Richard Liu

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EDUCATION

University of Illinois at Urbana-Champaign August 2021 - May 2024 (anticipated)
B.S. in Mathematics & Computer Science 4.0/4.0 GPA

EXPERIENCE

TITANS CCD Intern — *Sandia National Labs* May 2023 - August 2023

- Reverse engineered embedded systems using Ghidra
  - Performed dynamic analysis through creative use of diagnostic memory primitives and crash vectors
  - Low level binary exploitation, writing a significant amount of assembly
- Created automated pentesting suite for 5G networks
  - Tested various parts of 5G network stack

Embedded Systems Research — *SPRAI* April 2022 - June 2022

- Used QEMU snapshot fuzzer from GSoC to fuzz test PLCs
- Wrote a paper on feasibility of snapshot fuzzing in QEMU

QEMU — *Google Summer of Code* June 2022 - September 2022

- Developed a snapshot/restore fuzzer for QEMU as part of my Google Summer of Code project
- Integrated Libfuzzer test harness and coverage information from within QEMU

AWARDS

CSAW — *New York City, New York* November 2022
NYUSEC

- Competed on a team of 4 in a cybersecurity competition (CTF)
- Placed second place nationwide in the undergraduate division

Actuarial Competition — *Cupertino, CA* February 2020 - April 2020
Modeling the Future

- Wrote a paper about the impact of climate change on corn production and the insurance industry in Minnesota using Monte Carlo modeling
- Won 2nd place out of 170 teams in nationwide competition and published a paper in the Actuarial Research Clearing House

SKILLS

Reverse engineering/binary exploitation (Ghidra, pwntools, GDB)

Linux & Systems Programming (Rust, Bash, C, C++)

PORTFOLIO

UIUC Apartments: Apartment hunting website for my local area. Scraped data with Python and used PostgreSQL + GCP Cloud Functions for the backend.

QEMU Snapshot Fuzzer: QEMU fork with snapshot/restore features and libfuzzer integration