

# Sam Flattery

## SOFTWARE ENGINEER

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## 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 on-duty 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%

## Education

### Carnegie Mellon University

Pittsburgh, PA

#### B.S. IN COMPUTER SCIENCE, CONCENTRATION IN COMPUTER SYSTEMS

Aug 2018 - May 2022

- Cum. GPA: **3.91 / 4.00**
- School of Computer Science Dean's List, High Honors F18, S19, F20, S21, S22
- Selected courses:

**15-410** Operating Systems

**15-440** Distributed Systems

**15-418** Parallel Computer Architecture

**15-451** Algorithm Design & Analysis

**15-281** Artificial Intelligence

**15-445** Database Systems

## 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:** Java, C++17, C, Python, Swift

## Extracurricular Activities

### The Atlas Project

Pittsburgh, PA

#### SOFTWARE LEAD

Aug. 2019 - May 2021

- 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