

Carolina Navarrete

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EDUCATION

The University of Texas at Austin, Austin, TX

May 2024

Bachelor of Science and Arts, Astronomy

Certificate in Elements of Computing

Minor in Mexican-American Studies

Relevant Coursework: Software Design, Software Engineering I & II, Data Visualization, Differential Equations, Physics I, II, & III, Modern Physics and Thermodynamics, Planetary Systems, Galaxitic Studies, Research Methods in Astronomy

SKILLS

Technical/Computer Skills: Advanced Python, Advanced Java, Intermediate Julia, Javascript, HTML, CSS, and SQL

Platforms/Environments: Processing, Jupyter Notebook/Jupyter Lab, Git Version Control, Linux, Google Cloud Platform, Amazon Web Services,

Languages: English and Spanish, Native

EXPERIENCE

Morley's Exoplanet Atmospheres Research Group, The University of Texas at Austin

Jan. 2023 - Present

Undergraduate Research Assistant

- *Supervisors:* Dr. Brianna Lacy and Dr. Caroline Morley
- Performed spectral retrievals on the exoplanet WASP-39b
- Developed various modules to add to atmospheric retrieval code to improve parameterization capabilities
- Handled porting a code repository from Python to Julia to improve speed and dynamism.
- Skills used: software development, object-oriented programming, statistical analysis, and data reduction.
- Programming Languages: Julia, Python

FRI Summer Research Fellowship, The University of Texas at Austin

May - Aug. 2022

Student Researcher

- *Supervisors:* Dr. Mike Montgomery
- Observed white dwarf pulsars to analyze the differences between standard age and anomalous old WD stars.
- Systematically analyzed spectra to determine the existence of the rare DQ white dwarf stars (carbon-heavy).
- Skills used: Operated systems such as TopCat and visualized large datasets for analysis.
- Programming Languages: Python, HTML

TECHNICAL PROJECTS

Game Development & Graphics Project (Java, Processing, Unity):

- Built and designed an endless scrolling runner-based arcade game based on the game mechanics of the mobile game Jetpack Joyride. As a developer, I implemented **motion functionality, user interfaces, and interactive graphics.**

Visual Analytics Science and Technology (VAST) Mini Challenge (Python, DataFrames.Py, Seaborn.Py):

- Visualized water pollution with the given hydrology datasets derived from a preserve. Applied various data visualization techniques such as **interactive plots, graphic user interfaces, and data reduction/binning**.

Chemical Cartography of the Milky Way (Python, NumPy, Jupyter Labs):

- Investigated the metallicity distribution of OBAF-type disk stars across the Milky Way using APOGEE and GAIA DR3 data. Analyzed chemical signatures in the Milky Way using **statistical analysis, data fitting & visualization, and mathematical modeling**.

LEADERSHIP & COMMUNITY INVOLVEMENT

White Dwarfs Freshman Research Initiative, University of Texas at Austin

Jan 2023 - Present

Peer Mentor/TA

- Mentored students through laboratory astrophysics experiments. I facilitated learning of essential research skills (i.e. hosting Python boot camps, tutoring students on lab skills, etc.) as well as built various Jupyter Notebooks to provide tutorials for students.

SCIENTIFIC TALKS AND POSTERS

Posters

- 9th Frank N. Bash Symposium (Bashfest), Austin, TX
10/30/2023
- 242st American Astronomical Society Meeting (AAS), New Orleans, LA
01/07/2024