ELLIOT HILL

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EXPERIENCE

NASA summer internship

- Wrote a program to generate a computer vision dataset and trained deep learning models to detect biological structures in images to aid in the discovery of nature-inspired solutions to aerospace challenges

Tulane Mathematical Modeling and Analysis Lab

- *Masters thesis*: discovered best practices for reducing the computational cost of training machine learning algorithms and statistical models by up to 18% without sacrificing prediction accuracy
- Designed a novel regression regularization method that improved model prediction test error by over 5% on pathological data compared to ridge and lasso regression models
- Developed an optimization scheme that lowered the prediction error of logistic regression models on class-imbalanced data by up to 9% compared to standard stochastic gradient descent

Selected data science projects (click to view full list)

- Built an end-to-end machine learning pipeline that ingests text data from the streaming service Twitch and stores it in a relational database before training natural language processing models
- *Capstone project*: developed hierarchical Bayesian models for spatial multiple systems estimation
- Processed and analyzed protein sequence data to discover taxonomic variation in protein composition
- Fit linear mixed models to analyze the effect of global environmental change on biodiversity
- Cleaned, visualized, and analyzed police report data to determine spatial and temporal trends in arrests

Research experience

- *Honors thesis*: investigated behavioral data using social network analysis to predict competitive outcomes
- Derived and tested finite difference and interpolation schemes for solving moving boundary value problems
- Assisted in processing of geospatial data for a geolocator study on seasonal migration

SKILLS

Machine learning, applied statistics, NLP, data wrangling, feature engineering, data visualization, scientific computing, statistical modeling, network analysis, relational databases, technical writing, presenting

Languages: Python, R, MATLAB, C++, SQL
Data science libraries: NumPy, pandas, PyTorch, scikit-learn, Matplotlib, tidyverse
Tools: PostgreSQL, Git, GitHub, Docker, Jupyter notebooks, R Markdown, LaTeX, Microsoft Office

EDUCATION

Tulane University

M.S. Computational Science GPA: **4.0** (Aug 2019 - May 2020)

B.S. Ecology & Evolutionary Biology GPA: **3.845** (Aug 2014 - May 2018)

Relevant coursework

Machine learning, statistical learning, high-performance computing, data visualization, scientific computing (I, II, III), data structures, statistics, programming (I, II), math models, biostatistics, applied mathematics

Awards

Leaders in Service Award, The Gerald E. Gunning Memorial Award, Honors in EBIO, Deans List 2014-2018