Ava Hoffman

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Skills

Languages

Python
SciKit-learn · SciPy · NumPy · Statsmodels
Pandas · Gensim · Seaborn · Matplotlib
Bokeh · Jupyter Notebook

Shell / command line
Git · SLURM · software compilation · server & local machines

R
RStan · lavaan · leaps · segmented
dplyr · reshape2 · sva · bayesplot · ggplot2
ggtree · ggrepel · gridExtra · semPlot
RStudio · RMarkdown
bioinformatics: extensive, see GitHub

Databases

PostgreSQL
Python interface · SQLAlchemy · psycopg2
Amazon Web Services interface

Techniques

Prediction - Linear/nonlinear regression
hierarchical models · mixture models
repeated measures · time series analysis
structural equation modeling · design matrices · validation & predictive check
linear discriminant analysis · hypothesis testing
tools: Rstan · JAGS · SAS

Clustering - feature reduction
principal components analysis
unsupervised learning

Typesetting

LaTeX - manuscript & report generation
Markdown - report generation

Other

HTML / CSS - (some exposure)
Arduino - (some exposure)

Education

2018 **PhD** · **Ecology** — Colorado State University, USA

2012 **BS** · **Biology** — University of Virginia, USA

Experience

2018 **Insight Data Science Fellow** — Remote Program
Project: National Perks

- Launched to improve visitor experience in crowded National Parks
- Leveraged large National Park Service and NOAA datasets to forecast optimal time to visit parks using time series (FB Prophet and ARIMA models)
- Weighted user preferences for crowd level, plus minimum & maximum temperature with euclidean distance to personalize visitor experience
- Built a customized web app using Git, Python, Flask, Heroku, PostgreSQL, & Amazon Web Services providing visitors with an actionable recommendation for optimal visit time and access to further resources

2017 - 2018 **NIFA Predoctoral Fellow** — US Dept of Agriculture
Project: Blue Grama Diversity

- Designed to inform natural area stakeholders about genetic diversity in a foundational prairie grass, blue grama
- Pioneered genomic feature detection (sequencing) of a key grass species, discovering >9,000 genomic features to cluster populations & guide conservation from 15GB of data
- Modeled hierarchical linkages between genomics, populations, & plant appearance using R and RStan
- Communicated genetic clusters in ggplot data visualizations
- Facilitated 6-member team collaboration for a large-scale project

2013 - 2017 **PhD Researcher** — Colorado State University

- Discovered diversity within key prairie grasses in response to drought to guide management of grassland resources
- Optimized analytics pipeline for genes & contrasted fluctuation of >100,000 genes under different conditions using bash scripts
- Quantified predictive relationships among plant, traits, & ecosystem by implementing trait feature reduction, Bayesian hierarchical models, path analysis, module clustering, literature data mining, linear regression, & meta-analysis in R

Honors

2018 **Research Mentoring for Inclusivity & Advancement in STEM Fellow** — Colorado State University
25% acceptance rate

2017 - 2018 **Sustainability Leadership Fellow** — Colorado State University
<10% acceptance rate

2016 - 2017 **Vice President for Research Fellow** — Colorado State University
<10% acceptance rate