LEVI KEAY

Levi is a **Geospatial Data Scientist** with strong **Python** programming skills and a **Math and Physics** background. While obtaining his BSc. in Physics he explored the capabilities of analytics and computation while working with a broad range of data sources, from the magnetization of superconductors to acoustics audio data. His work experience in a **Remote Sensing research lab** gave him an appreciation for the power of **imagery**, **leveraging large datasets** and **computer vision** to find solutions in forest management and disturbance mapping using **timeseries approaches**. Comfortable and experienced working across environments of **GIS**, Python and other software systems, **Levi is able to script, automate, and optimize new methods of processing and analyzing data** from a range of sources towards a range of applications, and wants to use these skills to help your company efficiently provide value from its data.

SKILLS

Technical/Python libraries

- Geospatial analysis (Gdal, Rasterio, Shapely), ArcGIS Pro/ArcPy
- Computer vision (OpenCV, Scikit)
- Data visualization (Matplotlib, Plotly)
- Computation (Numpy, Multiprocessing, Threading, HDF5)
- Experiment design and hypothesis testing
- Machine Learning working knowledge

Advanced Math and Physics:

- Partial Differential Equations, Vector Calculus
- Computational Physics
- Electromagnetism and Quantum Mechanics
- Advanced Classical Mechanics
- Statistical Mechanics
- Fourier Analysis, Signal Processing

WORK HISTORY

Research Assistant, (CubeSat Imagery Specialist) 09/2020 to 05/2022

Integrated Remote Sensing Studio - UBC Faculty of Forestry, Vancouver, BC

- Levi designed and implemented algorithms using Python to detect forest harvest using CubeSat optical sensor data. He used open source Python libraries for geospatial operations (GDAL, Rasterio, Shapely), timeseries analysis (Numpy, Ruptures), and optimization (Numpy, Multiprocessing and Threading) reducing runtime by 839%.
- He wrote a manuscript describing methods, results and limitations of the algorithm, demonstrating his ability to communicate scientific results and procedures, through technical writing and descriptive figures. Levi is first author on the research paper that is submitted for review.

Fulltime Summer Internship (**Monitoring Forest Change with Satellite Imagery)**, 05/2020 to 09/2020

Integrated Remote Sensing Studio - UBC Faculty of Forestry, Vancouver, BC

- Levi downloaded, processed, and conducted analysis of radiometric calibration of PlanetScope Satellite Imagery for use in colleagues' research
- He automated the image download process from Planet server using the Python API, saving colleagues hours of time
- He wrote and edited funding applications and reports.

Teaching Assistant, 08/2020 to 12/2020

Experimental Physics Laboratory, PHYS 309 - UBC Faculty of Physics and Astronomy

- Levi designed and implemented a Python interface (PyAudio, Numpy, Threading) to audio hardware devices allowing students to conduct at-home experiments measuring Johnson Noise in resistors during covid-necessitated transition to online learning
- He clearly documented the solution and tested it on multiple computer operating systems to ensure full portability and troubleshot all issues prior to product release.

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Alpine Ski Coach, 09/2014 to present, winter seasons.
Grouse Mountain Tyee Ski Club – Vancouver, BC

- Levi directed on snow and dryland training sessions for teams of 30-40 athletes aged 12-13 to improve athletic abilities specific to alpine ski racing.
- He collaborated with other coaches to set and maintain a safe training environment.

PUBLICATIONS

- Keay, L., Mulverhill, C., Coops, N.C., McCartney, G. (2022). *Automated forest harvest detection with a normalized PlanetScope imagery time series.* Manuscript submitted for publication.

EDUCATION

- BSc. in Physics, University of British Columbia : 2022
- Development Level Coaching Certification, Alpine Canada : 2021

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