Yonathan T. Gashu

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Education

Georgia Institute of Technology Atlanta, GA

Bachelor of Science in Computer Science - GPA 3.94/4.0 *Graduating May 2027*

- Specializing in *Systems & Architecture* and *Devices*
- Coursework: Mobile & Ubiquitous Computing, Computer Organization & Architecture, Computer Systems & Networking, Computer Networking, Object-Oriented Programming, Data Structures & Algorithms

Experience

Department of Defense (DoD) *Washington, DC*

Capabilities Development Specialist (Control Networks Section) May 2025 - Aug. 2025

- Employed reverse engineering techniques to examine network-enabled embedded devices and exploit firmware vulnerabilities
- Developed proof-of-concept tools enabling remote code execution on embedded devices
- Conducted static and dynamic analysis on the control flow of functions of interest to enhance understanding of device runtime behavior
- Authored comprehensive documentation outlining findings and usage of created capabilities

Artificial Intelligence Research Intern May 2024 - Aug. 2024

- Worked with senior researchers investigating how knowledge graphs (KGs) can be extracted from unstructured text
- Implemented a KG-RAG system to enable Knowledge Graph Question Answering (KGQA)
- Developed methodologies for Named Entity Recognition (NER) and Relationship Extraction (RE) to populate the KGs

Software Engineer Intern Sep. 2022 - Aug. 2023

- Utilized *Java* to develop backend database management features for internal web application, and successfully integrated those functionalities into the frontend interface using *VueJS*
- Created a developer-sided API to allow for more efficient creation of test agreements/datafeeds

The Hive Makerspace Aug. 2025 - Present

Student Researcher *Atlanta, GA*

- Led ECE makerspace operations on the electronics lab and embedded devices attracting over 7500 monthly visitors
- Delivered training sessions on embedded systems and benchtop tools for 200+ students/semester, ensuring 100% proficiency

Autonomous & Connected Driving Simulator VIP Aug. 2024 - Present

Cybersecurity Subteam (Undergraduate Research) *Atlanta, GA*

- Engineered multimodal biometric data pipelines (*EEG, ECG, eye tracking*) in *Python/Matlab* for preprocessing and visualization of driver states, supporting cybersecurity-focused experiments on drivers during simulated attacks
- Extended *Unity* driving simulation by integrating warning systems and threat event triggers to simulate cyberattacks

Projects

LoRa Enabled Wearable Off-grid Communication (LEWOC) | *Rust, Embedded Systems* Aug. 2025 - Dec. 2025

- Developed encrypted long-range text messaging device for remote areas using LoRa radio technology
- Implemented display integration and UI with embedded-graphics framework on ST7735R TFT LCD
- Designed physical input controls for emergency messaging, achieving 1000-foot communication range
- Built using Rust/Embassy on RP2350 with Ascon encryption and Bluetooth mobile app connectivity

Raycaster | *C++, SDL2* Aug. 2024 - Dec. 2024

- Built a Wolfenstien-style 3D raycasting engine from scratch in C++ using SDL2, handling rendering pipeline, collision detection, 2D/3D graphics math, map and texture parsing, skybox generation, and ray traversal optimization

Technical Skills

Languages: C, Java, C++, Python, C#, Assembly (ARM64), JavaScript
Frameworks: React, Node.js, VueJS, JUnit
Developer Tools: Ghidra (Firmware Analysis, Reverse Engineering), Atlassian tools (Bitbucket, Confluence, Jira), Linux, Git, VMware, Wireshark, Docker, Amazon Web Services, Google Cloud Platform, VS Code, IntelliJ, Jenkins, Agile, Unity