# Stuart Small


Contact Information

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Professional Experience

**Randori**, Denver, Colorado **May 2020 – Present**
*Principal Engineering Lead*

- Built up and lead the team building out the Continuous Automated Red Team (CART) product.
- Took over the initial MVP and stabilized it. Added CI, monitoring, wrote test plans and polished the deployment process.
- Built new automated phishing functionality and client software reconnaissance feature.
- Worked directly with the attack team to identify needs and implement them to maximize their efficiency.
- Mostly developed in Python with some Go on top of an in house Docker orchestration framework.

**ThreatX**, Boulder, Colorado **June 2017 – May 2020**
*Director of Engineering*

- Joined company during seed funding phase as an early software engineering hire. Took an MVP product and helped transform it into a production worthy, scalable state.
- Served in various technical roles inside the company. The primary focus was software engineering but also played a major role in operations, was part of external penetration testing contracts, ran simulated phishing campaigns, and handled customer support.
- Actively involved in the development of every part of the product. Technologies regularly used include Rust, MongoDB, Nginx, Consul, RabbitMQ, Typescript, AngularJS, Python3, and Flask. The vast majority of the work was done in Rust.
- Stepped into a leadership position after the series A funding. Led the hiring process in engineering, maintained the roadmap and guided the team towards making the best product possible. Stepped in as scrum master, product owner, and product manager as needed.
- Designed new processes, and policies to improve code quality, velocity, and on call team's responsiveness to production issues.

**Spectralink**, Boulder, Colorado **October 2013 – June 2017**
*Senior Software Engineer*

- Was instrumental in bringing a line of ruggedized, SIP based smartphones to market. Worked at almost every point of the system from the WiFi device driver, Android middleware, bug fixes in upstream AOSP, to writing some user applications.
- Served as the security expert for the project. Maintained SELinux policies, tracked upstream projects and backported security fixes. Regularly audited parts of the system and wrote exploit code when problems were found. Wrote blog posts and technical bulletins to explain security issues in the news and how they affect our product.
- Served as scrum master for the platform team. In charge of keeping the team organized in the context of the sprint, tracking and interrupting metrics, and organizing and running sprint ceremonies.
- In my free time, I rearchitected our phone provisioning system to allow for a fast, secure, zero touch method that works across our product line. A proof of concept was written using Scala on the Play Framework.

**NewType.com LLC**, Manitou Springs, Colorado **January 2013 – March 2015**
*Co-founder*

- Co-founding member of small bootstrapped startup.
- Primarily focused on the mobile strategy. Played major role in design and architecture of the system. Other primary responsibilities included testing, security, and operations

**Cisco Systems, Inc**, Richardson, Texas **January 2012 – January 2013**
*Contract Software Engineer*

- Member of the OnPlus team. Worked towards making a cloud based network management tool.
- Development time split between an embedded Linux based network discovery device and development of server side services based on FreeBSD, PostgreSQL and PHP.

- Reached out to open source community to help relicense and bring existing projects in to be part of our solution.
- Worked in a major rearchitecture of the service with the goal of massive scalability.
- Wrote a remote hardware management service that would control and monitor customer premises equipment in Java on Spring.
- Created a Java desktop application to emulate virtual devices for correctness and load testing.

**Datascan Inc**, Carrollton, Texas **February 2009 – January 2012**
*Software Engineer*

- Instrumental in the development of a new handheld inventory scanning system. Helped port uClinux to the new board, wrote device drivers, and expanded system level services.
- Verified and approved hardware designs and schematics. Provided feedback on hardware design from a software perspective.
- Developed a suite of test applications for quality control during manufacturing.
- Ported a legacy application written in C from a DR-DOS based Symbol scanner, optimizing communications code, and maintained and expanded already existing C++ server side solutions.
- Planned and developed a system for the warehouse staff to automate the updating of firmware on devices, resulting in massive increases in worker productivity.
- Responsible for long term, experimental projects. Including but not limited to sourcing parts, hand soldering prototypes, and writing software for experimental wireless scanners. Including GPRS, CDMA and several WiFi models. This research was used to make a multi-million dollar decision on which communication method to go with.
- Helped introduce a new multi-threaded approach to an legacy DOS application for marked increase in productivity.

**Desktop Devices, Inc**, Plano, Texas **July 2008 – February 2009**
*Contract Software Developer*

- Planned, developed, and supported a flexible project to track budget and project requests and approvals using PHP and MySQL to run on Linux.
- Worked on a team that developed a large scale engineering resource management tool-set.
- Developed applications in a wide variety languages (i.e., PHP, MySQL, JavaScript, C#, ASP.NET, Classic ASP).

## Research and Talks

- A lead researcher for a group during a project funded by the National Science Foundation on *Verification and Validation for Software Safety*. The work was later published in *IEEE Transactions on Reliability*.
- Gave several talks on building malware in Rust. Walked through an analysis of the functionality and design of a real world implant. Then described the process of building a toy implant with command and control system in Rust.
- User group talk on dependency injection patterns and unit testing best practices in Rust.
- Gave a presentation a Rustls fork I wrote that allows for sub-NAT user tracker via TLS session resumption.
- Taught an introduction class on Android firmware reverse engineering. Followed a real world example stepping through decompilation, file formats, some deobfuscation techniques and finally pulling hardcoded secrets out of the firmware.

## Education

**University of Texas at Dallas**, Richardson, Texas
*Bachelors of Science Degree in Computer Science*

- Leader of my embedded systems course's team. Worked on projects including, but not limited to, writing the firmware for an AVR based line follower robot and programmed a system running the RTOS VxWorks to control a toy train set.
- Leader of my Senior design project. Managed a team in developing a fully functional, distributive peer-to-peer file sharing application built around the Chord algorithm in Java.