

Rebecca Minsley

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Summary

As a PhD candidate in astrophysics, I am eager to apply my analytical skills and experience in a professional environment. My academic research has provided me with extensive expertise in using programming languages such as Python and R to analyze large datasets and identify statistical trends and anomalies. I also possess significant experience in parameterizing critical features of these datasets to model the behavior of specific phenomena. With a solid foundation in working with diverse data pipelines and databases, I am confident in my ability to tackle complex problems in any industry. Moreover, my active involvement in academic conferences and collaborations has equipped me with exceptional communication and teamwork skills. My experiences in presenting and discussing research findings with a diverse range of audiences have strengthened my ability to deliver clear and effective presentations, actively listen to others, and adapt to different communication styles. I firmly believe that the skills I have acquired in astrophysics are transferrable to various industries, and I am excited to explore new opportunities where I can leverage my skills to contribute to innovative solutions.

Education

University of Arizona

PHD ASTRONOMY AND ASTROPHYSICS

Tucson, AZ

Expected 2027

- **Relevant Coursework:** Statistical Methods

Bates College

BA PHYSICS, *Magna Cum Laude*

Lewiston, MA

May 2021

- **GPA: 3.89**
- Experimental Physics Prize: Awarded for demonstrating great ability and potential in experimental physics

Skills

Programming	Python (Pandas, NumPy, Scikit-learn, Tensor Flow, Matplotlib, Seaborn), R (ggplot2), MATLAB, Mathematica
Computer	Git., Latex (Overleaf/Docker), Microsoft Office Suite (Word, Excel, PowerPoint), Keynote, MS Visual Studio Code, Google Colab, Jupyter Lab/Jupyter Notebooks
Analytical	Statistical Analysis, Data Visualization, Data Cleaning, Machine Learning, Monte-Carlo Modeling
Soft Skills	Team Work, Problem-solving, Communicating and Presenting Complex Ideas

Research & Data Analysis Experience

The University of Arizona

GRADUATE RESEARCHER

Tucson, AZ

Aug. 2021 - Present

- Improved data quality by removing noise from inhomogeneous low signal-to-noise astronomical data sets.
- Applied statistical techniques to fit power-law and Gaussian distribution models to spectroscopic data.
- Employed three different models to investigate the behavior of dust in a range of distinct stellar clusters.
- Led weekly project update meetings with a team of 3 principal investigators, fostering discussions on data analysis results.
- Presented findings at a talk given to over 20 scientists at The National Optical-Infrared Astronomy Research Laboratory.
- Wrote up the technical steps and results of my work for a forthcoming scientific journal article allowing future scientists to replicate the study and understand important findings.
- **Technical Skills:** Python (Pandas, SciPy, matplotlib, Seaborn), R, Monte-Carlo Modeling, Model Fitting, Regression Analysis
- **Soft Skills:** TeamWork, Problem-solving, Communicating and Presenting Complex Ideas, Time Management, Taking Criticism

The Space Telescope Science Institute

Baltimore, MD

RESEARCH INTERN

Feb. 2021 - July 2021

- Conducted complex queries and performed data matching across diverse databases from multiple sources, resulting in successful integration of large-scale data sets for the analysis of over 2500 supermassive black hole targets.
- Developed informative data visualizations to identify gaps in the sample space, facilitating targeted data collection efforts.
- Employed data cleaning and signal processing techniques in Python to enhance the quality and reliability of messy spectroscopic data, ensuring accurate and meaningful analysis.
- Contributed to the development of persuasive and well-structured research proposals by providing valuable insights, reviewing content, and ensuring consistency throughout the document.
- Regularly communicated progress updates on research activities through weekly reports.
- **Technical Skills:** Python, Pandas, NumPy, SQL, Matplotlib, Seaborn
- **Soft Skills:** Analytical Thinking, Problem Solving, Communication, Attention to Detail, Adaptability, Time Management

Bates College

Lewiston, ME

RESEARCH ASSISTANT

Sep. 2019 - Jan. 2021, Jan. 2019 - May 2019, May 2018 - July 2018

- Utilized the MaNGA data pipeline to efficiently extract and analyze a targeted sample of 589 galaxies of interest from a vast dataset comprising over 10,000 galaxies.
- Manipulated three-dimensional galaxy maps for all 589 galaxies, effectively assessing the asymmetry of galactic wind velocities and providing valuable insights into their dynamics.
- Presented research findings on galactic outflows for the 589 galaxies of interest at the prestigious 2020 American Astronomical Society meeting and an internal MaNGA collaboration meeting, effectively conveying complex scientific concepts to an audience of over 100 scientists.
- **Technical Skills:** Python, Use of Data Access Pipelines, Data Visualization
- **Soft Skills:** Public Speaking, Technical Communication, Analytical Thinking

Teaching Experience

Bates College

Lewiston, ME

TEACHING ASSISTANT

Sep. 2020 - Dec. 2020

- Course: Galaxies and Cosmology
- Facilitated engaging and interactive in-class discussions, encouraging student participation and critical thinking while addressing questions and clarifying course material.
- Conducted weekly study sessions to guide and support students in understanding course content.
- Assisted students in grasping Python programming concepts by providing personalized instruction, explaining coding principles, and offering guidance on code implementation and debugging.
- **Technical Skills:** Python, Debugging and Troubleshooting
- **Soft Skills:** Patience, Adaptability, Communication, Empathy, Feedback and Evaluation, Leadership, Technical Communication

Academic Projects

Applying Domain Adaptation Techniques to Neural Networks that Classify Galaxy Morphology

Tucson, Az

UNIVERSITY OF ARIZONA

Oct. 2022 - Dec. 2022

- Successfully replicated the results of an academic research paper by modifying and implementing the research team's GitHub repository, demonstrating proficiency in code adaptation and replication of scientific findings.
- Developed a comprehensive presentation of the major statistical theories and mathematical concepts behind domain adaptation, transfer loss, and Maximum Mean Discrepancy.
- Provided documentation and clear explanations of the modifications made to the codebase.
- Provided a live code demonstration showcasing the functionality and effectiveness of the modified code.
- **Technical Skills:** Machine Learning, Domain Adaptation, Python, Tensor Flow, Google Colab
- **Soft Skills:** Presentation Skills, Technical Writing and Communication