Simon Alam

818-850-8754 | alasimon@seas.upenn.edu | linkedin.com/in/simon-alam-693005178/ | github.com/salam002

Education

University of Pennsylvania January 2023 – May 2025
Master of Computer and Information Technology (Computer Science)

University of California, Berkeley August 2020 – May 2022
Bachelor of Arts in Political Science

Technical Skills

Languages: Python, C/C++, Java, SQL, JavaScript, HTML/CSS, R, Shell Scripting (Bash)
Developer Tools: Git, Docker, VirtualBox, Google Cloud Platform, AWS, AJAX, Azure, Visual Studio Code, PyCharm, IntelliJ, Eclipse, Jupyter, Colab, Replit, Vim, GDB, Valgrind, DBeaver, Tableau
Libraries: Pandas, NumPy, Matplotlib, Seaborn, GeoPandas, Flask

Experience

Graduate Teaching Assistant - Computer Systems Programming Current
University of Pennsylvania *Remote*

- Conducted office hours and recitations on operating system concepts, including processes, threads, inter-process communication, traps, interrupt handling, scheduling, virtual memory, file systems, and standard network protocols (e.g., TCP/IP).
- Guided students in developing C programs for network communication, signal handling, and related topics.
- Assisted students in setting up Docker environments for Linux containers, as well as using debugging tools like GDB/GEF and memory analysis tools such as Valgrind.

Cybersecurity Graduate Scholar June 2022 – January 2023
Lawrence Livermore National Laboratory *Livermore, CA*

- Implemented Python-based API scripts integration to efficiently download and manage large (24+ GB) netCDF files of climate data, automating data collection and preprocessing for climate analysis.
- Utilized Xarray and Cartopy Python libraries on a computing cluster to preprocess and visualize ERA5 climate datasets, optimizing workflows to visualize temperature anomalies for regional analysis.
- Worked with key stakeholders, including the Department of Defense, to support a framework that integrates climate risk insights into national security planning, therefore enabling proactive measures.

Data Science Intern October 2021 – December 2021
Defenders of Wildlife *Washington, DC*

- Used Google Earth Engine (JavaScript) to extract geospatial features, generating GeoJSON and .tif datasets for multiple counties to train predictive models.
- Leveraged Azure to run and fine-tune Microsoft Land Cover AI models, validated results against the National Land Cover Database using confusion matrices for accuracy assessment.
- Automated data workflows and streamlined model processes with Python scripts in Vim, increasing efficiency and promoting preemptive decision-making for key stakeholders on land-use change.

Projects

App Security and Exploit Developments | *Python, C, x86, GDB, VirtualBox, Git* September 2024

- Used GDB to analyze stack vulnerabilities in C programs (e.g., strcpy, malloc) on x86 architecture.
- Developed Python scripts to automate buffer and integer overflow exploits for privilege escalation testing (e.g., overwriting $ebp register, return address, integer wrap-around).
- Investigated memory behavior in GDB to identify security flaws, preventing adversaries from root privileges.

Social Media "Flu" Tracking Application | *Java, JSON, IntelliJ, Git* October 2023

- Developed a Java application to analyze Twitter data, identifying flu-related tweets using regular expressions to detect flu words and hashtags based on customizable rules.
- Matched tweet locations to US states, aggregating and reporting flu mentions by state for public health insights.
- Applied an N-tier architecture with modular components for parsing, analysis, and reporting, and implemented the Singleton design pattern for efficient data management.