Lina Florez

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SKILLS

Programming Languages: Python • SQL/MySQL • Javascript (including Google Apps Script) • Tableau • Google Sheets
Technical Skills: Statistical Analysis • Machine Learning • Data Visualization • Data Mining
Packages & Tools: Numpy • Pandas • Matplotlib • bash • Scipy • Jupyter • scikit-learn
Natural Languages: English (fluent), Spanish (fluent)

EXPERIENCE

Rapid TPC **June 2023 – Present**
Software and Production Operations Intern *Pittsburgh, PA*

- Spearheaded the creation and development of a FLASK API integrated with Google Apps Script to automate the generation of production blueprints. This initiative resulted in a substantial increase in operational efficiency and the implementation of robust functionality.
- Successfully facilitated recurring meetings to ensure the seamless integration of additional features into production templates. Coordinated the integration of improved blueprints with concurrent production runs, optimizing the overall workflow.

University of Pittsburgh **August 2020 – April 2023**
Graduate Research Assistant *Pittsburgh, PA*

- Led the development phase of MANGA-C, an innovative astronomy Python package for the multi-dimensional data analysis and simulation of thousands of distant galaxy observations. The ongoing creation of MANGA-C is instrumental in advancing our understanding of galaxy evolution through cosmic time by seamlessly integrating nearby and distant galaxy datasets.
- Thrived in collaborative environments, proactively identifying and resolving challenges, and implementing strategic solutions. This approach significantly contributed to the successful development and refinement of MANGA-C, ensuring its effectiveness in handling large-scale astronomical datasets.
- Instructed over 300 students in Introduction to Astrophysics as a teaching assistant, adapting to the challenges of the pandemic to foster an engaging virtual learning environment.

Princeton University **June 2017 – May 2020**
Research Assistant *Princeton, NJ*

- Applied pandas and SQL for advanced data science and visualization, conducting a comprehensive comparative analysis of specific properties of galaxies within merged astronomical datasets. Played a key role in initiating preprocessing, examining extensive spectral data, and integrating datasets in the early stages of analysis.
- Executed Principal Component Analysis (PCA) to model and compare sky emission line strengths, refining foreground removal algorithms and advancing the project's comprehension of atmospheric interference in astronomical observations.
- Communicated complex research methodologies and results for multiple presentations to diverse audiences

PROJECT

DESI-ML

- Applied machine learning regression models, including Random Forest and XGBoost, to analyze around 20,000 DESI spectra for predicting physical characteristics of galaxies.
- Achieved significant enhancements in key evaluation metrics, notably reducing Normalized Average Absolute Deviation (NAAD) and Root Mean Squared Error (RMSE), while improving the Spearman Correlation Coefficient (SCC).
- Ongoing efforts involve extending the regression to more parameters to identify optimal models for comprehensive predictions.

EDUCATION

University of Pittsburgh **August 2020 – April 2023**
Master of Sciences, Physics *Pittsburgh, PA*
Relevant Coursework: Astrostatistics, Classical & Quantum Mechanics, Thermodynamics & Statistical Mechanics

University of Illinois at Urbana-Champaign **August 2016 – May 2020**
Bachelor of Science, Astronomy *Urbana, IL*
Relevant Coursework: Calculus III, Linear Algebra, Computing in Astronomy, Computing in Physics