Matthew Quast

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EDUCATION

University of Maryland, Baltimore County   Catonsville, MD
Bachelor of Science in Computer Science, 3.64 GPA   *Aug. 2019 – May 2023*

EXPERIENCE

Software Engineer Intern   May 2022 – July 2022
Company   *City, State*

- Enhanced cybersecurity event handling by optimizing a Flask plugin, resulting in improved system performance and reliability through codebase refactoring based on the CTFd repository.
- Boosted user scalability by 40% by implementing asynchronous flag delivery in the intelligence server Dockerfile and Python backend, improving network throughput.
- Enhanced user experience and accessibility by developing and integrating API calls with HTML, CSS, and JavaScript, enhancing the admin graphical user interface using .
- Created plugin for a dynamic "decaying value" challenge type via templates and SQL penalty table.

PROJECTS

Audio File Phase Vocoder | *C++, CMake, JUCE*   November 2023 – Present
- * Developed a C++ phase vocoder, utilizing DSP expertise for audio applications like audio time-stretching and pitch-shifting of a .wav file.
- * Applied overlapping, FFT, and windowing techniques in C++ to minimize spectral leakage
- * Utilized the JUCE framework and CMake build tools to streamline development process

Kernel Level Circular Buffer | *C, Linux kernel*   May 2022 – May 2022
- * Implemented a circular buffer in kernel space with CRUD operations
- * Solved deadlock by inserting data via consumer and producer process kernel threads using semaphores
- * Added system calls to a modified Linux kernel in a Debian 11 VM

Campus Dining Review App | *Python, FastAPI, React, SQLite, JavaScript*   Feb 2023 – May 2023
- * Developed a full-stack web application using with FastAPI serving a REST API with a React frontend
- * Gathered hundreds of student user reviews to score campus food options weekly
- * Visualized data via Recharts and MUI to estimate service and quality trends over time

TECHNICAL SKILLS

Languages: Python, C/C++, SQL, JavaScript, HTML/CSS, Perl
Frameworks: React, Node.js, Flask, Material-UI, Bootstrap
Developer Tools: Git, Docker, AWS, VS Code, Visual Studio, Visual Studio Code
Coursework: Databases, Cybersecurity, Information Retrieval, Parallel Computing