Joe Buckley

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Education

University of Rochester — Rochester, NY
M.S. Data Science — *May 2019*
B.S. Mathematics & B.A. Economics — *May 2018*

- Research projects:
  - *Forecasting school district enrollment using Monte Carlo sampling:* used R to draw samples from 20 years of historical data from three New Jersey school districts to project 5 years of K-12 enrollment in each district
  - *Identifying prescribing patterns in England based on government data:* processed over 250 million rows of publicly available prescription records from the UK government and reshaped data to analyze by type of medication prescribed at the practice level; used dimensionality reduction (t-SNE) to reveal latent patterns
- Selected Coursework: Algorithms, Database Systems, Computer Organization, Data Mining, AI, Machine Learning, Behavioral Economics, Financial Math, Econometrics, Probability, Computational Statistics, Linear Algebra

Programming Skills

- Extremely proficient in **Python** (NumPy, pandas, scikit-learn), expert in **R** (base and tidyverse). Deep understanding of the mathematics and algorithms underlying the machine learning tools in both languages.
- Fundamental knowledge of **SQL** & relational databases: querying data, managing ETL process, creating schema
- Comfortable on the command line: Linux and bash, ssh, Git, etc.
- Familiarity with web design: Flask framework in Python, Shiny package in R, plotly for interactive data visualization; limited exposure to JavaScript, PHP, Java, HTML, CSS
- Ability to generate publication-quality figures, plots, mathematical equations and explanations using LaTeX, RMarkdown, and other document presentation tools; fluent in Excel/MS Office

Work Experience

Brigham & Women's Hospital — Boston, MA
Bioinformatician - Kristal Lab — *July 2019 - Present*

- Analyzed metabolomics data, with a focus on lipids, to discover biomarkers indicative of subjects' circadian rhythm, i.e. where they are in their sleep cycle, by modeling cyclic variation in time series data
- Focused on quality control and standardization by developing an algorithm to remove errors and compare concentrations of lipid molecules from samples across different studies and populations

University of Rochester Medical Center — Rochester, NY
Associate Programmer — *June 2018 - May 2019*

- Managed ETL process for multiple high-throughput biomedical studies: wrote R scripts to extract legacy data, cleaned and transformed data, then uploaded data into medical center relational database
- Met with principal investigators, lab personnel, and statisticians involved in research studies to understand volume, frequency, and format of data to be collected in order to write SQL queries to ensure data quality control

Little Harbor Advisors, LLC — Marblehead, MA
Associate Analyst — *July - August 2017, June - August 2018*

- Excelled in analytic and marketing settings for a long/short hedge fund during their launch of a quantitative, beta management ETF that uses machine learning to modulate market exposure based on daily prices of the S&P 500
- Built efficiency frontiers to analyze the effect of introducing the ETF into new clients' portfolios; created and presented a unique graphical animation connecting the statistical inputs used by the ETF to various market states
- Resumed working for the firm remotely the following summer, analyzing the ongoing performance of the ETF

University of Rochester, Math Department — Rochester, NY
Teaching Assistant — *September 2015 - May 2018*

- Held office hours and led 8 weekly workshops, each approximately 15 students, over the course of 6 semesters for 4 different calculus courses; received an aggregate rating of A+ (9.76/10) in most recent student evaluations
- Strengthened communication of technical material to individuals with differing levels of conceptual understanding