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Nathan Layman, PhD

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Senior Research Scientist with 5+ years of experience in statistical modeling, machine learning, and data science. Expertise in developing forecasting models, spatial modeling, automating data pipelines, and creating data visualizations to support decision-making. Skilled in Python, R, and SQL with a strong ability to communicate complex findings to stakeholders.

Skills: Python, R, SQL, Tableau, Power BI, Shiny, Machine Learning, Statistical Analysis, Hypothesis Testing, Experimental Design, Bayesian Modeling, Data Visualization, AWS, Docker, Ansible, Linux, Targets, Git

Experience

EcoHealth Alliance, Senior Data Scientist — Nov 2021 – Current

Machine Learning & Statistical Modeling
- Developed hybrid Bayesian machine-learning/mechanistic models for epidemiological forecasting
- Built boosted regression tree pipelines for disease occurrence analysis (e.g., Rift Valley Fever)
- Engineered spatiotemporal cross-validation techniques to address dataset complexity
- Authored dynamic reports to communicate insights to stakeholders (e.g., South Africa Agriculture Research Council, DTRA, World Organisation of Animal Health)

Data Pipeline Development & Automation
- Created generative AI/LLM pipeline extracting 4,000+ outbreak events from 100k+ articles (95% accuracy, 10x cost savings)
- Applied statistical methods to evaluate pipeline sensitivity to false positive/negative rates
- Maintained reproducible workflows for literature search, data cleaning, and analysis

Full-Stack Software Development
- Designed and maintained versioned SQL database for outbreak data (location, pathogen, socio-economic/environmental factors)
- Built Shiny-based web app (R/Python) for interactive epidemiological forecasting and visualization
- Automated Git-based workflows and containerized app rollouts (Docker/Compose)

Infrastructure Automation & DevOps
- Provisioned AWS EC2 instances and deployed containers using Ansible playbooks
- Automated CloudWatch monitoring, backups, and disaster recovery processes

University of Idaho, Postdoctoral Research Scientist — Aug 2018 – Oct 2021

Machine Learning & Computer Vision
- Developed neural network pipeline for segmenting aerial imagery to predict zoonotic disease reservoirs
- Linked segmented images to environmental features & reservoir data using boosted regression trees

Statistical & Spatial Modeling
- Created individual-based spatial model to map Lassa fever virus genetic diversity
- Bayesian estimation of Lassa virus epidemiological parameters
- Developed Maximum Likelihood-based web application to estimate the strength of mutation and selection acting against antigenic inserts

Education

Washington State University — Pullman, WA
PhD in Biology (GPA: 4.0/4.0) — *Aug 2012 – May 2018*

University of Washington — Seattle, WA
B.S. in Biology & B.A. in Environmental Studies — *Aug 2001 – Mar 2011*