Leland Liu

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Education

Rensselaer Polytechnic Institute *Fall 2017 - Spring 2021*
Bachelor of Science in Computer Science *3.18 GPA*
Honors: Dean's List - Summer 2019, Dean's Honor's List - Spring 2019, Fall 2020

Experience

Security Intern - *Ruby/Rails, Rust, Python, Brakeman, MySQL, AWS, Enterprise APIs* *Remote*
Include Security LLC *Summer 2020*
- Developed a Rails app which used Google & Mavenlink APIs to help consultants update their Mavenlink stats
- Found vulnerabilities during a cryptography focused audit of an open source Rust application
- Worked on a static analysis tool for Ruby code using Brakeman and Rake
- Verified and wrote up security advisories

Malware Obfuscation Researcher - *C++, x86 ASM, LLVM, McSema, Binary Ninja* *Troy, NY*
Rensselaer Polytechnic Institute *Summer 2019 - Fall 2019*
- Used McSema and Dyninst to lift binaries to bitcode for analysis, and recompiled lifted bitcode with Clang
- Performed static analysis on malware using Binary Ninja and dynamic analysis using Cuckoo Sandbox
- Wrote LLVM Function and MachineFunction passes to obfuscate lifted bitcode

Relevant Coursework

Program Analysis - *Java, Java Bytecode, C, Soot, Ghidra* *Spring 2020*
- Implemented various popular techniques for type analysis on Java bytecode, including RTA and XTA
- Explored cutting edge techniques in program analysis such as taint analysis and symbolic execution
- Studied standard dataflow problems and their implications for compiler optimization

Modern Binary Exploitation - *C, Python, x86 ASM, GDB, IDA* *Spring 2019*
- Learned how to exploit Linux binaries and write exploit scripts in Python through CTF challenges
- Performed static and dynamic analysis techniques on source code and binaries
- Bypassed modern mitigations such as stack canaries, DEP, ASLR, and RELRO
- Utilized GDB, pwntools, and IDA for reverse engineering and exploitation

Projects

ARIS: Formal Proof Interface - *Rust, Java, Git* *Spring 2020*
- Used abstract syntax trees to represent formal logic sentences
- Implemented solvers to solve various classes of logic problems
- Built an auto-grader to grade students' homework submissions

RUST: Rust Utilizing Spotify Tracker - *Rust, Git, Handlebars, Actix, Nginx* *Spring 2020*
- Configured a web server using Actix to handle routing with nginx for load balancing on Fedora Linux
- Wrote backend code to handle oauth2 authentication and parse Spotify API response data
- Created a website that displays visualizations of a user's Spotify listening habits

Extracurricular Activities

RPISEC (Computer Security Club) *Spring 2019 - Present*
Club Officer: System Administrator
- Participated in meetings to learn about various security topics such as cryptography and tools like Ghidra and angr
- Used DigitalOcean, Google Suite, and Linux to manage servers for club administration and Attack/Defend CTFs
- Played CTF competitions, used tools such as IDA, GDB, pwntools to find vulnerabilities and develop exploits
- Gave a lecture on binary instrumentation

Other clubs - GZ Basement (Live Music Venue): *Co-President*, WRPI Radio: *Radio DJ*, Tech Ethics Group: *Member*

Skills

Tools - IDA Pro, Ghidra, Binary Ninja, GDB, Linux, LLVM, Git, Make, McSema, Soot, Valgrind, Ruby/Rails, AWS
Programming Languages - Rust, Ruby, Python, C, C++, x86 Assembly, Java, Bash, LaTeX/Markdown