Peter Whitman

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Summary

I've most recently worked as a researcher at the U.S. Environmental Protection Agency (EPA), where I leveraged high performance and cloud computing resources to develop peer-reviewed scientific approaches for satellite-based water quality monitoring that support federal management decisions. I hold a Master of Science degree in Geography from The University of British Columbia, where I conducted research on topics related to geospatial analysis and remote sensing. My core competencies include research and development, data science, geospatial analysis, statistics, image processing, machine learning, and satellite remote sensing. I have extensive, documented experience with Python, R, JavaScript, MATLAB, and ESRI ArcGIS products.

Professional Experience

U.S. Environmental Protection Agency **Raleigh, NC**

Oak Ridge Institute of Science and Education Post-Master's Research Fellow 09/2019 – 09/2022

- Leveraged high performance and cloud computing resources to develop scientific approaches for satellite-based water quality monitoring that supported federal management decisions.
- Research efforts focused on monitoring harmful algal blooms, oil spills, and submerged aquatic vegetation, and evaluating the future water quality applications of a satellite that will be launched by NASA in 2026 called the Geostationary Littoral Imaging and Monitoring Radiometer (GLIMR).
- Worked independently and as an effective team member to author eight peer-reviewed publications and multiple reports.
- Developed workflows and wrote code in Python, JavaScript, and R to download, process, classify, and analyze terabytes of satellite imagery and geospatial data.
- Worked with Level 1B – 2C multispectral imagery from PlanetScope, RapidEye, WorldView 2/3, Landsat 1-8, Sentinel 2, Sentinel 3, Envisat, and MODIS. Worked with hyperspectral imagery from DESIS, SAR imagery from Sentinel 1, and geostationary imagery from GOES-R.

University of British Columbia **Vancouver, BC**

Graduate Research Assistant 05/2018 – 08/2019

- Used advanced modeling techniques in R to analyze the spatial and aspatial factors associated with the deaths of environmental activists.
- Mined and scrubbed data, reduced dimensionality, and performed areal interpolation in R to prepare independent variables for geospatial analysis of cardiac arrests in British Columbia.
- Coordinated aerial imaging and mapping of the Fraser River in British Columbia and conducted a field campaign to collect *in situ* data. Used image processing techniques in MATLAB and photogrammetric techniques in Agisoft Metashap to ensure the spectral, spatial, and radiometric quality of aerial imagery. Developed machine learning methods for image classification using Python.

Graduate Teaching Assistant 09/2017 – 08/2019

- Worked with 300+ students during two semesters of Geographic Information Science, one semester of Advanced Geographic Information Science, and one semester of Introductory Remote Sensing.
- Helped design labs, graded tests and lab reports, drafted answer keys, held office hours, and led multiple lab sections each week that involved lectures and live demos using Python and ESRI ArcGIS products.
- Received the Geography Department's "Outstanding Teaching Assistant" award in 2019.

Carthage College **Kenosha, WI**

Undergraduate Research Assistant 01/2017 – 05/2017

- Developed a mobile application to collect data during labs and field research at Carthage College.

Undergraduate Teaching Assistant 09/2016 – 05/2017

- Worked with 100+ students during two semesters of Introduction to Geographic Information Science.
- Answered questions during lab sections, graded tests and lab reports, and held weekly office hours.

Student Manager 09/2016 – 05/2017

- Led a team of 15 undergraduate students and provided one-on-one mentorship to increase team performance.
- Used ESRI ArcGIS products for a geospatial analysis of alumni data to plan and optimize engagement.
- Helped increase annual alumni donations by 25% from the previous year.

City of Edina **Edina, MN**

Geographic Information Systems Intern 06/2016 – 08/2016

- Independently planned and performed field inspections of public works assets.
- Used Python to automate hundreds of individualized updates to flood zone maps for homeowners.
- Managed terabytes of geospatial data on the department's shared database enterprise.

Minnesota Department of Natural Resources **Saint Paul, MN**

Invasive Species Program Intern 06/2015 – 09/2015

- Developed a supervised classification using ESRI ArcGIS products to identify suspected buckthorn infestations within aerial imagery of Minnesota state land.
- Independently organized and conducted multiday field campaigns to verify the accuracy of aerial image classification methodologies and support future treatment decisions.
- Inventoried invasive species along forest roads. Worked with foresters on ecological site classifications and stand inventory in multiple Minnesota forestry districts.

City of Saint Paul **Saint Paul, MN**

Urban Forestry Intern 06/2014 – 08/2014

- Independently planned and performed the fieldwork required to manage 3,000+ recently planted trees and located planting sites for new trees using ESRI ArcGIS products.

Education

University of British Columbia **Vancouver, BC**

Master of Science, Geography 08/2019

Carthage College **Kenosha, WI**

Bachelor of Arts, Geoscience, Geographic Information Science, Environmental Science 05/2017

- Geospatial Science Department Distinguished Senior Award
- Environmental Science Department Distinguished Senior Award

Skills

Methods: frequentist and Bayesian statistics, machine learning, digital image processing, spatiotemporal statistics, object-based image analysis, image classification, photogrammetry, atmospheric correction, satellite validation, data visualization, signal processing

Software: ENVI/IDL, ESRI ArcGIS products, Agisoft Metashape, QGIS, GeoDa, FUSION/LDV, Adobe Photoshop, Adobe Illustrator, Microsoft Office Suite, Google Workspace

Programming & Computing: Python, R, MATLAB, JavaScript, Google Earth Engine, SQL, Unix, high performance computing, parallel processing, version control

Packages: *Python* – GDAL/OGR, TensorFlow, OpenCV, NumPy, ArcPy, Matplotlib, netCDF4, Pandas, GeoPandas; *R* – ggplot2, raster, ncdf4, stats, caret, sp, sf, rgdal, spatstat, maxent, boot, glcm

Scientific Instrumentation & Field Work: field & lab spectroscopy, imaging systems, GPS, forest inventory, water sampling, land surveying, plant and wildlife surveys

Communication: peer-reviewed publications, technical reports, research proposals, lectures, presentations, technical demonstrations, stakeholder engagement, mentorship, team collaboration