Elijah Z. Bernstein-Cooper

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Education

Masters in Astrophysics, 3.5 GPA — Dec. 2015
University of Wisconsin – Madison

B.A. Physics with an Astronomy Emphasis, 3.5 GPA — May 2013
Macalester College

Technical Skills

Languages: > 10,000 lines: Python
> 1,000 lines: Matlab
Working knowledge: Java, HTML, CSS, R

Software: Git (https://github.com/ezbc), Markdown, Jekyll, Sphinx, UNIX, Debian/Ubuntu, OSX, Travis-CI, Latex

Techniques: Data visualization, uncertainty analysis, predictive modeling, pattern recognition, multi-processing, machine learning, frontend web development, unit + integrated testing

Projects

Structure Identification of Gas Around Stars — Aug. 2013 — present

- Identified complex gas structure around stars by employing Fourier image decomposition in multi-dimensional parameter space.
- Quantified uncertainty of gas content by applying Bayesian methods such as Monte Carlo Markov Chains and Maximum Likelihood Estimation.
- Published Python module to regrid large non-standard data into accessible format for astrophysicists.

Data Visualization with Hospital Readmission — Jan. 2016 — present

- Developing online tool for patients to compare US hospital readmission rates.
- Interfacing PostgreSQL database with Phoneix Framework/Elixir web application.

Air B&B User Destination Prediction — Jan. 2015

- Predicted Air-B&B-user destinations in Kaggle competition with 70% accuracy.
- Applied and cross-validated neural-network regression on categorical and numerical data.

Contributed to Open-Source Astro Library — Dec. 2015

- Bolstered bootstrapping capabilities of statistical Python package "astropy" for more sophisticated uncertainty analysis.

Relevant Courses

- Pattern Recognition
- Object-Oriented Programming
- Applied Categorical Data Analysis
- Estimating Functions of Data
- Intro to Scientific Programming
- Statistics for Astronomers
- Linear Algebra