

NICHOLAS SEBASTIAN HUSIN

nicholashusin@gmail.com | nicholas.sh | linkedin.com/in/nicholas2750 | github.com/nicholas2750

EDUCATION

University of Illinois at Urbana-Champaign
Bachelor's of Science in Computer Science

Aug 2018 - May 2022
Cumulative GPA: 3.98 / 4.0

EXPERIENCE

Google

May 2021 - Aug 2021

Software Engineering Intern

Remote

- Created a generic MapReduce pipeline in C++ for doing language analysis, enabling users to run custom analyzers over all of Google's codebase efficiently (throughput: over 15,000,000 lines of code per minute).
- Implemented a schema converter for an internal configuration language that transforms source code and AST into a flat schema that can be processed using SQL queries, allowing language analysis to be done easily.
- Integrated an interpreter's language metamodel feature into a web-based graphical debugger made with TypeScript and Angular to enrich the data that can be displayed.
- Developed a Python script to programmatically refactor code style violations in over 18,000 files.

Google

May 2020 - Aug 2020

STEP Intern

Remote

- Developed an in-browser IDE with modern features: linting, auto-format, auto-complete, Vim emulation, etc.
- Implemented a Node.js module that concurrently executes untrusted code in sandboxes, visualizes the code interpretation process, and does analyses such as test coverages.
- Researched and presented the potential of adapting BloodHound (open-source Active Directory project) for internal usage by the Managed Service for Microsoft AD team.
- Created a Python script that runs custom Cypher queries on a Neo4j database as specified on YAML files, resulting in the possibility of automated Active Directory analysis and vulnerability scanning.

ACADEMIC & RESEARCH

IoT Systems Research Group

Aug 2020 - May 2021

Undergraduate Researcher

University of Illinois at Urbana-Champaign

- Utilized various binary lifters and symbolic execution engines to generate models for formal verification.
- Researched the possibility of calculating worst-case energy usage in IoT devices using symbolic execution and device emulation.

Distributed Protocol Research Group

Dec 2019 - May 2020

Undergraduate Researcher

University of Illinois at Urbana-Champaign

- Used Seastar library and PyTorch C++ API to rewrite CNN implementations with better concurrency.
- Wrote scripts to profile GPU usage of CNN training process and analyze how they could be optimized.

CS125: Intro to Computer Science

Jan 2019 - Dec 2019

Course Developer

University of Illinois at Urbana-Champaign

- Designed and developed a distributed and scalable grading system on Kubernetes through the use of mirror Git server and RabbitMQ—grades over 15,000 student codes per semester.
- Identified and submitted mitigation steps for several vulnerabilities such as injecting code to leak assignment solutions, crashing the Java code playground used in lectures by exhausting the JVM's memory limit, etc.

ACTIVITIES

ACM SIGPwny - Computer Security Club

Feb 2019 - Present

Officer

University of Illinois at Urbana-Champaign

- Created challenges and websites for [UIUCTF](#), an annual online information security tournament attended by 1900 users in 2021.
- Developed a brand-new website for the club ([sigpwny.com](#)) to document past presentations and meetings, allowing new members to easily ramp up and take over the responsibility of graduating students.
- Presented various security topics and made accompanying security challenges to help teach new members.

SKILLS

Languages

C, C++, Python, JavaScript, Java, Ruby, Bash, Haskell

Technologies

Kubernetes, Docker, Linux, Git, SQL, MongoDB, Neo4j, RabbitMQ, Jekyll, Bootstrap, tmux, Vim