investigate wireless power transfer efficiency.
- Used a scintillator and statistical analysis to detect and calculate the lifetime of muons.
- Performed work on hyper-sensitive equipment such as a torsion balance to obtian Gravitational constant.
- Investigated Faraday rotation of light through various media within a magnetic field.
- Used Python libraries like SciPy, NumPy, and Matplotlib for analysis and visualisation.

Technical Projects

Capstone Project: SQL/RelAlg Editors & Auto-Grader

University of British Columbia | May 2023 – Aug 2023

- Built interactive SQL and Relational Algebra editors in JavaScript.
- Developed a Python backend for procedurally generating randomised databases and associated questions.
- Created Python scripts to accurately grade student submission for both preset and randomised questions.
- Integrated CI/CD thorugh DroneCI and automated regression testing.
- Group achieved the highest project grade in class.

Select Personal Software Projects

- Built Newtonian and relativistic orbital simulators including a project modeling hypothetical interstellar ion-ramjet spacecraft.
- Created novel algorithm to intelligently select image palettes during downscaling; trained custom neural networks to recognise unique character sets.
- Worked on several miscellaneous simulation-based projects: lower bound on mine density in infinite grid Minesweeper; optimal strategies in classic card games such as Cribbage and four-card Golf.
- Computationally challenging problems such variants of the unsolved Magic Square mathematics problem and finding sets of pangrams with restrictions.
- Several Minesweeper implementations including a quantum variant, procedural skeletal animation framework for Picotron, API to transform 16-bit PICO-8 computer system into a 64-bit system.

Teaching Experience

Teaching Assistant – Experimental and Undergraduate Physics
University of British Columbia | Sep 2022 – Dec 2023

- Led two undergraduate labratory sections in experimental physics.
- Graded assignments, created lecture slides, and guided students in lab technique and analysis for multiple physics courses.

Web & Design Work

Frontend Volunteer – iGEM UBC Okanagan Team
iGEM Competition | Oct 2022

- Designed HTML/CSS frontend for the iGEM wiki.
- Helped team win a Gold Medal at the iGEM 2022 competition.

Leadership & Extracurriculars

Executive Member – UBC Astronomy Club
University of British Columbia | January 2022 – May 2024

- Organised and lead campus stargazing events.
- Performed recruitment and onboarding for new members.
- Maintained and collimated telescopes for club and personal use.

Group Leader – UBC Board Games Club
University of British Columbia | Sep 2019 – Dec 2019

- Organised and led weekly group activities.

Skills

- **Programming Languages:** Python, Rust, Lua, Java, JavaScript, C, bash, zsh.
- **Data Analysis & Tools:** NumPy, SciPy, Matplotlib, Jupyter, Excel, Google Sheets.
- **Web & DevOps:** HTML/CSS, Git, GitHub, Docker, DroneCI.
- **Research Methods:** Experimental labwork, semi-structured interviews, simulations, data fitting.

- **Languages:** English (native), French (DELF B2).