

Nicholas Vasilescu



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ew ork, New York -  nited States

EDUCATION

• Columbia University

B.A. in Astrophysics and History, Columbia College

◦ GPA: 3.791/4.00

September 2024 - May 2027
New York, NY, United States

• Cornell University

College of Arts and Sciences

◦ GPA: 3.763/4.00

August 2023 - May 2024
Ithaca, NY, United States

• Brooklyn Technical High School

Secondary Education

◦ GPA: 102.35/100

September 2019 - June 2023
Brooklyn, NY, United States

SKILLS

- Python (expert), Machine Learning (expert), CSV (expert), Pandas (intermediate), NumPy (expert), LaTeX (intermediate), CUDA (intermediate)

EXPERIENCE

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Rochester Institute of Technology Multimessenger Astrophysics REU Researcher

May 2025 - August 2025

Rochester, NY

- * As a National Science Foundation funded researcher at RIT, I conducted research with Professor Jason Nordhaus on high mass common envelope binary star systems over the course of 10 weeks. Specifically, I determined the post-common envelope regions where companions of different masses can orbit 10-70 solar mass primary stars. This involved calculating the companion's orbital radii at which envelope ejection occurs and where tidal forces shred each companion apart.
- * Involved simulation data created using MESA 1-D Stellar Evolution Code at hundreds of orbital radius points for each primary star.
- * Created functions using Python to make calculations, such as the energy required to gravitationally bind a star of a certain mass together and the energy generated by an object inspiraling towards a star's core.
- * Presented findings at the RIT Undergraduate Research Symposium
- * Presentation Abstract Accepted into the American Astronomical Society 247 Winter Meeting
- * Working on paper for publication.

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Astrostatistics 3896 taught by Professor David Kipping

September 2024 - December 2024

Columbia University

- * Learned how to construct Markov Chain Monte Carlo (MCMC) simulations using Bayesian probability to model various astrophysical events. This involved creating log-likelihood functions and skillfully setting log-prior conditions
- * Exposed to a variety of model-selection methods, such as log-likelihood ratio and reduced chi-squared.
- * Delivered concise 3 minute presentations on three week projects.
- * Culminated with the final project that determined which model (MOND or LCDM) best represents three separate spiral galaxies (NGC 3198, NGC 2403, and Messier 33).

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NASA N3 Program Summer Intern

May 2023 - August 2023

Remote

- * Working alongside Astronomy Professor Michael Stamatikos of the Ohio State University, I undertook research that involved tracing neutrinos detected by the IceCube Neutrino Observatory in Antarctica to gamma-ray bursts detected by the Neils Gehrels Swift Observatory.
- * Created Python code that reformatted timeseries data in the form of CSV files.

- * Used my program to find matches in different quantities, such as terrestrial position (Right Ascension and Declination) and time, between the two data sets within specific uncertainties
- * Found two pairs of neutrinos and gamma-ray bursts that were detected at the same time and located in terrestrial coordinates within 1 percent of each other.

◦ **Brooklyn Technical High School Weston Research Scholars Program**

May 2021 - May 2023

Brooklyn, NY

- Undertook astrophysics research mentored by Professor Tansu Daylan of Washington University in St. Louis to find anomalous stars in our galaxy that could indicate the presence of extraterrestrial intelligence (SETI).
- Gained experience with a variety of Python libraries, including Numpy, Pandas, PyTorch, and TensorFlow. Implemented AI Gans Model: Orion ML.
- Experience using Python and Astroquery library to automatically download astrophysics data from SIMBAD and MAST websites.
- Created plots and CSV files for results from the Python program.

NON-STEM PROJECTS

• **Columbia International Relations Council and Association (CIRCA)**

September 2024 - Present

Columbia University

- As a member of CIRCA, I participate in Model UN in different capacities, specifically as a delegate at conferences, a chair and crisis director running committees, and a member of leadership organizing conferences. These roles involve public speaking, writing large resolution documents, and utilizing problem solving skills.
- Compete at other collegiate Model UN conferences as a member of Columbia University's Model United Nations Travel Team
- Member of Secretariat (Undersecretary General of Committees) of CMUNCE, Columbia's premier Model UN conference for high schoolers
- Written background guides and orchestrated Model UN Committees on a range of historical topics, including the Kuril Islands Dispute and the modern space race amongst countries

• **US Open Tennis Championships Ballcrew Member**

August 2019 - Present

Queens, NY

- As a member for four US Opens, I collaborate with others to efficiently retrieve and service tennis balls to the best tennis players in the world.
- Involves great physical endurance, mental anticipation skills, and teamwork while under pressure.
- Worked during the 2025 Mixed Doubles Final and shared the court with players such as Rafael Nadal and Carlos Alcaraz.

• **Columbia Club Tennis Travel Team Member**

September 2024 - Present

Columbia University

- As a member of the travel team, I travel to compete against other Ivy League club tennis teams and other club tennis teams from around the country in USTA Tennis on Campus competitions.
- As the Recreational Chair for Club Tennis, I organize internal tournaments for the club and coach beginner tennis players.

RELEVANT COURSEWORK

- **ASTRO 2211: Stars, Galaxies, and Cosmology (Cornell)**
- **ASTRO 2002: Intro to Astrophysics II (Columbia)**
- **ASTRO 3896: Astrostatistics (Columbia)**
- **ASTRO 4242: Order of Magnitude Astrophysics (Columbia)**
- **PHYS 1110: Introduction to Experimental Physics (Cornell)**
- **PHYS 1116: Classical Mechanics and Special Relativity (Cornell)**

- **PHYS 1602: Thermodynamics, Electricity, and Magnetism (Columbia)**
- **PHYS 2601: Classical/Quantum Waves (Columbia)**
- **PHYS 3003: Mechanics (Columbia)**
- **MATH 1910: Calculus for Engineers (Cornell)**
- **MATH 1920: Multivariable Calculus for Engineers (Cornell)**
- **MATH 2010: Linear Algebra (Columbia)**