Ethan Shafron

Ethan.Shafron@mso.umt.edu | +1 (216) 212-0235

Education

University of Vermont *May 2019*

Environmental Studies (B.A. *with honors*)

Geospatial Technologies (minor) | German (minor)

Albert-Ludwigs Universität Freiburg *Aug. 2017 – Dec. 2017*

IES Abroad Environmental Studies Program

Research Interests

Remote sensing, coupled natural-human systems, applied spatial ecology, computer vision, free and open-source software, pedagogy for building computational literacy, complex systems science, statistical learning, algorithm development, field ecology, community-based natural resource management, conservation science, ecosystem services modeling and valuation, working with non-tabular data structures

Honors/Awards

Phi Beta Kappa

UVM Honors College Scholar

2018 UVM Environmental Program Summer Research Award ($3,800)

Publications

In Review

Weingarten, E., Martin, R., Hughes, F., Vaughn, N. R., **Shafron, E.**, Asner, G. P., (2020) Early Detection of a Tree Pathogen Using Airborne Remote Sensing. *Ecological Applications*

Published

Asner G. P., Vaughn N. R., Foo S. A., **Shafron, E.**, Heckler J., Martin R. (2021). Abiotic and Human Drivers of Reef Habitat Complexity Throughout the Main Hawaiian Islands. *Frontiers in Marine Science*. https://doi.org/10.3389/fmars.2021.631842

Asner G. P., Vaughn N. R., Grady, B., Foo, S., Anand, H., Carlson, R., **Shafron, E.**, Teague, C., Martin, R. (2021). Regional Reef Fish Survey Design and Scaling Using High-Resolution Mapping and Analysis. *Frontiers in Marine Science*. https://doi.org/10.3389/fmars.2021.683184

Asner, G. P., Vaughn, N. R., Heckler, J., Knapp, D. E., Balzotti, C., **Shafron, E.**, Martin R., Neilson, B., Gove, J. M. (2020). Large-scale mapping of live corals to guide reef conservation. *Proceedings of the National Academy of Sciences*. doi:10.1073/pnas.2017628117

Experience

Field Coordinator/Programmer *May 2021 – Present*

University of Montana Spatial Analysis Lab (Missoula, MT)

- Led successful field work operations in remote regions of Eastern Montana to support invasive plant mapping using Machine Learning and Satellite Imagery
- Spearheaded, developed, and wrote small python library for convenient machine learning and statistical analyses with raster data
- Collaborated with state, federal, and tribal governments on ecological mapping and inference projects
- Conducted geostatistical analyses using novel algorithmic approaches
- Maintained lab git repository and provided computational instruction to other faculty and staff

Geoscientists-in-the-parks Guest Scientist Biology Assistant *Oct. 2020 – April 2021*

Glacier National Park (West Glacier, MT)

- Managed, collected, and organized decades of citizen science data for ongoing Loon and Mountain Goat population monitoring and population trend analyses
- Created SOPs for collecting field data via Survey123 Mobile apps, and automated data extraction and QAQC processes
- Developed SOPs to assist NPS employees in usage of USGS high performance computing resources and Bayesian N-Mixture modeling

Remote Sensing Research Specialist *Oct. 2019 – Aug. 2020*

Arizona State University Center for Global Discovery and Conservation Science (Tempe, AZ)

- Developed algorithms combining machine learning, field ecology, LiDAR, and remote sensing
- Processed and analyzed more than 50 terabytes of data on a supercomputer using Python, R, QGIS, ArcGIS, Bash, and Linux CL, directly supporting marine and terrestrial conservation initiatives
- Actively contributed to lab git repositories, helping to maintain and enhance a large, complex library of scripts written in multiple languages

Geoscientists-in-the-parks Guest Scientist GIS Assistant *May 2019 – Aug. 2019*

Congaree National Park (Hopkins, SC)

- Used ArcGIS and Python to conduct spatially explicit nutrient export/load modeling, cultural mapping
- Engaged with stakeholders in Congaree Biosphere Reserve by leading informational sessions pertaining to conservation, development, education, open data, and computational tools for sustainability
- Nominated by NPS Office of International Affairs as sole US representative to MAB Youth Forum in China

Research Assistant *Oct. 2018 – June 2019*

Gund Institute for the Environment (Burlington, VT)

- Analyzed geo-tagged Twitter data to understand community responses to extreme weather events in Detroit
- Extensively utilized Python, R, & ArcGIS for computational language processing, statistical analysis, & cartography to support mixed-methods research

Teaching Experience

University of Vermont

Teaching Assistant, *International Environmental Studies* *Spring 2018*

Additional Trainings

AIARE Avalanche Safety/Rescue Training 1

Skills

Geospatial analysis: ArcGIS Pro 2.x, ArcMap 10.x, ArcGIS Online, QGIS, GDAL, ERDAS Imagine, ENVI, QT Modeler

Programming: Python (gdal, sklearn, numpy, matplotlib, pandas, arcpy, scipy, etc.), R (tidyverse, sf, Raster, etc.), Bash

Analytical & technical: Linux command line and utilities, Git, Vim, creating FGDC-compliant metadata, MaxEnt habitat modeling, hyper/multispectral imagery preprocessing, inferential and predictive applications of machine learning, Slurm, interactive mapping, ESRI Survey123, ESRI Field Maps/Collector, web mapping with ArcGIS and/or R, probability theory, information theory, linear algebra, dichotomous keys, radiative transfer models

Second languages: German (effective operational proficiency)

Miscellaneous

Through-hiker of the Colorado Trail (485 miles, completed Fall 2020)

Avid musician (drums, guitar)

Over 14 years of backcountry travel experience in varied climates for up to 6 weeks at a time

Grass/Forb/Shrub Identification