JOE SAIA

Data Scientist with Economics PhD

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Summary

Data Scientist transitioning from Economics PhD whose research combines machine learning and statistical theory to uniquely analyze empirical problems. Looking to apply my research history of posing questions, translating them to data exploration, hypothesis testing, and communicating conclusions in order to deliver actionable insights in new business settings

Projects

Rational Inflation Forecasting

- Coded a hidden Markov model with Bayesian Markov chain Monte Carlo in Julia to produce historical monthly probabilistic forecasts of U.S. inflation from 1980-2019
- Compared model forecasts to forecasts from behavioral models

The Role of Monetary Policy in Shaping Business Investment Decisions

- Implemented a variational recurrent neural net autoencoder to construct estimates for missing values in the Compustat panel dataset using PySpark and Flux.jl
- Scraped economic release dates and times from the BLS website with the BeautifulSoup, Requests and Pandas Python libraries
- Assembled data pipeline for financial trade data. Used Python to access the CME data API and PostgreSQL to warehouse and optimize database with 3 billion observations
- Estimated structural factors with asymptotic PCA using NumPy to decompose asset price returns into the direct and indirect monetary shocks of Federal Reserve announcements
- Used casual regression analysis to estimate the role of borrowing constraints in firm responses to monetary policy, showing they are unimportant for large firms

Employment

Head Teaching Assistant • Columbia University Economics Department • 2019 – 2020

- Managed 2 undergraduate and 2 graduate teaching assistants
- Responsible for addressing student concerns and course transition to remote learning

Teaching Assistant • Columbia University Economics Department • 2017 – 2019

- Taught modern macroeconomic theory at the undergraduate and masters level

Senior Research Assistant • Federal Reserve Board of Governors • 2014 – 2016

- Rewrote and modernized primary internal plotting library in R from S-PLUS
- Automated dashboard updates and data processing using Perl, Bash, and SAS
- Designed and produced graphics for two policy briefings for the Federal Open Market Committee using R

Education

PhD Economics • Columbia University • 2016 – Present

MSc Economics • University College London • 2013 – 2014

BS Physics & Economics • Rensselaer Polytechnic Institute• 2009 – 2013

Technical Skills

- Python
- Julia
- Forecasting
- SQL
- Git
- SAS
- R
- Docker
- Stata
- Time Series Analysis
- Statistical Modeling
- Data Visualization