Annastasia Haynie | PhD Candidate, Physics

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Trained research scientist in theoretical astrophysics transitioning into the field of data science to help solve our world's most pressing problems.

Relevant Skills

Python (NumPy, Pandas, SciPy, Scikit Learn, Matplotlib, Seaborn, Jupyter) | C/C++ | Data Analysis
Data Visualization | Mathematics | Statistics | GitHub | SQL | Scientific and Technical Writing | Mentoring
Communication & Public Speaking | Scientific Collaboration | Microsoft Office | Independent Learning

Education

PhD, Physics
University of Southern California
08/2018 – 05/2024 (expected)

BS, Physics
University of South Carolina
08/2014 – 05/2018

Work Experience

Graduate Student Researcher, *Carnegie Fellow*

University of Southern California & Carnegie Theoretical Astrophysics Center
05/2019 – Present Los Angeles, CA

- Utilize Bayesian analysis to build an improved analytic model with comparable accuracy to more sophisticated numerical models and can be easily applied to large datasets to prepare for the ~4 order of magnitude expected increase in data collection in the next 3 – 5 years as new telescopes come online.
- Developed physical models to analyze large datasets and constrain properties of more than 75 supernovae.
- Engineered new algorithms for existing code to expand simulation capabilities and increase accuracy by up to 33%.
- Authored 2 peer-reviewed papers published in The Astrophysical Journal, with a third manuscript as primary researcher in progress. Co-authored 3 peer-reviewed papers, one published, two recently submitted.
- Presented research at 9 academic conferences both domestically and internationally.
- Recognized with the Women in Science and Engineering Graduate Merit Award for outstanding research in May 2022.
- Taught the Data Visualization workshop for the Carnegie undergraduate internship program for 3 summers.

Graduate Teaching Assistant

University of Southern California
08/2018 – 12/2019 Los Angeles, CA

- Instructed ~75 undergraduate students per semester in two astronomy lab courses.
- Guided students through 7 individual laboratory experiments per semester as well as one semester long project.
- Conducted over 50 hours of personalized tutoring for students outside of class in math, physics, and astronomy.
- Created extra credit assignments to increase student engagement that garnered ~80% participation each semester.

Personal Projects

IBM Data Science Professional Certificate, *in progress*

- Improving key skills for data science through hands-on projects extracting and visualizing stock data, developing and evaluating predictive models for used car pricing, and determining the cost of launch for the SpaceX Falcon 9 rocket.
- Highlighted skills and tools include data mining, cleaning, analysis, & visualization, machine learning, Python and R programming, SQL querying, accessing databases with APIs.

IBM Data Engineering Professional Certificate, *in progress*

- Developing a working knowledge of essential skills and tools for data engineering using real-world data to measure weather forecasting accuracy, predicting e-commerce sales forecasts, writing script to automatically backup files, and more.
- Projects involve skills and tools including relational database management, Apache Spark, Bash, Airflow, & Kafka for implementing ETL and data pipelines, Hadoop, NoSQL, populating and deploying Data Warehouses, and BI reports.