Johnny So

Computer Science PhD Student

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Google Scholar Profile | Stony Brook PragSec Lab

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 Experience

Jan 2019 — Present
Research Project Assistant
Stony Brook University — *Stony Brook, NY*

- Performed a large-scale analysis of the modern JavaScript ecosystem, quantifying the fraction of scripts that change in various dimensions and the applicability of strict integrity from the more accurate perspective at the granularity of remote origins, and finally recommending promising directions for future script integrity verification (paper under submission).
- Investigated the integrity of bots that monitor Certificate Transparency and finding that website administrators need to register certificates for their domains as the last step, after security measurements are already in place [1].
- Demonstrated a lack of integrity in our current location-based addressing on the web through a large-scale analysis of traffic that resulted from *residual trust* in expired domains. Adversaries can potentially affect millions of IP addresses, situated in tens of thousands of autonomous systems, for the price of a few hundred re-registered domains [2].
- Proposed 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 [3]. Our evaluation showed that the mechanisms are practical from a security perspective.

May 2022 — Aug 2022
PhD Research Intern
NortonLifeLock Research Group — *(Remote) New York, NY*

- Explored the integrity of mobile applications through dynamic analysis (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 online health exchange platform.
- Established a preprocessing library used to build machine learning models.

Teaching Experience

Mar 2022 — Apr 2022 | **Instructor**
Stony Brook University — *Stony Brook, NY*
- (Spring 2022) WSE 380: Honeypots and Intrusion Detection

Aug 2017 — May 2021 | **Teaching Assistant**
Stony Brook University — *Stony Brook, NY*
- (Fall 2020 — Spring 2021, two semesters) Computer Security Fundamentals
- (Fall 2017 — Fall 2018, three semesters) Data Structures

Honors

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

Publications

2022
1. 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.
2. **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
3. 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.

Service

- USENIX Security Symposium 2022 Artifact Evaluation Committee Member

Qualifications

- Proficient in programming (e.g., Java, Python, JavaScript, C and C#)
- Proficient with development in a large codebase (e.g., industry and the Linux kernel)
- Proficient with the development, deployment, and management of infrastructure across tens of machines
- Experience with efficient analysis of large data sets and the application of machine learning models and techniques
- Experience with designing large-scale measurement experiments and studies
- Experience with implementing prototypes for novel, application-agnostic web security mechanisms