Johnny So

Computer Science Ph.D. Candidate

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Google Scholar PragSec Lab

About Me

I am currently a fourth-year Ph.D. candidate advised by Professor Nick Nikiforakis at the PragSec Lab in Stony Brook University. I investigate (the lack of) web integrity in various contexts (e.g., domain names and JavaScript) through large-scale experiments, and subsequently design and evaluate defenses that improve the integrity of the web.

Education

Aug 2020 – Dec 2024 (Expected)
Stony Brook University **Advisor: Nick Nikiforakis**
Doctor of Philosophy in Computer Science

Aug 2016 – May 2020
Stony Brook University, Honors College **Summa Cum Laude / 3.98 GPA**
Bachelor of Science in Computer Science
Bachelor of Science in Applied Math and Statistics

Work & Research

May 2024 — Aug 2024 (Future)
(Incoming) Software Engineer Intern
Meta Platforms, Inc. / IAB - Browser Product Infrastructure *Bellevue, WA*
Responsibilities TBD.

Jan 2019 — Present
Research Assistant
PragSec Lab at Stony Brook University *Stony Brook, NY*
Conducting web security research projects that result in flagship conference publications:

- Designing an application-agnostic link management system that prevents access to external dependencies of websites if such links violate integrity policies
- Demonstrated that strict integrity verification of scripts cannot protect the web and provided insight for future methods through a large-scale, data-driven analysis [1]
- Profiled the behavior of bots that monitor Certificate Transparency logs, analyzing how bots of various intentions and origins react to new certificates within seconds [2]
- Illustrated the capability of adversaries to potentially affect millions of IP addresses in tens of thousands of autonomous systems by re-registering a few hundred domains [3]
- Proposed transparent web authentication mechanisms that leverage deception [4]

Jun 2023 — Aug 2023
Software Engineer Intern
Cloudflare / Bot Management - API Shield *Remote*

- Designed a policy-based system to detect broken object-level authorization in API traffic

May 2022 — Aug 2022
PhD Research Intern
NortonLifeLock Research Group *Remote*

- Dynamically analyzing the integrity of Android applications over time (under submission)

Jun 2019 — Aug 2019
Software Development Engineer Intern
Amazon Alexa *Seattle, WA*

- Created an intent recommendation service for third-party skills using short utterances
- Proposed new services by leveraging other intern projects and existing production services

Jun 2018 — Dec 2018 | **Software Engineer Intern**
Softheon *Stony Brook, NY*

- Built the prototype of a new state health exchange platform
- Established a preprocessing library used to build machine learning models

Publications

2023

1. **So, J.**, Ferdman, M. & Nikiforakis, N. *The More Things Change, the More They Stay the Same: Integrity of Modern JavaScript* in *Proceedings of the ACM Web Conference 2023* (May 2023), 2295–2305.

2022

2. Kondracki, B., **So, J.** & Nikiforakis, N. *Uninvited Guests: Analyzing the Identity and Behavior of Certificate Transparency Bots* in *Proceedings of the 31st USENIX Security Symposium (USENIX Security 22)* (2022), 53–70.
3. **So, J.**, Miramirkhani, N., Ferdman, M. & Nikiforakis, N. *Domains Do Change Their Spots: Quantifying Potential Abuse of Residual Trust* in *Proceedings of the 43rd IEEE Symposium on Security and Privacy (IEEE S&P)* (May 2022), 119–133.

2021

4. Barron, T., **So, J.** & Nikiforakis, N. *Click This, Not That: Extending Web Authentication with Deception* in *Proceedings of the 2021 ACM Asia Conference on Computer and Communications Security* (2021), 462–474.

Teaching

Mar 2022 & Oct 2022 | **WSE380: Honeypots and Intrusion Detection**
Instructor *Stony Brook University*

Fall 2020 — Spr 2021 | **ISE 331: Computer Security Fundamentals**
Teaching Assistant *Stony Brook University*

Fall 2017 — Fall 2018 | **CSE 214: Data Structures**
Teaching Assistant *Stony Brook University*

Service

Artifact Evaluation | **USENIX Security Symposium (USENIX Security)**
Years: 2022, 2023, 2024

External Reviewer | **International Symposium on Research in Attacks, Intrusions, and Defenses (RAID)**
Years: 2023

Honors

2024 | **NSA 11th Annual Best Scientific Cybersecurity Paper**
Uninvited Guests: Analyzing the Identity and Behavior of Certificate Transparency Bots

2021 — 2022 | **Graduate Assistance in Areas of National Need (GAANN) Fellowship**
Stony Brook University

Qualifications

- Driving research projects to publication in flagship conferences
- Proficiency in programming languages (e.g., Python, Java, JavaScript, and C)
- Designing for large-scale projects that require performant, scalable infrastructure
- Programming in large codebases
- Applying machine learning models and techniques
- Learning and incorporating new technologies