Michael Stafford

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Education

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

- ACME Emphasis: Economics and Financial Markets
- GPA: 3.97
- Full tuition academic scholarship
- Relevant Coursework:

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

Experience

Software Engineer **May 2023 – Present**
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.

Assistant Commercial Appraiser **April 2022 – August 2022**
Analytix Appraisal Group *Eagle, ID*

- Applied the sales comparison, income, and cost approaches to valuate properties
- Drafted appraisal reports for clients on opinions of value for each subject property

Skills

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

Numerical optimization	Dynamic optimization	Fourier analysis & Wavelets
Numerical linear algebra	Gaussian quadrature	QR and singular value decompositions
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	Control theory	Numerical methods for differential equations
Optimal control		

Relevant Projects

Optimal Control: Pollution Tax Rates

- Used optimal control principles (Pontragyin's Maximum Principle and numerical solvers) to determine optimal tax rates for polluting companies.
- Used python (scipy library) to code up solutions and different variations of the optimal control problem.

Time Series Analysis: United States GDP

- Used the Kalman Filter, an ARIMA model, and structural models to filter and predict GDP trends in the United States.
- Coauthored a paper and presented our results