Bongiwe Sandi Nandi Mkwananzi

bongiwesan.mkwananzi@students.cookman.edu | linkedin.com/bongiwe | (470) 9089642|Github

EDUCATION

Bethune-Cookman University **Daytona Beach, Florida**
B.S Computer Science | International Studies May 2026
Presidential Scholar
4.0 GPA

SKILLS

Programming Languages: Python, Java, JavaScript, CSS, HTML, Swift, SwiftUI
Software: Tableau, MATLAB, Roadrunner, Figma
Relevant Coursework: Fundamentals of Scientific Computing, Calculus I & II, Computer Programming I & II(Java), Linear Algebra, Statistics, Microeconomics, Macroeconomics

PROFESSIONAL EXPERIENCE

EcoCAR EV Challenge **September 2023 - Present**
Connected and Automated Vehicle Intern, *Bethune-Cookman University/ Embry-Riddle Aeronautical University*

- Led the creation of high-fidelity simulation environments using MATLAB and Roadrunner, enhancing autonomous driving system tests. Focused on diverse driving conditions, the simulations improved algorithm training and reliability.
- Integrated CARLA simulations for vehicle control and sensor fusion tests, contributing to a robust framework that supports autonomous vehicle development. This work provided scalable testing platforms for realistic vehicle behavior analysis.
- Developed and optimized vehicle dynamics models in MATLAB for the EcoCAR Electrical Vehicle Challenge, focusing on energy efficiency and performance. These efforts underpinned advanced control strategy design for electric vehicles.
- Pioneered the use of computer vision and machine learning in simulations to enhance autonomous testing capabilities, leveraging MATLAB's deep learning tools. Improved simulated decision-making processes through realistic scenario analysis.

Fermilab Batavia, Illinois
US CMS PURSUE Research Intern June 2023- August 2023

- Conducted a 10-week comparative analysis of profiling results between Run 3 and High Luminosity Large Hadron Collider (HL LHC) Simulations & Reconstructions
- Executed scripts on Linux, successfully gathering experimental data from CERN (European Organization for Nuclear Research), which directly contributed to the accuracy of my analyses.
- Analyzed CPU time usage for each new release of Compact Muon Solenoid (CMS) software using Igprof and Vtune Profilers.
- Discovered a 43% increase in CPU time consumption due to the HL LHC having 29% more tracks compared to Run 3.

Emzini WeCode Remote
Programming Assistant May 2023-Present

- Teaching Assistant for Emzini we Code, a coding program for 100+ students in Africa.
- Facilitate individual tutorial sessions and group tutorials of 5-10 students at a time, ensuring a 100% satisfaction rate through post-session surveys; utilizing interactive teaching methods to foster engagement and comprehension, resulting in improved academic performance.
- Collaborating with 19 other Teaching assistants to deliver lectures and tutorials based on the Python curriculum of the course.
- Hold weekly office hours for 3+ hours, assisting students in debugging programs and offering mentorship.

PROJECTS

Robotics Club *Hardware Lead, Vice-President*

- Orchestrated the hardware phase that included drawing track lines and painting a wooden board for the IEEE SoutheastCON 2023 Competition.
- Implemented a comprehensive hardware strategy that optimized performance and reliability, leading to a 40% reduction in system failures during the competition.
- Facilitating weekly team meetings, tutorials, workshops, and team management.

OTHER SKILLS & INTERESTS

Languages: English, IsiNdebele, Shona, Zulu
Affiliations: ColorStack Fellow, Rewriting The Code Fellow, Adobe + HBCU 20 x 20 Fellow '24, Codepath: Technical Interview Prep (101 and 102) student summer '24, New Seasons Youth Program Participant, Narachi Fellow