Carolina Navarrete

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EDUCATION

The University of Texas at Austin *Aug 2020 - May 2024*
Bachelors of Science and Arts in Astronomy, Minor in Computer Science

SKILLS

Languages: Python, JavaScript, SQL, HTML/CSS, Julia
Frameworks & Libraries: React.js, Vue.js, Node.js, Seaborn, Matplotlib, NumPy
Tools & Platforms: Amazon Web Services, Google Cloud Platform, Git & Git Collaboration, Conda, Linux/Unix

EXPERIENCE

American Museum of Natural History **New York, NY**
Data Ingestion Specialist, Astrophysics Department *Aug 2024 - Present*

- Designed and implemented scalable backend ingestion pipelines using Python and SQL to populate SIMPLE, a stellar objects online database hosted on Amazon Web Services.
- Enhanced SIMPLE's schema infrastructure to allow for more complex data storage.
- Built ingestion and validation functions within Astrodb-Utils, the open-source Python package supporting SIMPLE, streamlining database updates and ensuring data integrity.
- Applied inverse modeling techniques to analyze substellar objects using high-performance computing clusters, implementing cluster optimization and data model configurations
- Conducted comparative analysis to evaluate statistical performance and model sensitivity in stellar atmospheric models.
- **Skills:** Python, SQL (SQLite), Science Communication, Project Management

The University of Texas Austin **Austin, TX**
Undergraduate Research Engineer, Astronomy Department *Jan 2023 – Jul 2024*

- Ported core functionality of the METIS Bayesian inference codebase from legacy Python to modern, modular Julia, improving performance and maintainability.
- Developed modular, reusable functions in Julia for METIS, improving parameterization, inference setup (MCMC/HMC), and result visualization.
- Presented research at the American Astronomical Society (AAS) meeting, emphasizing open-source scientific software development and effective science communication.
- **Skills:** Julia, Python, Statistical Analysis, Git Version Control

TECHNICAL PROJECTS

Matcha Madness NYC (Azure DevOps, Google Map API, Javascript, React.js, HTML):

- Developed a full-stack web app for discovering NYC matcha cafés, integrating Google Maps API and a custom user review system.
- Built a responsive front-end with café detail pages, search filters, and interactive map.
- Designed RESTful API endpoints and optimized schema for fast, scalable data access.

Hungry Austin (HTML, JavaScript, Google Web Services, PostgreSQL, SQL, APIs):

- Collaborated in a 4-person team to develop a Yelp-like web app that categorized Austin restaurants by cuisine, price, and location using food-based APIs.
- Directed front-end development, designing and implementing an intuitive, mobile-responsive UX/UI.
- Implemented web scraping to enhance data accuracy and reduce API call latency.
- Coordinated across front-end and back-end pipelines using Git to streamline workflow and deployment.

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

- Developed interactive visualizations to analyze water pollution trends from hydrology datasets.
- Applied data reduction, binning, and GUI-based exploration techniques to identify key insights.

TALKS AND CONFERENCES

Presenter, Computational Astrophysics

- 9th Frank N. Bash Symposium – *Austin, TX (Oct. 2023)*
- 242nd American Astronomical Society Meeting – *New Orleans, LA (Jan. 2024)*

Attendee

- PyData 2024 – *Microsoft, New York, NY (Oct. 2024)*
- Theoretical and Computational Astrophysics Networks (TCAN) Hackathon Week – *SETI Institute, Mountain View, CA (Mar. 2025)*

Bio

Education

Experience

Projects

Skills

Talks and Conferences