Alex Gundrum

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Education

The University of Alabama **May 2027**
Master of Science in **Computer Science** Tuscaloosa, AL

Bachelor of Science in Computer Science — GPA: 4.00/4.00 **May 2026**

- Relevant Courses: Data Structures and Algorithms, Operating Systems, Database Management Systems, Web Development.

Experience

AMEWAS, Inc. **Jun. 2025 – Aug. 2025**
Software Engineer Intern Patuxent River, MD

- Engineered a C++ data engine to normalize heterogeneous data formats enabling seamless component integration.
- Automated configuration file aggregation with Bash scripting, cutting 15 minutes of manual effort per deployment.
- Guaranteed production reliability of the C++ engine by authoring a comprehensive test suite with Google Test (GTest).
- Maintained an **Active Interim Secret Security Clearance**, ensuring strict adherence to classified project protocols.

Digital Forensics and Control Systems Security Lab **Aug. 2023 – May 2025**
Undergraduate Researcher Tuscaloosa, AL

- Implemented a real-time speed estimation system in Python using OpenCV and YOLOv8, achieving **94.3%** accuracy.
- Projected 2D detections into 3D bounding boxes by leveraging scene vanishing points, boosting spatial accuracy by 28%.
- Constructed a system to detect inhibited vehicles, facilitating free-flow speed analysis for accurate traffic metrics.
- Formulated geometric transformations mapping vehicles to real-world coordinates for precise spatial data.

Projects

Money Trees | ***Python, Flask, OpenAI API, SQLite, React, Next.js, Chart.js***

- **Won 1st Place** FinTech award at UAInnovate Hackathon for an AI-powered personal finance dashboard.
- Engineered Flask RESTful APIs and a SQLite database to manage financial data securely.
- Created a custom prompt system with the OpenAI API to deliver personalized financial advice.
- Built an intuitive frontend with React and Next.js, featuring dynamic visualizations using Chart.js.

Handwritten Digit Classifier | ***Python, TensorFlow, NumPy***

- Built a neural network with TensorFlow and Python, achieving **95% accuracy** on the MNIST dataset.
- Implemented mini-batch gradient descent and custom neural network layers for scalable training.

Mancala Engine | ***C++***

- Developed a C++ Mancala engine and implemented a competitive AI using the Minimax algorithm with alpha-beta pruning..

3D Rubik's Cube Simulator | ***Java, Processing, PeasyCam***

- Built an **interactive** 3D Rubik's Cube simulator in Java with real-time performance at up to **144 FPS**.
- Applied OOP principles to model cube structure, ensuring modularity and scalability.

Technical Skills

Languages: Python, C++, SQL, Java, JavaScript, HTML, CSS
Frameworks: Node.js, Next.js, React.js, Flask
Libraries: OpenCV, NumPy, YOLO, TensorFlow, TailwindCSS, SQLite, OpenAI API
Concepts:debugging, Image Processing, Version Control, Object Oriented Programming, Relational Databases, LLM Prompting
Developer Tools: Git, Linux, VS Code, FireBase, Docker, CMake, Bash, Jira, CMake