



Johnny So

Computer Science Ph.D. Candidate

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 Google Scholar

 PragSec Lab

About Me

I am currently a third-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 – Present

Stony Brook University

Doctor of Philosophy in Computer Science

Advisor: Nick Nikiforakis

Aug 2016 – May 2020

Stony Brook University Honors College

Bachelor of Science in Computer Science & in Applied Math and Statistics

GPA: 3.97

Work

Jan 2019 — Present

Research Assistant

PragSec Lab at Stony Brook University

Stony Brook, NY

- Designing an application-agnostic link management system that prevents access to external dependencies of websites if such links violate customizable 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 and evaluated deceptive web authentication mechanisms that remove the integrity of a web application from the attacker's arsenal, and instead place the lack of it in the defender's arsenal [4]

Jun 2023 — Aug 2023

Software Engineer Intern

Cloudflare Bot Management / API Shield

Remote

- Analyzing API traffic to reduce attack surface, detect malicious bot activity, and identify anomalous server-side behavior

May 2022 — Aug 2022

PhD Research Intern

NortonLifeLock Research Group

Remote

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

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

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| 2023 | 1. | So, J. , Ferdman, M. & Nikiforakis, N. <i>The More Things Change, the More They Stay the Same: Integrity of Modern JavaScript</i> in <i>Proceedings of the ACM Web Conference 2023</i> (May 2023), to appear. |
| 2022 | 2. | Kondracki, B., So, J. & Nikiforakis, N. <i>Uninvited Guests: Analyzing the Identity and Behavior of Certificate Transparency Bots</i> in <i>Proceedings of the 31st USENIX Security Symposium (USENIX Security 22)</i> (2022), 53–70. |
| | 3. | So, J. , Miramirkhani, N., Ferdman, M. & Nikiforakis, N. <i>Domains Do Change Their Spots: Quantifying Potential Abuse of Residual Trust</i> in <i>Proceedings of the 43rd IEEE Symposium on Security and Privacy (IEEE S&P)</i> (May 2022), 119–133. |
| 2021 | 4. | Barron, T., So, J. & Nikiforakis, N. <i>Click This, Not That: Extending Web Authentication with Deception</i> in <i>Proceedings of the 2021 ACM Asia Conference on Computer and Communications Security</i> (2021), 462–474. |

Teaching

Mar 2022 — Oct 2022	Instructor Stony Brook University • (Spr 2022) WSE 380: Honeypots and Intrusion Detection • (Fall 2022) WSE 380: Honeypots and Intrusion Detection	Stony Brook, NY
Aug 2017 — May 2021	Teaching Assistant Stony Brook University • (Fall 2020 — Spr 2021) Computer Security Fundamentals • (Fall 2017 — Fall 2018) Data Structures	Stony Brook, NY

Service

- USENIX Security Symposium Artifact Evaluation Committee Member: 2022, 2023

Honors

Sep 2021 — May 2022	Graduate Assistance in Areas of National Need (GAANN) Fellowship Stony Brook University	Stony Brook, NY
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Qualifications

- Designing and evaluating novel security mechanisms
- Programming in a large codebase
- Building performant and scalable infrastructure
- Collecting and analyzing large data sets
- Applying machine learning models and techniques