

Experience

Senior Software Engineer

Qualcomm Technologies | Boulder, CO | 5G TBS (Test Base Station) | November 2022 – October 2023

- Led weekly debugging tutorial meetings for knowledge share between team members of all experience levels
 - Topics include: Timeline delays, use after free, memory leaks, array boundary violations, instruction reordering, incorrect library usage, specification misunderstandings, tcpdump, Wireshark, etc.
 - Decreased team level average response time to bug reports by 57%
- Added interactive user configuration validation to catch configuration mismatches and reduce support load
 - Defined a Python based API to verify cross compatibility of multiple configuration fields, provide feedback about invalid configurations via the system GUI, and suggest alternative valid configurations
 - Decreased system downtime due to invalid user configurations by 98%
- Led the system-wide implementation of parameterized unit tests with GTest framework
 - Implemented baseline test setup and provided an easy way for other engineers to add test scenarios
 - Decreased time required to test and release new features by 76%
- Collaborated with other teams to improve internal developer tools (log analyzer, timer library, CI/CD, etc.)

Software Engineer

Qualcomm Technologies | Boulder, CO | 5G TBS (Test Base Station) | January 2020 – November 2022

- Developed a configurable network traffic generator utility for system performance testing and fuzzing
 - Configurable options: 5G/internet headers, payload size/contents, time distribution of packets, etc.
- Optimized C++ code performance with a variety of architecture (x64) specific and multi-architecture techniques
 - DPDK (Data Plane Development Kit) usage, data/instruction cache optimization, multiple worker thread model, hardware assisted cryptography, custom memory allocator for STL, firmware offloading, etc.
- Implemented multi-threaded log aggregation framework for tracking data throughput and other metrics
- Implemented 3GPP spec features and associated error simulation across multiple components in the 5G Stack
 - RLC/PDCP window management, protocol header processing, status report processing, QoS, GTP communication gNodeB to 5GC and gNodeB to gNodeB, TB creation and storage, CDRX, etc.

Software Engineer Intern | Viasat | Germantown, MD | May 2019 – August 2019

- Authored system and component level requirements along with supporting software design documentation
- Integrated legacy Java web applications (GWT, Tomcat) into authentication system (Keycloak) to improve security
- Created a strategy for automated testing (Selenium) and manual testing to ensure reliability and compliance

Software Engineer Intern | Viasat | Carlsbad, CA | May 2018 – August 2018

- Configured hardware to construct emulation environments for prototype demos (modems, routers, VPN, etc.)
- Strategically tested multiple software configurations to determine optimal defaults for release product
- Developed JavaFX application to test various network scenarios, then interpret and display the results

Skills

- High Performance C, C++ (STL, Boost, multi-threading, sockets, CMake, GTest, GCov, gcc, embedded software)
- Low Latency/High Performance Network Programming (DPDK (Data Plane Development Kit), Promatics TSN.1)
- Linux (Bash, Python, CentOS, Red Hat Enterprise Linux (RHEL))
- Software Troubleshooting and Debugging (gdb, tcpdump, Wireshark, strategic logging, stack trace analysis)
- Java (JavaFX, JUnit, Swing, GWT, Maven, Gradle)
- Version Control and Code Review (Git, Perforce, Gerrit)
- Documentation and Requirements Management (Confluence, Jira, Jama)
- Various Development Environments (JetBrains, Eclipse, Visual Studio, VSCode, Vim)
- Various Task Organization Structures (Agile, Kanban, Scrum, Waterfall)

Education

Bachelor of Science in Computer Science | Baylor University | Waco, TX | August 2016 – December 2019

- **GPA** 3.64 (Major), 3.54 (Overall)
- **Relevant Coursework**
 - Data Structures, Algorithms, Operating Systems, Networking, Computer Architecture, Database Design, Software Engineering, Competitive Cybersecurity, Numerical Methods, Data Mining, Technical Writing
- **Capstone Project**
 - A modern web based news aggregation application with personalized recommendation engine, intelligent category filtering, and bias detection
 - Technologies Used: Python, Flask, MongoDB, Vue.js, Bootstrap, OAuth, Docker
- **Other Notable Projects**
 - File compression and decompression utility using Huffman encoding (C++)
 - Computer player for “Tiger game” board game (C++ with SDL2 front-end)
 - Digital dice game with multi-player and computer players (Java with Swing front-end)
 - Resource collection strategy game (Javascript, Angular, MySQL)
- **Student Organization Leadership**
 - **Baylor Driving Club** | Road Rally Chair
 - Wrote detailed directions, made back-end calculations, and coordinated event volunteers
 - **Computing for Compassion (C4C)** | Secretary
 - Coordinated participant and volunteer sign-ups for Wacode, a hackathon style event