ISABELLA LAYBOURN

ilaybour@andrew.cmu.edu | andrew.cmu.edu/user/ilaybour | linkedin.com/in/bellalaybourn | github.com/saphirasnow

EDUCATION

Carnegie Mellon University — **Pittsburgh, PA**

B.S. Computer Science, Concentrations in Software Engineering and Computer Graphics — *May 2023*

- Dean's List Fall 2019, Spring 2021
- Relevant Coursework:

15-151 Mathematical Foundations of CS	15-251 Great Ideas in Theoretical CS	15-213 Intro. to Computer Systems
15-122 Principles of Imperative Comp.	15-210 Parallel Data Structures and Alg.	15-259 Probability and Computing
15-150 Principles of Functional Prog.	17-214 Principles of Software Eng.	17-355 Program Analysis

WORK EXPERIENCE

Salesforce — **(Remote)**

Infrastructure Security Intern, *REDSCAR Team* — *May 2021 – August 2021*

- Researched and improved Salesforce's static analysis tooling with regard to XXE and deserialization attacks
- Presented work *Reducing our Risk Debt at Scale with Application Guard Rails via Static Analysis* to SVP, Security Assurance
- Wrote and tested 13 Semgrep rules (2 open-source) for Java, Python, and Ruby for a tool run on all code reviews
- Caught 30 new, high-priority bugs in production code

Infrastructure Security Intern, *Reference Design, Security Controls, and Architecture (REDSCAR) Team* — *June 2020 – August 2020*

- Categorized over 600 security bugs filed by Infrastructure Security Advisory team
- Collaborated with Secrets team to integrate secrets management program Vault and internal database APIs to develop automated support for secret rotation (Python script for AWS Lambda and Go program in Docker container)
- Performed design reviews for security assessment

Cyber Crucible, Inc. — **Pittsburgh, PA**

Software Engineering Intern — *January 2020 – May 2020*

- Developed voice recognition software for security authentication in Java and integrated REST APIs for an Android app

Evalulogic — **Sitka, AK**

Data Analysis Intern — *July 2019 – August 2019*

- Analyzed and designed more than 100 Excel graphs sorting and depicting information from 2 surveys of high school students regarding usage of and attitudes toward controlled substances
- Formal presentation of the data to client Sitka Counseling at their monthly meeting

ACADEMIC EXPERIENCE

Undergraduate Research Assistant, Institute for Software Research, PASTA Lab — *January 2021 – Present*

- Created mutation analysis-based guidance plugin for fuzzer JQF
- Programmed mutation analysis functionality using Java bytecode instrumentation
- Currently working toward testing mutation-guided fuzzing on larger benchmarks

Teaching Assistant, 15-151/21-128 Mathematical Foundations of Computer Science — *August 2020 – December 2021*

- Taught weekly recitations, held office hours, and graded homework and exams
- Helped students understand and apply class concepts including logic, functions, and probability

SIGGRAPH Student Volunteer — *May 2021 – August 2021*

- Performed quality assurance tests for AR/VR pieces submitted to the SIGGRAPH VR Theater

Wired Wolves Robotics Club — *2017 – 2019*

- Leader and sole programmer for the Wired Wolves in the 2017-18 and 2018-19 First Tech Challenge robotics competitions (Alaska State Control Award in 2019)

Girls Can Code Club — *2015 – 2019*

- Taught Python and Unity as leader and participated and mentored others in Technovation 2017 and 2018 (semifinalist)

PROJECTS

Game Creation Society — *September 2019 – December 2019*

- Programmed sports-themed fighting minigame Sporshmallow in Unity with team

Biometric Shirt for Dravet Patient — *2018 – 2019*

- Programmed biometric shirt using LEDs to monitor temperature and activity for a Dravet patient
- Created two working prototypes using Arduino, Adafruit, and Particle IoT boards
- Tested a feature that writes the gathered temperature/activity information to a ThingSpeak channel

Transitions and Effects for AMVs — *2017 – 2019*

- Programmed 2D video effects and transitions, including feathered sweeps and a background-independent chroma key

SKILLS

Programming Languages: Java, Python, C, C++, Go, SML, OCaml, C#, Ruby, Arduino, Particle, HTML, JavaScript, LaTeX, bash
Programs: Adobe (Premiere Pro, Photoshop), Autodesk Maya, Unity, Semgrep, Docker, AWS, JQF, Maven, Soot, git, vim