ELLIOT HILL

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EXPERIENCE

National Aeronautics and Space Administration (NASA) Internship

- Generated 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**: Experimentally tested optimization algorithms for statistical and machine learning methods and discovered best practices for balancing algorithm efficiency and accuracy
- Designed a novel regularization method to improve model prediction on pathological data
- Developed an optimization scheme that improved the test error of classifiers on class-imbalanced problems

Data science projects

- **Honors thesis**: Analyzed behavioral data using social network analysis to predict competitive outcomes
- **Capstone project**: Built hierarchical Bayesian models for spatial multiple systems estimation
- Processed and analyzed protein sequence data to discover taxonomic variation in protein composition
- Developed linear mixed models to analyze the effect of global environmental change on biodiversity
- Implemented PCA for dimensionality reduction, image compression, and PCA regression
- Processed, visualized, and analyzed data on police reports to determine spatial trends in arrests
- Derived and tested finite difference and interpolation schemes for solving moving boundary value problems
- Created an interactive dashboard visualization for real-time optimization benchmarking
- Simulated an influenza epidemic using ODEs and discovered strategies for preventing outbreaks

SKILLS

Machine learning, applied statistics, data wrangling, data visualization, scientific computing, statistical modeling, numerical optimization, network analysis, applied mathematics, technical writing, presenting

Languages: Python, R, MATLAB, C++, SQL

Data science libraries: tidyverse, NumPy, pandas, PyTorch, scikit learn, Matplotlib

Tools: Git, GitHub, Jupyter, R Markdown, LaTeX, Microsoft Office

EDUCATION

Tulane University

M.S. Computational Science GPA: **4.0** (Aug 2018 - May 2020)

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

Relevant coursework

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

Awards

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