He (Shawn) Shuang

Looking for full-time and internship in Summer/Fall 2025

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EDUCATION

Doctor of Philosophy (PhD), *University of Toronto* 2020 - 2025

Web Security, Computer Engineering Supervisor Prof. David Lie

- Thesis: Improving the security and privacy of client-generated request in web applications
- Project #1: defending against user-impersonation attacks with client-side request certification systems
- Project #2: detecting web trackers (non-mixed and mixed) with the addition of a breakage detector
- Side projects: program debloating through program dynamic analysis, program fuzzing

Master of Applied Science (MASc), University of Toronto 2017 - 2020

Network Security, Computer Engineering Supervisor Prof. David Lie

- Project: defending against pervasive monitoring in software-defined networks (SDN)

Honours Bachelor of Science (HBSc), University of Toronto 2011 - 2016

Computer Science with a focus on Web and Internet High distinction, Dean's list (all years)

SELECTED PUBLICATIONS

- [NDSS 2025] He Shuang, Lianying Zhao, David Lie. 2025. "Duumviri: Detecting Trackers and Mixed Trackers with a Breakage Detector".
- [CSUR 2024] Lianying Zhao, He Shuang, Shengjie Xu, Wei Huang, Rongzhen Cui, Pushkar Bettadpur, and David Lie. 2024. "A Survey of Hardware Improvements to Secure Program Execution".
- [DSN 2023] He Shuang, Lianying Zhao, David Lie. 2023. "vWitness: Certifying Web Page Interactions with Computer Vision". Acceptance rate 19.58%.
- [APSys 2019] He Shuang, Wei Huang, Pushkar Bettadpur, Lianying Zhao, Ivan Pustogarov, and David Lie. 2019. "Using Inputs and Context to Verify User Intentions in Internet Services".

EMPLOYMENT

Researcher, Huawei Waterloo Research Center 2024 - 2025

- Large language model(LLM)-based vulnerability early detection framework reducing vulnerability acknowledge time
- LLM-based vulnerability automatic patcher reducing mean time to patch (MTTP)

Research Assistant, University of Toronto, with Prof. Harald Bathelt 2021 - 2024

- Economics data analysis and model building in R

Software Developer, Trapeze Group, Mississauga 2014-2015 (Intern), 2016-2017 (Full Time)

- Front (JavaScript in MVC architecture) and back end (C++, SQL) web-based application development

SKILLS

- *Web Security*: OWASP Top 10, crawling (Selenium), malicious script detection & anti-detection(ML-based)
- *Network Security*: OSI stack, bot detection and anti-detection, SDN network simulation (Mininet), traffic analysis & obfuscation (ML-based), network cache (Squid, MITMproxy), packet sniffers (Wireshark)
- *System Security*: vulnerability analysis (fuzzing), malware identification (ML-based), attack surface reduction (dynamic and static program analysis), trusted IO (under privileged attacker), reverse engineering (Frida), program control flow and data flow analysis (LLVM-based)
- *Large language models (LLM)*: prompt engineering, model evaluation
- *Programing Languages*: Python (model building), R (statistical analysis), SQL, Javascript, C/C++