

Andrew Gonzaga

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Location: New Bedford, MA

Software Engineer

Software engineer with unusual range: embedded firmware work in C/C++, security tooling in Python and application development across the stack. Currently shipping open-source web reconnaissance tool for authorized security research. Available for AppSec and software development engineering roles

SKILLS

Languages:C, C++, C#, Python, Go, Rust, Java

Security:Playwright, Burp Suite (Basic), Authorized Recon, Threat Modeling

Embedded:ESP32, STM32, i.MX8QM, CYUSB3014, Yocto/Linux, I2C, ADC, USB Device Drivers

Web/BackEnd:.NET, Qt, Windows Forms, REST APIs, CLI design

Tooling:Git, CI/CD (Github Actions), Pytest, ruff, pyright, CMake, Neovim

EXPERIENCE

Independent Software Engineer

Jan. 2024 – Present

Remote

- Designed GhostMap, an open-source behavioral web reconnaissance tool for authorized bug bounty research. implements scope-aware authorization gating, content-hashed cross-scan finding registry, and defense-in-depth credential redactions. Focused on responsible disclosure and careful scope verification.
- Designed elegant websites for local businesses.

Software Engineer

May 2023 – Jan. 2024

Celerity Embedded Design Service, Bourne, MA

- Designed and shipped the iMPB/HSDL panel CLI application for Smith's Detection's airport grade luggage x-ray scanners, replacing previous vendor firmware. Including a Linux port and FPGA programming workflow
- Configured Yocto Linux Build environment for IRainboW-G27M and CONGATEC SMARC-SOM platforms; debugged and patched boot sequence issues for custom network switch PCB.
- Reverse-engineered a camera shutter mechanism, integrating ESP32/STM32 microcontroller code with custom hardware restore working behavior.

EDUCATION

Bridgewater State University

Bridgewater, MA

Bachelor of Science degree in Computer Science

Jan 2021 - May 2023

Dean's list: Fall 2021 and Fall 2022

PROJECTS

GhostMap

Python, Playwright, Pytest, ruff, Pyright, YAML, git

- Command Line Application, Static Analysis
- Open-Source behavioral web reconnaissance tool for security research; crawls targets, captures network traffic, classifies endpoints, and surfaces IDOR candidates worthy of manual investigation
- Designed scope-aware authorization gating that enforces program-specific permissions in code rather than operator memory, preventing unauthorized testing across multi-program engagements
- implemented content-hashed cross-scan finding registry: stable F-ABCDE identifiers survive re-scans so verification state, evidence, and report drafts attach to findings.

iMBP Panel & HSDL Panel applications

C++, CMAKE, git

- Command Line Application
- Collaborated with team members to integrate a DLL into the Project

- Application handled Programming FPGA with custom Firmware and transferring Video data from Host to FPGA using a **CYUSB3014-BZXI**
- written in C++ and supports Windows and Linux

Tank Monitor

C++, QT, MbedOS, mosquito-server

- GUI Application which communicated through MQTT with **Multitech mDot** running low-level drivers to wakeup and measure Gas Tanks
- data would be transmitted back to GUI
- GUI parses data and stores it so the user could know which Gas Tank locations needed to be refilled

Network Switch

Yocto-4.0 Kirkstone, Windows Forms, C++, Python, Git

- Utilized Yocto Framework to build multiple customized images for embedded systems based on recipes provided by different manufacturers using Yocto 4.0 to build images for both **IRainbow-G27M**, and **CONGATEC-SMX8XQM SMARC SOM's**
- Configured Yocto environment to boot properly on custom System
- Added CI/CD pipelines using Yocto to automate the build, test, and deployment processes
- Troubleshooted and resolved issues related to and Patched Yocto Build
- Windows Forms C++ application controlling PCB Network Switch
- configured **IRainbow-G27M SMARC SOM** to communicate with Artix 7 FPGA
- Switch GUI could connect to Network Switch, set Switch Configuration and control Switch Operations

A.I. Web Scraper

Python, Ollama, Selenium, streamlit, Git

- Streamlit A.I. Application, for safely scraping all data from a desired URL
- Data scraped can then be manipulated by A.I. using Open Llama A.I.
- A.I. can use scraped data to make tables, compile information and return to user, return specific data to user.

EPSS score Viewer

Python, Pyside6, Numpy, matplotlib, Git

- EPSS Viewer is a PySide6-based desktop GUI application that provides a visual representation of Exploit Prediction Scoring System (EPSS) data for CVEs (Common Vulnerabilities and Exposures). It allows users to input CVE identifiers, fetch EPSS scores from the FIRST.org API, and visualize the results on a bell curve.

Arduino Computer Vision, High-Speed Detection

Arduino, 5110V0 Lens, C, Python, OpenCV, Git

- Computer vision system utilizing Arduino and 5110V0 camera for real-time object speed detection and tracking
- Implements advanced object tracking algorithms with Python/OpenCV for accurate velocity calculations
- Features dashboard for real-time monitoring and analysis of object speeds
- Includes automated calibration system for maintaining measurement accuracy