He (Shawn) Shuang

PhD Candidate · Web Security

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Education

University of Toronto *Toronto, ON Canada*

PhD, Web Security *2020 - present*

- Advisor: Dr. David Lie
- Dissertation: On the Security and Privacy of Web Request

University of Toronto *Toronto, ON Canada*

MASc, Web Security *2017 - 2020*

- Advisor: Dr. David Lie
- Dissertation: Using Context to Verify Human Intent

University of Toronto *Toronto, ON Canada*

Honours Bachelor of Science (HBSc), Computer Science *2011 - 2016*

- High distinction
- Focus on Web and Internet technologies

Professional Experience

2024-Present	**Rsearcher**, Huawei Research Canada
2020-2024	**Graduate Research Assistant with Professor Harald Bathelt**, Economics & Political Science, University of Toronto
2018-2023	**Graduate Teaching Assistant**, Computer Engineering, University of Toronto
2016-2017	**Software Developer**, Trapeze Group
2016-2017	**Research Assistant with Professor Mariano Consens and Dr Marina Barsky**, Mechanical & Industrial Engineering, University of Toronto
2014-2015	**Software Developer Intern**, Trapeze Group
2013-2014	**Undergraduate Teaching Assistant**, Computer Science, University of Toronto

Publications

Published

He Shuang, Lianying Zhao, and David Lie. 2025. Duumviri: Detecting Trackers and Mixed Trackers with a Breakage Detector. In The Network and Distributed System Security Symposium (NDSS).

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. ACM Computing Surveys (2024).

He Shuang, Lianying Zhao, and David Lie. 2023. vWitness: Certifying Web Page Interactions with Computer Vision. In 2023 53rd Annual IEEE/IFIP International Conference on Dependable Systems and Networks (DSN), IEEE, 431–444.

He Shuang. 2020. Using Context to Verify Human Intent. University of Toronto (Canada).

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. In Proceedings of the 10th ACM SIGOPS Asia-Pacific Workshop on Systems, 76–83.

Lianying Zhao, **He Shuang**, Shengjie Xu, Wei Huang, Rongzhen Cui, Pushkar Bettadpur, and David Lie. 2019. Sok: Hardware security support for trustworthy execution. arXiv preprint arXiv:1910.04957 (2019).

Wei Huang, Vasily Rudchenko, **He Shuang**, Zhen Huang, and David Lie. 2018. Pearl-TEE: supporting untrusted applications in trustzone. In Proceedings of the 3rd Workshop on System Software for Trusted Execution, 8–13.

Awards, Fellowships, & Grants

2024 **Doctoral Completion Awards**, University of Toronto
2023 **Ontario Graduate Scholarship**, University of Toronto
2022 **Bell Graduate Scholarship**, University of Toronto
2021 **Bell Graduate Scholarship**, University of Toronto
2020 **Ontario Graduate Scholarship**, University of Toronto
2019 **Bell Graduate Scholarship**, University of Toronto
2018 **Ontario Graduate Scholarship**, University of Toronto
2017 **Graduate Research Fellowship**, University of Toronto
2015 **Dean's List Scholar**, University of Toronto
2013 **Dean's List Scholar**, University of Toronto
2012 **Dean's List Scholar**, University of Toronto
2011 **In-course Scholarship**, University of Toronto
2011 **Dean's List Scholar**, University of Toronto

Presentations

** presenting author; + mentored undergraduate*

Invited Talks

Summer 2023. *vWitness: Certifying Web Page Interactions with Computer Vision*. Oral presentation at DSN 2023 in Porto, Portugal.

Summer 2019. *Using inputs and context to verify user intentions in internet services*. Oral presentation at ApSys 2019 in Hangzhou, China.

Teaching Experience

Spring 2024	**ECE568: Computer Security**, Teaching Assistant	*Toronto*
Spring 2024	**ECE1776: Computer Security, Cryptography and Privacy**, Teaching Assistant	*Toronto*
Fall 2023	**ECE568: Computer Security**, Teaching Assistant	*Toronto*
Fall 2022	**ECE568: Computer Security**, Teaching Assistant	*Toronto*
Fall 2022	**ECE1776: Computer Security, Cryptography and Privacy**, Teaching Assistant	*Toronto*
Spring 2022	**ECE568: Computer Security**, Teaching Assistant	*Toronto*
Fall 2021	**ECE568: Computer Security**, Teaching Assistant	*Toronto*
Fall 2021	**ECE1776: Computer Security, Cryptography and Privacy**, Teaching Assistant	*Toronto*
Fall 2020	**ECE568: Computer Security**, Teaching Assistant	*Toronto*
Fall 2020	**ECE1776: Computer Security, Cryptography and Privacy**, Teaching Assistant	*Toronto*
Spring 2020	**ECE344: Operating Systems**, Teaching Assistant	*Toronto*
Fall 2019	**ECE344: Operating Systems**, Teaching Assistant	*Toronto*
Spring 2019	**ECE344: Operating Systems**, Teaching Assistant	*Toronto*
Fall 2018	**ECE344: Operating Systems**, Teaching Assistant	*Toronto*
Fall 2018	**CSC108: Introduction to Computer Programming**, Teaching Assistant	*Toronto*

Mentoring

Summer 2022 **Tianchen Zhang**, Undergraduate Student, University of Toronto — *Toronto*

Outreach & Professional Development

Service and Outreach

2019 **ACM SOSP 20119**, Volunteer — *Huntsville, ON Canada*

2018 **ACM CCS 2018**, Volunteer — *Toronto, ON Canada*

Development

Awesome Trusted Execution Environment 2023, co-located with DSN 2023

Systex 2019: Workshop on System Software for Trusted Execution, co-located with SOSP 2019

Systex 2018: Workshop on System Software for Trusted Execution, co-located with CCS 2018

SOUPS 2018: Fourteenth Symposium on Usable Privacy and Security, co-located with USENIX Security 2018

Professional Memberships

Association for Computing Machinery (ACM)
Institute of Electrical and Electronics Engineers (IEEE)