DORINE TIPO

Software Engineer

Github profile

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SUMMARY

I am a Software Engineer with a focus on Kernel Development, currently expanding my expertise through hands-on experience and continuous learning. I successfully completed the LFX Linux Kernel Bug Fixing Mentorship Program, where I contributed over 5 patches to the Linux kernel. This experience has provided me with valuable skills in kernel development, including device drivers, kernel configuration, debugging, and testing, as well as proficiency in virtualization, build systems, and toolchains. I have utilized both dynamic and static analysis tools to effectively debug kernel issues, enhancing my problem-solving capabilities. Additionally, I hold a certification in Docker Essentials and am pursuing advanced certifications in Containers, Kubernetes, and Istio on IBM Cloud, demonstrating a solid foundation in modern containerization and orchestration technologies.

EDUCATION

Africa Leadership University - ALU

Software Engineering
May 2022 - July 2023

University of Nairobi

BSc. Biology
May 2013 - Sept 2018

SKILLS

- **Programming** - C, Python, JavaScript, Bash, Puppet.
- **Linux Kernel Development** - Configuration, testing, debugging, device drivers and patches
- **Version Control Systems** - Git, Git workflows and Repository management
- **Build Systems and Toolchains** - Kconfig, Kbuild, cross-compilers, Make, clang/LLVM
- **Virualization and Embedded Systems** - QEMU, KVM, sandboxing, Yocto
- **APIs** - RESTful API, GraphQL
- **Server Configuration and Management** - Nginx, Apache, Gunicorn
- **Containerization and Orchestration** - Docker, Kubernetes, Docker Swarm, Breeze
- **Software Developmen**t - Packaging, software architecture and design, refactoring
- **Open Source Contribution**
- **Soft Skills** - Problem Solving, Communication, Collaboration, Flexibilty

CERTIFICATIONS

- A Beginner's Guide to Linux Kernel Development - completed
- Docker essentials - completed
- Forage Lyft Back-End Engineering Job Simulation - completed

REFERENCES

Shuah Khan - Linux Kernel Maintainer
skhan@linuxfoundation.org

Danson Kalaghe - SE Technical Mentor
dmwangombe@sandtech.com

PROFESSIONAL EXPERIENCE

Linux Foundation mentee

Linux Kernel Bug Fixing spring 2024 | March 1 - August 31, 2024

- **Linux Kernel Debugging -** Gained experience in diagnosing and resolving kernel crashes by interpreting panic messages and stack traces. Learned fundamental debugging techniques and advanced methods to analyze system behavior during crashes.
- **Event Tracing** - Utilized event tracing tools to monitor and analyze kernel activities, identify performance bottlenecks, and debug errors by visualizing the execution flow.
- **Dynamic Analysis** - Applied Address Sanitizer (ASAN) and Kernel Concurrency Sanitizer (KCSAN) to detect runtime errors, ensuring kernel stability.
- **Style Fixes and Code Cleanup** - Used checkpatch.pl to identify and fix style violations, removed dead code, and corrected documentation errors, contributing to general kernel cleanup and adherence to coding standards.
- **Kernel Patching -** Gained experience in creating, sending, and applying patches, with several contributions accepted into the kernel staging tree.
- Semantic Patching with Coccinelle - Automated code transformations, including improving memory management by removing redundant of_node_put() calls and applying __free(device_node) attributes.
- **Linux Kernel Testing** - Developed a test for PR_SVE_VL_INHERIT functionality after a double fork in ARM64 self-tests.
- **Open-source Contribution -** Contributed to the growth and improvement of open-source software through active participation in linux kernel bug fixes.

Outreachy open source Contributor

Linux Kernel | October 2023 and March 2024

- **Landlock Testing:** Developed user-space tests to improve Landlock's effectiveness in isolating processes.
- **Kernel Development:** Demonstrated proficiency in Linux kernel development by successfully completing the Outreachy "First Patch Tutorial" and having several patches accepted into the staging tree and merged into the mainline kernel.
- **io_uring Security**: Extended Landlock's tests to cover io_uring operations by writing landlock tests for IORING_OP_OPENAT.