**Emmanuel Butsana** | East Lansing, MI | butsanae@msu.edu | (517) 721-0687 | ebutsana.me

*Deliver impactful solutions by leveraging technical skills and fostering an environment built on teamwork*

## EDUCATION

**Michigan State University** - East Lansing, MI — May 2026
*Bachelor of Science, Electrical Engineering (Additional Major: Computer Engineering)* — GPA: 4.0

**Skills:** C/C++, Python, MATLAB, Verilog, FreeRTOS, Cadence Virtuoso, Altium Designer, LTspice

**Coursework:** Embedded Systems, Computer Architecture, Advanced VLSI Design, Signal Processing

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## EXPERIENCE

**Human Augmentation Technologies (HAT) Lab** - East Lansing, MI
*Undergraduate Research Assistant* — January 2025 - Present

- Deployed and benchmarked image recognition models on the NVIDIA Jetson AGX Orin, applying model compression techniques to minimize memory and latency while maximizing accuracy
- Developed an image augmentation pipeline in C++ supporting geometric transformations, color adjustments, and noise injection, while achieving a 3× speedup over a baseline Python implementation
- Fine-tuned generative image models to produce high-fidelity synthetic datasets, improving generalization in downstream vision tasks

**DayDream Inc.** - Grand Rapids, MI
*Firmware Engineering Intern* — August 2024 - May 2025

- Implemented firmware with C++ to interface the ESP32-S2 SoC with rotary encoders through polling and with the BMI270 IMU through I2C
- Leveraged FreeRTOS to manage 6 concurrent tasks across 2 cores, optimizing resource utilization and ensuring reliable system performance
- Integrated Bluetooth Low Energy (BLE) functionality to enable wireless communication between the ESP32-S2 and mobile devices, supporting real-time data exchange and remote control features.
- Designed schematics and PCB layout for a smart AR device via Altium Designer, focusing on power and communication circuits

**KPIT Technologies** - Novi, MI
*Software Development Intern, Middleware* — June - August 2024

- Built a formatting tool with Python to help with the implementation of MISRA C guidelines for generated C scripts, identifying over 90% of compliance violations and reducing manual review time
- Automated generation of Lauterbach PRACTICE test scripts through Excel and Python, lowering prerequisite technical barriers and accelerating the script development process
- Maintained codebase documentation and prepared weekly presentations to keep key stakeholders apprised of progress and obtain feedback

**Physical Ultrasonics, Microscopy, and Acoustics (PUMA) Lab** - East Lansing, MI
*Professorial Assistant* — September 2022 - May 2024

- Employed data augmentation and preprocessing techniques to enhance the diversity of time-series datasets with MATLAB
- Utilized Python to implement algorithms to compute and visualize material properties from signals collected via ultrasonic testing, obtaining results within 5% of accepted values
- Built a preprocessing pipeline to clean and format raw data from ultrasonic testing and prepare it for machine learning applications.