Michael Stafford

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https://mraystaf.github.io/PersonalWebsite/

Education

BS, Applied & Computational Mathematics (ACME)
Second Major: BS, Economics **December 2024**
Brigham Young University *Provo, Utah*

- ACME Emphasis: Economics and Financial Markets
- GPA: 3.97
- Relevant Coursework:

Linear and Nonlinear Analysis	Computer Science	Multivariable Calculus
Computation and Optimization	Mathematical Programming	Price Theory
Econometrics	Financial Markets	

Experience

Research Assistant – BYU Record Linking Lab **September 2024 – Present**
Computer Vision Team *Provo, UT*

- Implemented and maintained object detection models to programmatically interpret census records.
- Explored key point detection models to detect census record gridlines using python's mmpose library.
- Built a customized loss function to incentivize key point collinearity.

Software Engineer **May 2023 – September 2024**
Select Bankcard *Lehi, UT*

- Created a monitoring system that uses SQL stored procedures to examine internal services.
- Developed a file compression system to compress over 2 million files.
- Managed an internal application and its associated API, using C#, Angular, and SQL.

Skills

- Proficient in C#, SQL, C++, and python (numpy, pandas, statsmodels, pytorch, and sklearn libraries).
- Basic knowledge of Stata, Angular, and HTML.
- Mathematics Skills:

Importance and rejection sampling	PageRank algorithm	Thompson sampling
Machine learning/neural networks	Hidden Markov models	State-space models
Kalman filter	ARIMA models	Mathematical statistics
Bayesian modeling	Sampling (MCMC)	Modeling with differential equations
Dynamical systems	Optimal Control	Numerical methods for differential equations
Numerical optimization	Dynamic optimization	Fourier analysis & Wavelets
Numerical linear algebra	Gaussian quadrature	QR and singular value decompositions

Relevant Projects

Battle of the Quants – 2nd Place Finish

- Collaborated with a team to build a quantitative trading strategy based on past stock data in python (pandas library).
- Used the Fama and French 5 factor model, OLS, and a binning strategy to generate monthly portfolios.

Time Series Analysis: United States GDP

- Used the Kalman Filter, an ARIMA model, and structural models to filter GDP data in the United States..
- Predicted future GDP trends using past data.