JOHN DILGER

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github.com/jdilger

Education

University of San Francisco - 2016
B.S., Environmental Science

Geospatial Technology Certification (2016)

Google Cloud Associate Engineer Certification (2022)

Areas of Experience

- Geospatial analysis
- Remote sensing
- Artificial intelligence and computer vision
- Machine learning
- Cloud-based remote sensing and modelling
- Image processing

Technical Skills

GIS:

- Google Earth Engine
- GDAL/OGR
- GIS (ESRI/ Q)
- SNAP (SAR)
- LiDAR

Programming and statistical languages:

- Python
- SQL
- JavaScript
- R

Other:

- Git
- Docker
- Metaflow
- Windows
- Linux

Locations of Experience

- United States
- South America - Ecuador, Colombia, Peru
- Southeast Asia - Laos, Myanmar, Malaysia, Cambodia
- Southern Africa

Professional Experience

Sr. Data Scientist & Software Engineer

Astraea, Remote (Austin, TX) *2022 - 2024*

- Developed production analytics for road segmentation, forest loss, construction monitoring, and substation identification. Tech: Python, PyTorch, GDAL, Docker, Metaflow
- Built 20+ pipelines for ML batch prediction, ETL, and model training. Tech: Metaflow, Argo, Docker, Python
- Designed and co-created an image-processing package to allow easy extendability to new imagery sources and apply spectral indices. Tech: Python, Rasterio, Numexpr
- Improved query time for utility-owned property analytic. Reduced query time from ~25 minutes to ~2 seconds for parcel table spanning 155MM records. Tech: Postgresql/PostGIS

Geospatial Data Scientist

Spatial Informatics Group LLC, Remote (SF, CA) *2018 - 2022*

- Created insights and automated workflows for forest carbon monitoring, restoration planning, and forest monitoring reporting and validation. Tech: Google Earth Engine, Python, GIS, SQL
- Researched and developed geospatial applications using computer vision for areas of crop mapping, invasive species detection, and illegal gold mining. Tech: Tensorflow, Google Earth Engine, Python, Google Cloud Platform
- Created ETL pipelines for batch data ingestion/export from Google Earth Engine. Tech: Python, Google Storage, Google Earth Engine
- Manage IAM and resources for the Environmental Mapping team. Tech: Google Cloud Platform

Geoinformatic Fellowship

NASA DEVELOP National Program - SSAI, Ames Research Center, CA *2017 - 2018*

- Served as point of contact for GIS(ArcMap, ENVI, QGIS), remote sensing, and scripting (Python, JavaScript) needs for ~50 NASA DEVELOP project teams as part of a 3-person team.
- Directly collaborated with Ames Research Center DEVELOP project teams processing multispectral remotely sensed imagery (Landsat, RapidEye, Sentinel-2) and supporting geospatial analysis.
- Managed software release process of 5 project teams.
- Managed NASA DEVELOP Google Earth Engine repository and GitHub.

Earth Science Contractor

NASA DEVELOP National Program - SSAI, Ames Research Center, CA *2017*

LiDAR and Geospatial Analyst Volunteer

University of San Francisco Geospatial Analysis Lab, SF, CA *2016 - 2017*

Selected Projects

Se.plan Forest Restoration Potential App: Application for planning forest restoration activities based upon user constraints, restoration goals, and cost for low and middle-income countries. Developed core code for analysis and dashboard using Google Earth Engine Python API. Assisted in front-end development using Jupyter notebooks, Voila, and Ipyvueify. The application is hosted on the U.N. Food and Agriculture SEPAL platform. GitHub Docs

Post Fire Vegetation Monitoring Plumas County, USA: This system provides land managers systematic updates for areas burned by wildfire, including changes in vegetation cover on a yearly cadence from 1984 onward. Wrote image preprocessing and analysis using Google Earth Engine Python API. Maintained and updated front-end Django website over 2 years. GitHub Website

Spooky maps (personal project): Web map for viewing ghost sightings. My goal with this project was to gain hands-on experience with web GIS frameworks and to make a fun map by using underutilized visualization customizations such as cute ghost markers as icons and a spooky gray, purple and green color schema for the vector base map tiles. Built using Flask, Bootstrap, SQLAlchemey, Google Maps API, Postgres, and PostGIS. GitHub Website

Affiliations

SERVIR Tensorflow working group, 2019 - Present

NASA DEVELOP Software Carpentry Instructor, 2019 - Present

Scientific Publications

Aryal, R.R., Wespestad, C., Kennedy, R., Dilger, J., Dyson, K., Bullock, E., Khanal, N., Kono, M., Poortinga, A., Saah, D. and Tenneson, K., 2021. Lessons Learned While Implementing a Time-Series Approach to Forest Canopy Disturbance Detection in Nepal. *Remote Sensing*, *13*(14), p.2666.

Poortinga, A., Thwal, N.S., Khanal, N., Mayer, T., Bhandari, B., Markert, K., Nicolau, A.P., Dilger, J., Tenneson, K., Clinton, N. and Saah, D., 2021. Mapping sugarcane in Thailand using transfer learning, a lightweight convolutional neural network, NICFI high resolution satellite imagery and Google Earth Engine. *ISPRS Open Journal of Photogrammetry and Remote Sensing*, *1*, p.100003.

Tenneson, K., Patterson, M.S., Jadin, J., Rosenstock, T., Mulia, R., Kim, J., Quyen, N., Poortinga, A., Nguyen, M.P., Bogle, S. and Dilger, J., 2015. D. Saah. 2021. Commodity-Driven Forest Loss: A Study of Southeast Asia. Washington DC. 196pp.

Saah, David & Johnson, Gary & Ashmall, Billy & Tondapu, Githika & Tenneson, Karis & Patterson, Matthew & Poortinga, Ate & Markert, Kel & Hanh, Nguyen & San Aung, Khun & Schlichting, Lena & Matin, Mir & Uddin, Kabir & Aryal, Raja Ram & Dilger, John & Ellenburg, Walter & Flores, Africa & Wiell, Daniel & Lindquist, Erik & Chishtie, Farrukh. (2019). Collect Earth: An online tool for systematic reference data collection in land cover and use applications. Environmental Modelling and Software. 118. 10.1016/j.envsoft.2019.05.004.

Self Learning

Course: Data Structures & Algorithms in Python, Udacity, 10/2021

Course: Building Data-Driven Web Apps with Flask and SQLAlchemy, Talk Python Training, 2021

Course: Grow with Google Challenge Scholarship: Front-End Web Dev, Udacity, 2018

Course: Echoes in space (SAR), EO College, 2017