Ryan Guide

ryan.guide@comcast.net | +1-814-470-6823

Skills

Languages: Python, C++, C, JavaScript, Java, Racket

Frameworks & Libraries: React, Flask REST

Tools & Platforms: Docker, Git, GitLab, Bitbucket, MongoDB, SQLite, Jira, Confluence, Artifactory, SonarQube, Apache NiFi, AWS, Apache Tomcat

Domains: Full Stack Development, Systems Programming, Simulation, Network Security

Experience

The Applied Research Laboratory at Penn State University — University Park, PA

Research and Development Engineer II — *March 2023 – Present*

- Improved simulation platform scalability by designing and integrating complex C++ and Python models, reducing model integration time by streamlining tooling across the development pipeline.
- Increased consumer accessibility and experience by building full stack web applications using Java and React, delivering intuitive interfaces that reduced on-boarding friction for end users.
- Accelerated cross-team delivery on multiple concurrent projects by serving as a technical liaison between engineering groups, coordinating efforts and resolving blockers across Docker-based deployment workflows.
- Maintained code quality and CI/CD health across projects by leveraging GitLab, SonarQube, Artifactory, and Jira, ensuring consistent standards across distributed teams.

The Pennsylvania State University — University Park, PA

Teaching Assistant — *August 2021 – December 2022*

- Improved student performance in a Data Structures course by delivering one-on-one and classroom instruction, earning a certification for outstanding teaching contributions in September 2022.
- Reinforced student mastery of fundamental programming concepts by designing and preparing course materials aligned with real-world software engineering workflows.

Projects

Network Data Pipeline | *Python, Snort, Docker, AWS, Regex* — Research

- Reduced rule analysis turnaround time by building an automated AWS-based pipeline that ran modified SNORT/SIDS rules against live network traffic, eliminating manual analysis steps.
- Improved analysis accuracy by condensing large network capture files into hash tables and validating against a heuristic ground truth, enabling precise measurement of rule modification impact.

PFS Virtual File System | *C* — Systems

- Eliminated file corruption risk in a simulated disk environment by implementing a robust allocation table and command-block control system for managing reads and writes under real-world workloads.

Dynamic Memory Manager | *C* — Systems

- Optimized both space and time efficiency of a custom memory allocator by implementing block splitting, coalescing, and free-list traversal using embedded linked lists within free memory regions.

Education

The Pennsylvania State University — University Park, PA

M.S. in Computer Science and Engineering — *December 2022*

- Focus: Systems & Internet Infrastructure Security (SIIS Lab)
- Relevant Courses: Operating Systems, Data Structures & Algorithms, Computer Networks, Computer Architecture, Programming Language Theory, Security

Allegheny College — Meadville, PA

B.S. in Mathematics — *May 2020*

- Relevant Courses: Combinatorics, Abstract Algebra, Probability & Statistics, Computability Theory

Publications

• Ryan Guide, Eric Pauley, Yohan Beugin, Ryan Sheatsley, Patrick McDaniel. "Characterizing the Modification Space of Signature IDS Rules." *IEEE MILCOM 2023*, pp. 536–541. doi:10.1109/MILCOM58377.2023.10356225