

ROHIT CHOUHAN

700 Health Sciences Drive, Stony Brook, NY, USA, 11790

☎ (631) 710-9938 ✉ rchouhan@cs.stonybrook.edu 🐙 [Github](#) 🌐 [Website](#) [in](#) [LinkedIn](#)

Education

Stony Brook University

Aug 2021 – May 2023

Master of Science in Computer Science (Thesis) — GPA 3.62/4

Stony Brook, NY

Courses - OS (Prof. Erez Zadok), System Security, Computer Networks, Algorithms, Visualization and HCI

Institute of Engineering and Technology, D.A.V.V.

Jul 2016 - Sep 2020

Bachelor of Engineering in Information Technology — GPA 8.37/10

Indore, India

Experience

Amazon

May 2022 - Aug 2022

Software Development Engineer Intern

Austin, Texas

- Spearheaded the development of a robust security analysis system enabling the third-party security team to detect, analyze, and monitor third-party application usage, thereby benefiting about 100,000+ employees.
- Engineered a full-stack data collection portal on native AWS infrastructure in about 8 weeks (3000 sloc).
- Designed the front end as a static *React* web page written in *Typescript* delivered by *AWS S3* and *Cloudfront CDN*.
- Leveraged *AWS Lambda* functions written in *Python* as the back-end for achieving a server-less design resulting in cost saving of about 70%.
- Automated deployments by creating a CI/CD pipeline which reduced deployment time by 90%.
- Presented a tutorial on development tools and workflow to my team of 10 people.

Accenture

Feb 2021 – Jul 2021

Application Development Associate

Bangalore, India

- Examined and debugged more than 500+ daily data streams and *ETL* jobs.
- Automated daily report generation using bash scripts to save 91+ man hours/year.

Research

Secure Systems Lab

Jan 2022 - May 2023

Research Assistant — Adviser - Prof. R. Sekar

Stony Brook University, NY

- Researched on preventing *Control-Flow hijacking* attacks on memory unsafe languages.
- Customized GNU libc and loader to support binary instrumentation (500 sloc).
- Developed a shadow stack implementation for protecting 95% backward-edges (return addresses).
- Co-authored a paper about a more efficient and error-tolerant binary instrumentation with an overhead of about 4%.

Technical Skills

Programming Languages: C, C++, Python, JavaScript, Java, Typescript, x86 Assembly, Go

Scripting and Markup Languages: Bash, Python, HTML, CSS, Markdown, PS, \LaTeX

Tools and Frameworks: Git, Vim, VScode, GDB, React, D3, AWS, CI/CD, Flask, REST API, SQL

Projects

Secure Trash Bin File System

C, Linux Kernel, VFS, File system WrapFs, bash

- Implemented as a kernel loadable module written in Linux kernel style C (700 sloc).
- Transformed WrapFs' concept of upper and lower level VFS objects to interpose 8 VFS functions.
- Programmed 2 encryption algorithms to that enable a secure trash-bin line functionality.

Safex

C, YAML, eBPF, Python, system security, Linux

- Created a sandboxing system in C and Python with a policy parser that utilized eBPF to filter 10 system calls.
- Redirected calls through a delegate process that verified the system call and its (6-7) parameters before making the call.
- Fulfilled a critical role in developing the delegate process, refactoring (700 sloc), testing, and documentation.

DNS resolver in Python

Python, dnspython, DNSSEC, UDP, Computer networks

- Coded resolver contacts the root server then the top-level domains and finally the corresponding nameserver (300 sloc).
- Hardened DNS (DNSSEC) with public-private key encryption techniques using KSK, ZSK, RRSET and RRSIG.