Aiden Ballard

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EDUCATION

West Virginia University, Morgantown, WV Expected, May 2027
Bachelor of Science in Computer Science
GPA: 4.00/4.00
Related Coursework: Software Engineering, File and Data Structures, Computer System Concepts, Secure Software Development, Principles of Programming Languages, Discrete Mathematics
Awards: President's List: Fall 2023, Spring 2024, Fall 2024, and Spring 2025

PROJECTS

Autonomous "Attacker" Drone

- Improved targeting algorithms for about a 34% increase in accuracy using frame differentiation.
- Developed OpenCV algorithms to detect and track, in real time, targets/goal posts at 23 frames per second.

"Snowhere You're Going"

- Coordinated the participation of 8 team members and assimilated their work in our ~4000-line code base using Git.
- Interfaced a 32 gigabyte Azure SQL database to securely store, access, and update user info.
- Leveraged RESTful APIs from NOAA and weather.gov to forecast weather at 350 resorts.

Design of a Simple CPU

- Implemented an 8-bit CPU on a DE10-Lite FPGA for 3 key functions: load, add, and store.
- Developed a 15-state FSM to orchestrate CPU operations based on 3-bit opcodes.

SKILLS

Programming Languages: Java, Python, C, C++, HTML, CSS, JavaScript, SQL
Hugging Face, Windows, Linux, Git, OpenCV, ROS, NodeJS, React, Microsoft Office (Word, PowerPoint, Excel), Technical documentation and writing

WORK HISTORY

Embedded Artificial Intelligence Intern, West Virginia University February 2025 – Present

- Optimized dataset retrieval by caching vectors in a persistent file structure, reducing retrieval time on average by 84%
- Improved machine learning model accuracy by 13% through dataset expansion (15x larger), data augmentation, and hyperparameter fine-tuning for enhanced natural language processing.

Undergraduate Lab Assistant, West Virginia University September 2023 – August 2024

- Researched computer vision tracking techniques to detect objects in real time producing a 75% accuracy rate on Raspberry Pi models 02 W and 4B.
- Facilitated autonomy in four drones using ROS2 resulting in a successful, autonomous capture during competition.

PUBLICATIONS

Jackson, I. S., Ballard, A. G., Hefeida, M. S., Srivastava, A. K., & Gyawali, P. K. (2025). Development of Microcontroller-Based AI Robot Tour Guide Utilizing Custom Language Models. 2025 IEEE World AI IoT Congress (AIIoT).

LEADERSHIP & ACTIVITIES

Men's Ultimate Frisbee – President August 2023 – Present

- Generated $9,800 through fundraising, tournament hosting, and merchandise selling.