William Henshaw

henshb@protonmail.com ∗ (484) 975-2270

Aspiring Geospatial Data Scientist

GIS graduate student interested in pursuing a career in geospatial data analysis to solve agricultural, climate change, and sustainable development problems. Skilled in automating geoprocessing workflows in a GIS and/or IDE, identifying relationships between datasets, and communicating these relationships visually and verbally.

EDUCATION

Master of Science, GEOGRAPHIC INFORMATION SCIENCE — **Expected May 2022**
Clark University, Worcester, MA

Doctoral Coursework, ATMOSPHERIC SCIENCES — **August 2019 – January 2021**
University of Washington, Seattle, WA

Bachelor of Science, ENVIRONMENTAL SCIENCE — **May 2018**
Allegheny College, Meadville, PA

CORE COMPETENCIES

- **ArcGIS Desktop, Online, Pro**
- **ArcGIS for Python API**
- **TerrSet**
- **QGIS**
- **Google Earth Engine**
- **Python**
- **R**
- **PostgreSQL, PostGIS**
- **JavaScript APIs (Leaflet, ArcGIS, Google Maps)**
- **Linux / Unix shell**
- **Git / GitHub**
- **Docker**
- Raster and Vector Analysis
- Spatial and Temporal Modeling
- Spatial Statistics
- Supervised & Unsupervised Classification
- Multi-Criteria Decision Making

RELEVANT EXPERIENCE

NASA DEVELOP TEAM MEMBER (29 hrs/wk) ($19.48/hr) — **January 2022 – April 2022**
Langley Research Center, Hampton, VA (remote)

Project Title: *Delaware Basin Health & Air Quality: Measuring Atmospheric Pollutants and Vegetation Trends in the Guadalupe Mountains and Carlsbad Caverns National Parks*

- Oversaw and assisted with GIS data analyses and collection of air quality data over the study region, delegating tasks as needed to ensure equal contribution to the project
- Achieved 100% automation of data collection, utilizing Python APIs to download hundreds of GBs of satellite products, saving weeks of time for my team.
- Performed multidimensional statistical analyses on wind and tropospheric column satellite measurements and correlated these outputs with *in-situ* measurements.
- Lauded by my team as a hard worker and team player who understands the difficult, technical aspects of Python, data download automation, and GIS and makes sure every aspect of a project is understood by every team member before proceeding.

GIS ANALYST (40 hrs/wk) ($20/hr) — **May 2021 – January 2022**
Flow Path AgTech, Newbury Park, CA (remote)

- Automated harvest scheduling and management workflows using ArcGIS for Python API. Achieved 98% automation from a fully manual process.
- Created map products using the ArcGIS Online suite of applications to support the technical and operational management of a grape-growing and marketing company.
- Assisted in the production of a machine learning model that detects harvest readiness of grapes. Contributions led to a seamless transfer of model outputs to an ArcGIS Online hosted feature service that allows for easy comparison between model and human assessments.

LIDAR ASSOCIATE (40 hrs/wk) ($13/hr) — **July 2018 – July 2019**
Michael Baker International, Moon Township, PA

- Digitized engineering features (buildings, curbs, road shoulders, etc.) into a CAD environment for use by the client.
- Performed accuracy assessment of point cloud data by tying together points from multiple sensors; removed underground noise points; created and smoothed bare-earth models using MicroStation.
- Led a data collection group for three sites in Virginia, planned out collection paths, maintained the hardware and software of the LiDAR truck, and performed the collection process. Lauded by supervisor as being responsible for the cleanest data he had ever processed.

ENVIRONMENTAL CLEANUP / BROWNFIELDS INSPECTOR (40 hrs/wk) ($9/hr) **May 2015 – August 2015**

Pennsylvania Department of Environmental Protection, Norristown, PA

* Updated documents and databases for coworkers. Streamlined consulting process by eliminating the need for administrative work for each site.
* Collected water samples at low-flow sources at residential and business sites for trichloroethylene delineation underground, which increased productivity and efficiency at each site.
* Organized the division's legal documents associated with over 30 Superfund sites. Alphabetized each site, removed duplicates, and sorted by date.

INVITED TALKS

Spatiotemporal Analysis of Precipitation in Hawaii Using High-Resolution Gridded Rainfall Data **2022**
American Association of Geographers

PROFESSIONAL DEVELOPMENT

Cartography **March 2022**
Esri

RESEARCH EXPERIENCE

Clark University, Worcester, MA

***High resolution, annual maps of the characteristics of smallholder-dominated croplands at national scales*, Research Project** **Summer 2021**

Compiled and assessed the quality of 3-class labels for the Republic of Congo to produce a raster layer of all smallholder farms in the country.

University of Washington, Seattle, WA

***Climate Dynamics of Extreme Warming Scenarios (Working Title),* Research Paper** **Summer – Fall 2020**

Evaluated outputs from three climate models showing extreme climate sensitivities out to 2300 from the SSP5-85 extension scenario of the newly released CMIP6 ensemble.

Allegheny College, Meadville, PA

GIS Suitability of Agrivoltaic Array Installation to Mitigate Climate Stress on Crops **Fall – Spring 2018**

Used ArcGIS Desktop and TerrSet to create a suitability analysis of optimal farm locations to install agrivoltaics to mitigate increasing heat stress on crops and provide solar energy to the local community.

Identifying Short-eared Owl (Asio flammeus) Roosting Locations in Southwestern Pennsylvania using GIS **Spring 2018**

Compared weighted linear combination, Boolean, and fuzzy GIS approaches to identify potential roosting locations for short-eared owls in Pennsylvania.

Comparison of Unsupervised and Supervised Classification for Urban Sprawl in Beijing, China **Spring 2017**

Used supervised and unsupervised classification in TerrSet to assess urban development changes between 1988 & 2009 to determine urban sprawl resulting from the 2009 Olympics.

Using LiDAR to Locate Nutrient Loading Sources in Lake Wilhelm Watersheds **Spring 2017**

Performed hydrologic modeling in TerrSet from DEMs. Leveraged ArcGIS Desktop to assess agriculture lands within the buffer zone of each river.

Prioritization of Landowners in Pennsylvania for Sustainable Forest Management **Spring 2015**

Performed suitability analysis to find forestland that fit criteria that Foundation for Sustainable Forests (FFSF) specified so that they can effectively inform landowners of sustainable forestry practices.

Multi-Criteria Evaluation for Suitable Honeybee Pockets in Erie, Crawford, and Chautauqua Counties **Fall 2015**

Ranked, weighted, and combined multiple criteria layers using ArcGIS tools to identify the most suitable locations for honeybee "pockets" in Erie, Crawford, and Chautauqua Counties, to minimize the rate of local extinction.

Assessing Factors of Invasive Species Proliferation in an Allegheny Hardwood Stand **Fall 2015**

Created transects randomly throughout an area of tree harvesting and recorded the type and number of occurrences of each invasive species.

PROFESSIONAL AFFILIATIONS

* **ASSOCIATION OF PACIFIC COAST GEOGRAPHERS** **March 2021**
* **AMERICAN ASSOCIATION OF GEOGRAPHERS** **March 2021**
* **PI MU EPSILON, Mathematics Honor Society** **April 2017**
* **PHI GAMMA DELTA, Pi Chapter** **January 2015**