ALEXANDRA V. SAVINO

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TECHNICAL SKILLS

Proficient: Python (NumPy, Pandas, Plotly, Matplotlib), Java, HTML, CSS, GitHub, VSCode, Data Visualization, UI/UX
Knowledgeable: Linux/Unix/macOS, CLI, JavaScript, PyCharm, Intellij, MIPS, iOS development (Xcode, Swift, SwiftUI, MapKit)
Some Familiarity: PyTorch, Sklearn, SciPy, NodeJS, ReactJS, SQL (mySQL), PostgreSQL, Postman/pgAdmin 4, REST APIs, Matlab
Languages: English (Native), French (Intermediate)

EDUCATION

Georgia Institute of Technology, M.Sc. in Computer Science, concentration in Machine Learning | **Expected December 2025**
Columbia University, Barnard College, B.A. in Astrophysics, minor in Math-Computer Sciences | **September 2020 - May 2024**

- **GPA: 3.8/4.0**
- **Dean's List: 2020-2024**
- **Relevant Coursework:** Artificial Intelligence, Introduction to Databases, Computational Robotics, Fundamentals of Computer Systems, Data Structures, Computer Graphics & Design, Introduction to Statistics, Linear Algebra, Ordinary Differential Equations, Modeling & Numerical Methods
- **Key Honor:** Was a primary contributor to the MicroChas project which won NASA funding to be launched into permanent orbit aboard its own satellite.

EXPERIENCE

The Recurse Center Program | **Brooklyn, NY**
Software Engineering Participant | **November 2024 - February 2025**

- Lead self-directed full-stack development projects focusing on JavaScript, React, and systems architecture to deepen technical expertise.
- Build machine learning prototype applications combining web technologies with Python-based ML frameworks in preparation for my graduate studies.
- Collaborate with peer programmers in weekly code reviews and technical discussions to refine project approaches and share knowledge.

CERN & DESY | **Geneva, Switzerland | Berlin, Germany**
Software Engineering Intern | **July 2023 - September 2023**

- Developed two Python-based simulations for the ATLAS experiment at the world's largest particle accelerator in Switzerland, modeling the behaviors and detecting capabilities of state-of-the-art, experimental detectors specifically designed for the ATLAS Experiment.
- Enhanced my models to allow for user interactivity, increasing flexibility, allowing users to adjust the model's geometry.
- Developed and implemented seven streamlined command-line tools using batch scripting on a Windows computer to automate and simplify experimental procedures, including positioning and moving physical components, data readout, and connections to other data analysis tools.
- Collaborated with two PhD students to design and calibrate an experimental setup that successfully validated the accuracy of my simulation models, using hardware and equipment such as oscilloscopes, multimeters, power supplies, and FPGA technology.

American Museum of Natural History | **New York, NY**
Software Engineering Intern | **May 2023 - August 2023**

- Created a data pipeline using Python to process raw stellar cluster evolution simulation time series data, improving processing efficiency and analysis quality.
- Used Sklearn machine learning algorithms with customized parameters to identify and analyze cluster distributions and statistically track them over time.
- Developed an interactive 3D model to visualize the distribution of clusters, with dynamic color-coding and a framework for tracking changes over time.
- Mentored one junior research intern; provided advice for structuring code, debugging support, and suggestions to guide their research interests.

PROJECTS

Personal Portfolio Website | Sole Designer & Developer | github.com/alexsavino/alexsavino.github.io

- Designed and developed a comprehensive 7-page personal portfolio website, featuring a landing page with a resume download button, and separate pages for About, Experience, Skills, Projects, Creative Works, and Contact information. Implemented a consistent navbar across all pages for navigation.
- Created an interactive contact form using JavaScript and Google APIs, enabling visitors to send messages directly through the website. Implemented input validation with specific error handling to ensure data integrity, automatically recording submissions in a Google Sheet for daily review and follow-up.
- Engineered a robust project and creative work management system using a PostgreSQL database, allowing for efficient organization and display of portfolio items. Implemented advanced filtering functionality, enabling visitors to sort projects based on specific criteria such as technologies used.
- Technologies used: JavaScript (React, Node.js, Express.js), HTML, CSS, PostgreSQL, Google APIs, Git.

The Robot Astronomer | Software Developer | github.com/alexsavino/OA_RobotAstro

- Led a team of two developers that identified relevant news sources and developed web scraping scripts for the most searched astronomical objects each day.
- Independently designed and implemented the project's front end: a 5-page website with fully animated transitions, featuring a welcome page, dynamic displays of the day's top three objects, information on each object, the user's location and time, and whether each object is visible from the user's location.
- Integrated JavaScript APIs to determine user location and local time, enabling the app to verify the visibility relative to the user of top astronomical objects.
- Technologies used: Python (Beautiful Soup, Requests, Astropy), HTML, CSS, JavaScript (Geolocation and TimeZone APIs), Git.

Interactive Gravitational Lensing Simulator | Sole Developer | github.com/alexsavino/gravitational-lensing-simulator

- Developed an interactive simulator that aids users in visualizing the complex astronomical phenomena of light deflection caused by black holes, having no prior experience with graphics packages or knowledge of the physics of gravitational lensing.
- Implemented user-friendly interfaces and error-handling mechanisms to guide users through adjusting simulation parameters and to ensure realistic input, including black hole mass, star radius, and star positioning relative to the user.
- Engineered a sophisticated N-body simulator within the program to generate geodesics in space-time influenced by the mass of the black hole.
- Technologies used: Python (Turtle graphics package, re, itertools), Git.

HONORS & GRANTS

1st Place Columbia University Annual AstroFest Research Poster Session Winner (as part of a team) | **2022**
Barnard College SRI Research Grant Recipient - *$6,000* | **2021, 2022**
NHED Scholarship Winner - *$10,000* | **2020, 2021**