Xiwen Teoh

xiwen.teoh@u.nus.edu xiwen.me Google Scholar gyataro xiwenteoh 0009-0009-8528-9088

Education

PhD **National University of Singapore**, Computer Science 2024 – present
- Advised by Prof. Jin Song Dong and Prof. Yun Lin.
- Research interests: Agentic AI for Internet security and software testing.

BE **Shanghai Jiao Tong University**, Computer Science 2019 – 2023

Experience

National University of Singapore, Research Assistant 2023 – 2024
- Published industry research with GovTech Singapore under the TAICeN project (log anomaly detection) and Guotai Junan Securities (mobile UI testing).

Selected Publications

WebTestPilot: Agentic End-to-End Web Testing against Natural Language Specification by Inferring Oracles with Symbolized GUI Elements 2026
International Conference on the Foundations of Software Engineering
Xiwen Teoh, Yun Lin, Duc-Minh Nguyen, Ruofei Ren, Wenjie Zhang, Jin Song Dong

Are CAPTCHAs Still Bot-hard? Generalized Visual CAPTCHA Solving with Agentic Vision Language Model 2025
USENIX Security Symposium
Xiwen Teoh, Yun Lin, Siqi Li, Ruofan Liu, Avi Sollomoni, Yaniv Harel, Jin Song Dong

GUIPilot: A Consistency-Based Mobile GUI Testing Approach for Detecting Application-Specific Bugs 2025
International Symposium on Software Testing and Analysis
Ruofan Liu[‡], Xiwen Teoh[‡], Yun Lin, Guanjie Chen, Ruofei Ren, Denys Poshyvanyk, Jin Song Dong

PhishDecloaker: Detecting CAPTCHA-cloaked Phishing Websites via Hybrid Vision-based Interactive Models 2024
USENIX Security Symposium
Xiwen Teoh, Yun Lin, Ruofan Liu, Zhiyong Huang, Jin Song Dong

Publications

PiMRef: Detecting and Explaining Ever-evolving Spear Phishing Emails with Knowledge Base Invariants 2026
ACM SIGSAC Conference on Computer and Communications Security
Ruofan Liu, Yun Lin, Yuxin Wang, Xiwen Teoh, Zhenkai Liang, Gongshen Liu, Haojin Zhu, Jin Song Dong

Compiling Large Multi-Modal Requirement Documents into Runnable Software Systems: From an Agentic Test-Driven Perspective 2026
International Symposium on Software Testing and Analysis
Weiyu Kong, Yun Lin, Xiwen Teoh, Duc-Minh Nguyen, Ruofei Ren, Jiaxin Chang, Haoxu Hu, Haoyu Chen

MINES: Explainable Anomaly Detection through Web API Invariant Inference 2026
International Conference on Software Engineering
Wenjie Zhang, Yun Lin, Chun Fung Amos Kwok, Xiwen Teoh, Xiaofei Xie, Frank Liauw, Hongyu Zhang, Jin Song Dong

Detecting and Explaining Anomalies Caused by Web Tamper Attacks via Building Consistency-based Normality 2024
International Conference on Automated Software Engineering
Yifan Liao, Ming Xu, Yun Lin, Xiwen Teoh, Xiaofei Xie, Ruitao Feng, Frank Liauw, Hongyu Zhang, Jin Song Dong

Less Defined Knowledge and More True Alarms: Reference-based Phishing Detection without a Pre-defined Reference List 2024
USENIX Security Symposium
Ruofan Liu, Yun Lin, Xiwen Teoh, Gongshen Liu, Zhiyong Huang, Jin Song Dong

Invited Talks

Towards Trustworthy GUI Agents via Neuro-Symbolic Reasoning 2026
The First Global PhD Student Forum for Interdisciplinary and Innovative Research, Jiao Chuang Forum, Shanghai Jiao Tong University

Service

Reviewer 2027
ACM The Web Conference (WWW)

Reviewer 2024 – 2026
International Sports Analytics Conference and Exhibition (ISACE)

ACM Professional Membership 2026 – 2027

Teaching and Mentorship

Teaching Assistant 2026
National University of Singapore
- CS4211 Formal Methods for Software Engineering (AY2025/2026 Semester 2).

Mentor for Siqi Li (NUS Undergraduate Researcher) 2025
National University of Singapore
- Research on agentic vision-language-model CAPTCHA solving, resulting in a USENIX Security 2025 publication.
- Mentee received the NUS SoC Outstanding Undergraduate Research Prize, AY2024/2025.

Awards

First Prize 2025
Prototype System Competition, CCF ChinaSoft

Research Achievement Award 2025
National University of Singapore, AY2025/2026 Semester 1

Gold Medal 2025
China International College Students' Innovation Competition, Southeast Asia (SEA-CICSIC)

Silver Medal 2024 – 2025
China International College Students' Innovation Competition (CICSIC / Shanghai Division)

NUS Research Scholarship 2024

Shanghai Government Scholarship 2019

National Top 10, Computing and Information Technology 2018
Unified Examination Certificate (UEC), Malaysia