Sam Flattery

SOFTWARE ENGINEER

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Education

Carnegie Mellon University   *Pittsburgh, PA*

B.S. IN COMPUTER SCIENCE, CONCENTRATION IN COMPUTER SYSTEMS   *Aug 2018 - Expected May 2022*

- Cum. GPA: **3.92 / 4.00**
- School of Computer Science Dean's List, High Honors F18, S19, F20, S21
- Selected courses:

15-410 Operating Systems *(Current)*	**15-440** Distributed Systems	**15-445** Database Systems
15-418 Parallel Computer Architecture	**15-451** Algorithm Design & Analysis	**15-414** Automated Program Verification
15-330 Intro to Computer Security	**15-281** Artificial Intelligence *(Current)*	**15-210** Parallel Data Structures

Work Experience

Google   *Ireland (Remote)*

SOFTWARE ENGINEERING INTERN   *May. 2021 - Aug. 2021*

- Worked on the SafetyNet Attestation API, an anti-abuse platform which assesses device side integrity on Android devices
- Designed and implemented a principled way to process device information and produce a new integrity verdict for a new class of device
- Added monitoring metrics and a graphical dashboard to this system to allow the onduty to recognize and respond to scaled abuse
- Extended the system that calculates preexisting integrity verdicts in a way that made it more configurable, scalable and easier to debug
- This new system is on the critical path to assessing over a billion devices daily
- During the three month internship, two other team members have already used this new infrastructure to simplify their parts of the system

Google   *Ireland (Remote)*

SOFTWARE ENGINEERING INTERN   *May. 2020 - Aug. 2020*

- Worked with the security team to find bugs in Envoy, an open source L7 proxy, through randomized fuzz testing
- Wrote a fuzz target for Envoy's xDS protocol, which provides a centralized infrastructure for distributing config files to Envoy nodes
- Implemented an abstract state tracker that maintained the correct state of the nodes to verify that updates to the configurations were properly processed after executing the fuzzed input
- Fixed two logical bugs in Envoy's implementation of xDS found by my fuzzer
- Increased fuzz coverage over key files by more than 40%

Personal Projects

iOS App - FCE++   *May. 2019 - Aug. 2019*

- Created an iOS app on which students can view CMU's course information and ask questions about courses
- Utilized the Parse Platform API and HTTP requests to manage a server-side database
- Compiled data from CMU's CSV of course data to JSON format using Python's Pandas, CSV and JSON modules

Programming Language - sudoCode   *Dec. 2019 - Jan. 2020*

- Taught myself C++ by writing a lexer, parse tree and abstract syntax tree generator from scratch for a small programming language
- Created a tool to visualize the graphs that are created as the input code is interpreted

Skills

- **Programming Languages:** C++17, C, Python, Java, Swift, SML, x86-64 Assembly
- **Development Tools:** Git, Vim, Xcode, Make, Bazel, Tmux

Extracurricular Activities

The Atlas Project   *Pittsburgh, PA*

SOFTWARE LEAD   *Aug. 2019 - Now*

- Managing the software team developing a fully autonomous gravity-powered vehicle
- Present weekly briefings on software progress to the organization and assign tasks to team members
- Integrated deep learning semantic segmentation into the vehicle's control mechanism