Pierce Makombe

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Education

RUTGERS UNIVERSITY New Brunswick, NJ
Bachelor of Science in Physics, Minor in Computer Science Graduation: May 2023
Attended: 2021-2023

Relevant Physics/Astronomy Coursework: Fundamentals of Astronomy, Earth Systems, High Energy Astrophysics, Principles of Astrophysics, Observational Astrophysics, Computational Astrophysics, Radio Astronomy, Modern Physics, Classical Mechanics, Electromagnetism

Relevant Computer Science Coursework: Principles of Advanced Programming, Data Structures, Data Management for Data Science, Introduction to Artificial Intelligence.

LYCOMING COLLEGE Williamsport, PA
Attended: 2019-2021
Honors: Dean's List, 2019

Experience

STUFF YER FACE New Brunswick, NJ
Bouncer/Barback May 2022– June 2023

- Maintained a safe and secure environment, efficiently managing crowd control.
- Assisted bartenders in stocking and preparing the bar, showcasing strong teamwork and time management skills.
- Responded quickly and effectively to unexpected situations, demonstrating excellent problem-solving abilities.

LYCOMING COLLEGE DETWILER PLANETARIUM Williamsport, PA
Planetarium Technician January 2020 – May 2020

- Assisted in the organization and preparation of planetarium shows, ensuring smooth operations and optimal audience experience.
- Contributed to concept development for new shows, aiding in the creation of engaging and educational content.
- Utilized Digistar software for scene composition, scripting, sequencing, and multimedia integration, enhancing the quality and interactivity of planetarium shows.
- Performed regular maintenance on planetarium equipment, upholding consistent performance and minimizing downtime.

JUNIPER HILL RESTAURANT Clinton, NJ
Food Runner/Expediter May 2018 – January 2020

- Ensured efficient communication between kitchen and service staff, enhancing overall restaurant operations.
- Managed order flow to guarantee timely delivery of orders, demonstrating a high level of organizational skill.
- Assisted in resolving any issues regarding orders, showcasing effective problem-solving and customer service skills.

Leadership & Activities

DELTA KAPPA EPSILON New Brunswick, NJ
Member September 2021 – May 2023

- Participated actively in fraternity events, contributing to a strong community of peers.
- Organized and executed a successful fundraiser for the Movember Foundation for men's health for three consecutive semesters, raising close to $3,000 in total.

SOCIETY OF PHYSICS STUDENTS Williamsport, PA
Member September 2019 – May 2021

- Engaged in regular meetings and events, furthering understanding of Physics and its practical applications.
- Collaborated in a team to create a homemade radiometer, demonstrating practical Physics knowledge and teamwork skills.

Skills & Projects

Technical:

- Proficient in Java, Python, and C++
- Unix command line proficiency
- Experience with PhAst software

Language: Moderate-level proficiency in spoken and written German
Laboratory: Experienced in utilizing programming for data analysis on large datasets, with a focus on studying large samples of galaxies.

Transiting Exoplanets **—** ***Computational Astrophysics***
October 2022 - November 2022

In the fall of 2022 in a course called computational astrophysics I was part of a four-student group in which I conducted an analysis of the light curves of TrES-2 and XO-1, two hot Jupiter-sized exoplanets, to explore the correlation between the dip in relative flux of a star and the size of the planet, inclination angle, semi-major axis of the planet's orbit, and its orbital period. Utilized data analysis techniques and skills related to Python programming to uncover meaningful insights into the physical properties of exoplanetary systems.

Adiabatic Collapse of a Gas Sphere in Star Formation **—** ***Computational Astrophysics***
November 2022 - December 2022

In a similar manner, I engaged in a group project where I modeled the adiabatic collapse of a gas sphere using G2-gas sphere in Gadget4 on the Amarel cluster, a high-performance computing cluster at Rutgers University, to provide output snapshots. Analyzed the output files and snapshots using Python programming skills to create a movie showcasing the changes in density over time and energy over time. Compared simplified initial parameters to numerical calculations of star formation, validating new physics by comparing it to current literature.

FIRST Sources in the COSMOS Field **—** ***Observational Astrophysics***
February 2023 - March 2023

Conducted an analytical review of the VLA (Very Large Array) FIRST (Faint Images of the Radio Sky at Twenty-cm) Survey in the COSMOS (Cosmic Origins Survey) field images. Utilized Python programming skills to extract specific celestial coordinates, calculate the RMS (Root Mean Square) in order to find the average intensity across the entire image, and select all the sources in the cutouts by identifying every radio source whose peak flux density is 3× the RMS noise in the field. Identified patterns and relationships among 1.4 GHz flux density, 1.4 GHz morphology, and distance to nearest 1.4 GHz neighbor within the COSMOS field. Through this I achieved a comprehensive understanding of radio astronomy data analysis and utilization of advanced computational tools to conduct cutting-edge research.