Daniel Robertson

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Software Engineer

Perseverant and purposeful software engineer with expertise in Linux kernel development, open-source collaboration, software performance and scalability, cross-team collaboration, and debugging and troubleshooting. Confidently tackle detail-oriented challenges, demystifying and integrating complex issues into broader projects and facilitating team member contribution and collaboration. Customer-focused engineer who stays close to the problem and generates solutions that exceed client expectations.

- ⇒ Linux Kernel Development
- ⇒ Open Source Collaboration
- ⇒ File System Development
- ⇒ Debugging & Troubleshooting
- ⇒ C
- ⇒ Rust
- ⇒ X86 Assembly
- ⇒ Fuzz Testing
- ⇒ Technical Writing
- ⇒ Network Protocols (IPv6)
- ⇒ Cross-Functional Collaboration
- ⇒ Hypervisor Development

Open Source Highlights

Linux Kernel	• **Authored and upstreamed the BMA400 Accelerometer IIO driver** to the Linux kernel, enabling use of the device with either I2C or SPI serial communication protocols. • **Improved system stability and robustness** of `bcachefs` by identifying and resolving several kernel bugs found during fuzz testing.
Rust Compiler	• **Closed critical gap in interoperability with C** by implementing C `va_list` and variadic functions, enhancing ability to export C APIs. • **Optimized stability and functionality of Rust language** by rectifying several internal compiler errors.
Smoltcp	• **Implemented IPv6 support**, refining Redox OS' networking capabilities. • **Supported project maintenance** and coordinated contributors, fostering collaboration in open-source environment.
Mythril	• **Designed guest ACPI table building**, enabling virtual machines to accurately detect and allocate system resources. • **Directed initial development efforts** and delegated smaller tasks, cultivating teamwork among volunteers.

Work Experience

Senior Software Engineer, **MOZILLA** - San Francisco, CA (Remote) Apr. 2022–Present

Non-profit software community promoting exclusively free software and open standards with 40K global active contributors. Best known for Firefox web browser, Thunderbird email client, Bugzilla bug tracking system, Gecko layout engine, and Pocket "read-it-later-online" service.

Hired to maintain the asynchronous panning and zooming (scrolling) component of Firefox web browser after volunteering on several Mozilla open-source projects, including Servo and the Rust Compiler.

- **Provided reliable product up-time** by resolving incoming bugs and collaborating remotely with 3 software engineer team members to triage, troubleshoot, and debug issues.
- **Upheld user functionality** by aligning patches with web specifications and writing C++ code to fine-tune performance and address problems.
- **Improved web compatibility across multiple browsers** by contributing to web speifications and test frameworks, with a focus on `Blob` handling in the `fetch` specification.

Member of the Technical Staff, **STAR LAB, A WIND RIVER COMPANY** - Washington, DC Apr. 2019–Apr. 2022
Provider of cybersecurity solutions for protecting Linux-based systems in mission-critical environments.

Hired to maintain custom Linux kernel-based security module and implement 2 file overlay filesystems an authenticated filesystem and an encrypted file system. Allied with 3–4 technical staff members in managing high-security contracts.

- **Improved correctness of the file system implementation** by debugging and implementing fixes for issues found when guiding customers through the integration process.
- **Advanced file system performance** by debugging complex performance bottlenecks to enable faster and more secure data handling.
- **Boosted Linux security module performance** by developing the kernel implementation, to evolve from experimental phase to tangible, sellable product.

Machine Intelligence Engineer, **EMBEDDED INTELLIGENCE** - Washington, DC May 2018–Apr. 2019
Cutting-edge R&D company enhancing safety and security of Aenabled systems.

Joined industry contact and friend in supporting DARPA research projects by formulating secure data pipelines and web crawlers to gather large-scale current and historical data from public archives.

- **Informed strategic decisionmaking in research initiatives** by enhancing accuracy algorithms and designing pipelines that processed largescale datasets in partnership with machine learning experts.
- **Strengthened research proposals** by leveraging in-depth knowledge of network protocols to enable precise metadata collection from network traffic, ensuring richer datasets for analysis.

Software Engineer, **TRIPWIRE** - Atlanta, GA May 2016–Jun. 2018
Provider of cybersecurity risk management, helping organizations build security, compliance, and operational efficiency.

Recruited as network security product subject matter expert, using protocols to gather device information and evaluate risk of malicious intent and use. Collaborated with 20 software engineers and managers to remotely serve clients.

- **Upheld system reliability and minimized downtime for customers** by resolving complex memory issues in network devices using remote debugging techniques and code analysis to identify and fix problems.
- **Maintained high system performance and customer satisfaction** by providing on-call engineering support to troubleshoot and resolve urgent customer concerns.

ORISE Fellow, **CENTERS FOR DISEASE CONTROL & PREVENTION (CDC)** - Atlanta, GA Sept. 2014–May 2016
The US' leading science-based, data driven service organization that protects the public's health.

Hired as a new graduate to pair with staff and receive handson research experience.

- **Cut data entry time by 50%** by writing programs to automatically input survey data into forms, eliminating need for double student entry.

Education

GEORGE MASON UNIVERSITY – Fairfax, VA
Master of Public Health in Epidemiology | Graduate Certificate in Biostatistics | Bachelor of Science in Community Health

Conference Presentations

Daniel L. Robertson, Jin-Mann S. Lin. Application of computer vision and machine learning to public health data validation. CDC/ATSDR Statistics Day. Atlanta, GA. September 22, 2015