Shreyas Minocha shreyasminocha@rice.edu · shreyasminocha.me

Education

Rice University, Houston, TX

B.S., Computer Science with a minor in Mathematics — **May 2024**

3.68/4.00 Cumulative GPA

Professional Experience

Rice University, Houston, TX

Undergraduate Research Assistant — **August 2023–Present**

- Working with Dr Nathan Dautenhahn on analyzing the information leakage of containers through kernel data structures.

Undergraduate Research Assistant — **March–August 2022**

- Worked with Dr Dan Wallach on a Typescript implementation of Microsoft's ElectionGuard SDK for Enhanced Voting.
- Used *fp-ts* and *io-ts* to implement robust codecs to achieve compatibility with a reference implementation.
- Wrote property-based tests and unit tests, bringing coverage to over 90% coverage. Used *fast-check* and *jest*.
- Contributed new CLI commands and bug fixes to the open source electionguard-python implementation.

Max Planck Institute for Security and Privacy, Bochum, Germany

Software Security Research Intern — **May–August 2023**

- Worked with Dr Marcel Böhme and Seongmin Lee on quantifying information leakage of programs using statistical methods.
- Applied methods from ecology to estimate the amount of information leaked by a program's observable outputs about its secret values, given a small number of program execution samples.
- Implemented a prototype of our method in Python and compared its mutual information estimates to those of state-of-the-art methods.

RiceApps, Houston, TX

Tech Lead — **August 2022–May 2023**

- Led a team of eight developers to build a cross-platform app for in-community music sharing.
- Helped developers use Flutter to build the cross-platform frontend and NodeJS with TypeScript to develop the backend.
- Prototyped backend routing and database schema design using *Koa* and *TypeORM*.

Software Developer — **August 2021–May 2022**

- Worked as a full-stack developer on an agile team working on the Rice Carpool React app.
- Made over 15 pull requests fixing issues across the stack, including GraphQL query performance improvements.
- Implemented four new features, including email notifications and a field to track ride details.

Cummins Inc., Indianapolis, IN

Software Engineering Intern **June–August 2022**

- Fixed issues with the E-Commerce search system, including incorrect handling of edge-case queries and missing results.
- Enhanced the product checkout experience, improving accessibility and resolving product order-related bugs.
- Participated in code reviews, quality assurance, and DevOps, performing thorough testing and managing deployments.

Pashi, Remote

Software Engineering Intern **May–July 2020**

- Built a prototype for Pashi's interactive, visual programming language with JQuery and HTML5 Canvas.
- Worked with a REST API that controlled production lines to connect user-written code to real-world effects.
- Explored React and vanilla JavaScript as alternate stack choices by creating interactive, minimally viable demos.

Submitted Conference Papers

[1] S. Lee, S. Minocha, and M. Böhme, "[redacted for review]," in *IEEE International Conference on Software Testing, Verification and Validation (ICST) 2024*, Submitted.

Teaching Experience

Rice University, Houston, TX

Instructor

- Introduction to CTFs (COLL 123) **Spring 2023**
  - Developed and taught an activity-based course introducing students to capture-the-flag competitions.
  - Covered the basics of web exploitation, reverse engineering, binary exploitation, cryptography, and digital forensics through lectures and demos.
  - 11 students enrolled; Overall quality rating of 1.22 vs Rice mean of 1.72 (1 = Outstanding, 5 = Poor).

Teaching Assistant

- Introduction to Concurrent Program Design (COMP 318) **Fall 2023**
- Systems Software (COMP 621) **Summer 2023**
- Introduction to Computer Systems (COMP 321) **Fall 2022, Spring 2023**

Leadership and Outreach

RiceApps OSA Mentor **June–August 2022**

- Mentored six students as part of RiceApps Open Source Accelerator and introduced them to full-stack development.

Rice Information Security Club

- President **Fall 2023–Present**
- Co-founder and Vice President **Spring 2023**

HackRice 13 CTF, Co-organizer and challenge developer **Fall 2023**

- Planned and organized a 36-hour capture-the-flag competition for over 30 participants.

Awards

- Rice Undergraduate Scholars Program Grant **2023–24**
- Second Place Team, HackRice 12 **September 2022**
  Built an end-to-end encrypted platform to connect students with health resources.
- US-Canada Top 15 Team, CSAW CTF '22 Qualifiers **September 2022**
  Solved over ten capture-the-flag challenges in 48 hours.
- Second Place Team, Education Track, HackRice 11 **September 2021**
  Built a tool to generate lecture summaries from audio lectures.