

Carl Ulberg, Ph.D.

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SKILLS

Languages: Python (pandas, numpy, scikit-learn, matplotlib), Bash, Java, C++, Matlab, Spanish

Tools: Apache Spark (PySpark), RDBMS (MySQL, Antelope), AWS (EC2, S3), Jupyter, vim, git, Dash

PROFESSIONAL EXPERIENCE

Data Engineering Fellow, *Insight Data Science* Sept 2019 - present

- Developed a fast, distributed, **ETL pipeline** to evaluate earthquake location algorithms on a large (~80GB), historical, dataset
- Utilized **Python** scripts and **Apache Spark** to read data stored in an **AWS S3** bucket, process it efficiently, and write summary information to a **MySQL** database
- Created a front-end to display summary information using **Dash**

Research Associate, *University of Washington* Sept 2018 - Aug 2019

- Performed seismic tomography to constrain a >1M-node model using **C++**, **Matlab**, **Bash**
- Collaborated with researchers at the U. of Washington, U. of Arizona, Cornell, and USGS, on interpretation of 3-D crustal models to improve volcanic hazard forecasting
- Lecturer for Earth and Space Science courses ESS 202 and 314 (each with ~50 students)

Graduate Research Assistant, *University of Washington* June 2011 - Aug 2018

- Calculated >700 GB of envelope functions of seismic time series data using **Matlab** and **shell scripting** and archived for public use at the IRIS Data Management Center, ds.iris.edu/ds/products/envelopefunctions/
- Deployed and maintained a 70-instrument seismometer array at Mount St. Helens, WA; Reviewed instrument log files and archived ~1TB of seismic data collected over 2 years using custom **Bash** scripts
- Compiled earthquake wave arrival times with automatic and manual processing using Antelope (seismic **RDBMS**), **Bash** scripts
- Calculated and interpreted 3-D seismic velocity models using **C++**, **Matlab**, **Bash**
- Primary or co-advisor for 4 undergraduate students

PROJECTS

Predicting blight violation compliance with Machine Learning Mar 2019

- Evaluated multiple Machine Learning algorithms to predict compliance with fines using **Python (scikit-learn, pandas)** in **Jupyter** notebooks, achieving a 0.82 ROC-AUC score
- Summarized results at carlulberg.com/ml-blight

EDUCATION

Ph.D. Seismology, *University of Washington* Aug 2018

Thesis: Imaging northern Cascadia wave speed structure and slow slip

B.A. Geology, *Carleton College* June 2007