Gillen Brown

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Recent astrophysics Ph.D. graduate with strong programming, data analysis, and communication skills looking to apply these skills in the field of data science. Proficient in Python and capable of extracting compelling conclusions from messy data. Comprehensive formal training in mathematics, statistics, and data analysis.

Education

University of Michigan   Ann Arbor, MI
  Ph.D. Astronomy and Astrophysics   April 2022
  GPA: 4.0/4.0

University of Missouri-Kansas City   Kansas City, MO
  B.S. Physics with emphasis in Astronomy   May 2016
  Minors in Mathematics and Computer Science
  GPA: 4.0/4.0 (Summa Cum Laude)
  Relevant Coursework: Calculus (I, II, III), Linear Algebra, Mathematical Statistics, Introduction to Statistical Learning, Machine Learning for Data Scientists

Experience

Graduate Student Research Assistant   September 2016 — April 2022
University of Michigan, Ann Arbor, MI

- Performed astrophysics research by obtaining relevant datasets and doing rigorous quantitative analysis (key projects described below), resulting in four peer-reviewed scientific publications
- Used Python to analyze astrophysical data of several kinds, including tables, images, and volumetric data
- Presented work at local seminars, scientific conferences, and to the public (audiences from 5 to 100+ people)

Skills

Technical Skills: Python (including Matplotlib, Jupyter, pandas, etc.), SQL, C/C++, Unix, git, Tableau
Data Analysis: Statistics and probability, linear regression, Bayesian modeling, data visualization
Soft Skills: Technical writing, public speaking, critical thinking, problem solving

Selected Projects

Radii of Star Clusters
github.com/gillenbrown/LEGUS-sizes

- Used a Bayesian model to measure the radii of star clusters seen in Hubble Space Telescope images
- Successfully measured the radii of over 6,000 star clusters, more than all previous studies combined
- Performed some exploratory analysis of these radii with the goal of understanding how star clusters form and evolve, finding that more massive clusters form with larger radii and expand slightly with time
- Presented results and made the data publicly available in a peer-reviewed publication, which has been cited by 23 other scientific publications in less than two years

Analyzing Star Clusters in Numerical Simulations of Galaxy Formation

- Ran numerical hydrodynamical simulations of galaxy formation, producing a 60TB dataset of volumetric data
- Developed an automated Python pipeline to process this data and extract relevant galaxy properties
- Analyzed this dataset to understand how star clusters form as galaxies grow, resulting in two peer-reviewed publications

2020 Michigan Institute of Data Science: Basketball Data Madness Challenge

- One of the winners of this team competition to extract insights from basketball player activity data
- Analyzed relationships between player workload during games and game dynamics, finding several relationships that can inform how coaches gameplan and manage player workloads in practices

Astronomy Citation Manager Application
github.com/gillenbrown/library

- Developed an application that allows users to manage the astronomy papers that they want to read and cite
- Uses Python, Qt for the GUI, and SQLite for the local database