SHAR Lwin Khin

School of Computing and Information Systems
Singapore Management University (SMU)
80 Stamford Road
Singapore 178902

Email: lkshar@smu.edu.sg

Education

PhD, Nanyang Technological University, Singapore, 2014

Bachelor of Engineering, Nanyang Technological University, Singapore, 2008

Academic Appointments

Associate Professor of Computer Science (Practice), School of Computing and Information Systems, SMU, Jan 2022 - Present

Assistant Professor of Computer Science (Practice), School of Computing and Information Systems, SMU, Apr 2021 - Dec 2021

Assistant Professor of Information Systems (Practice), School of Computing and Information Systems, SMU, Jan 2019 - Mar 2021

Academic Administrative Positions

Director, MITB (Cybersecurity)Programme, SCIS PG by Course Work, SMU, Jan 2026 - Present

RESEARCH

Research Interests

Security analysis
Software testing

Research and Project Areas

Cybersecurity
Software Engineering

Publications

Journal Articles [Refereed]

Security modelling for cyber-physical systems: A systematic literature review, by HUANG, Shaofei; POSKITT, Christopher M.; SHAR, Lwin Khin. (2025). *ACM Transactions on Cyber-Physical Systems,* 1-29. https://doi.org/10.1145/3776549 (Advance Online)

Studying SATD in drone systems with Human-AI collaboration, by RANTALA, Leevi; SHAR, Lwin Khin; Mäntylä Mika V.; MINN Wei; TUN Yan Naing. (2025). *Journal of Systems and Software, 231* 1-15. https://doi.org/10.1016/j.jss.2025.112625 (Published)

Sustainable LLM inference for edge AI: Evaluating quantized LLMs for energy efficiency, output accuracy, and inference latency, by HUSOM, Erik Johanne; GOKNIL, Arda; ASTEKIN, Merve; SHAR, Lwin Khin; KASEN, Andre; SEN, Sagar; MITHASSEL, Benedikt Andreas; SOYLU, Ahmet. (2025). *ACM Transactions on Internet of Things, 6* (4), 1-34. https://doi.org/10.1145/3767742 (Advance Online)

VERCATION: Precise vulnerable open-source software version identification based on static analysis and LLM, by CHENG, Yiran; ZHANG, Ting; SHAR, Lwin Khin; YANG, Shouguo; DONG, Chaopeng; LO, David; Lv, Shichao; SHI, Zhiqiang; SUN, Limin. (2025). *IEEE Transactions on Software Engineering,* 1-19. https://doi.org/10.1109/TSE.2025.3599581 (Advance Online)

Fuzzing drones for anomaly detection: A systematic literature review, by MALVIYA, Vikas K.; MINN Wei; SHAR Lwin Khin; JIANG Lingxiao. (2025). *Computers and Security, 148* 1-45. https://doi.org/10.1016/j.cose.2024.104157 (Published)

Experimental comparison of features, analyses, and classifiers for Android malware detection, by SHAR, Lwin Khin; DEMISSIE, Biniam Fisseha; CECCATO, Mariano; YAN, Naing Tun; LO, David; JIANG, Lingxiao; BIENERT, Christoph. (2023). *Empirical Software Engineering, 28* (6), 1-39. https://doi.org/10.1007/s10664-023-10375-y (Published)

Decentralized multimedia data sharing in IoV: A learning-based equilibrium of supply and demand, by FAN, Jiani; XU, Minrui; GUO, Jiale; SHAR, Lwin Khin; KANG, Jiawen; NIYATO, Dusit; LAM, Kwok-Yan. (2023). *IEEE Transactions on Vehicular Technology, 73* (3), 1-16. https://doi.org/10.1109/TVT.2023.3322270 (Advance Online)

Automated reverse engineering of role-based access control policies of web applications, by LE, Ha Thanh; SHAR, Lwin Khin; BIANCULLI, Domenico; BRIAND, Lionel C.; NGUYEN, Cu Duy. (2022). *Journal of Systems and Software, 184* 1-18. https://doi.org/10.1016/j.jss.2021.111109 (Published)

COVID-19 One Year on - Security and Privacy Review of Contact Tracing Mobile Apps, by YANG, Ang Wei; SHAR, Lwin Khin. (2021). *IEEE Pervasive Computing, 20* (4), 61-70. https://doi.org/10.1109/MPRV.2021.3115478 (Published)

Out of sight, out of mind? How vulnerable dependencies affect open-source projects, by PRANA, Gede Artha Azriadi; SHARMA, Abhishek; SHAR, Lwin Khin; FOO, Darius; SANTOSA, Andrew E.; SHARMA, Asankhaya; LO, David. (2021). *Empirical Software Engineering, 26* (4), 1-37. https://doi.org/10.1007/s10664-021-09959-3 (Published)

Security analysis of permission re-delegation vulnerabilities in Android apps, by DEMISSIE, Biniam Fisseha; CECCATO, Mariano; SHAR, Lwin Khin. (2020). *Empirical Software Engineering, 25* (6), 5084-5136. https://doi.org/10.1007/s10664-020-09879-8 (Published)

Security analysis of permission re-delegation vulnerabilities in Android apps, by DEMISSIE, Biniam Fisseha; CECCATO, Mariano; SHAR, Lwin Khin. (2020). *Empirical Software Engineering, 25* (6), 5084-5136. (Published)

An Integrated Approach for Effective Injection Vulnerability Analysis of Web Applications Through Security Slicing and Hybrid Constraint Solving, by THOME, Julian; SHAR, Lwin Khin; BIANCULLI, Domenico; BRIAND, Lionel. (2020). *IEEE Transactions on Software Engineering, 46* (2), 163-195. https://doi.org/10.1109/TSE.2018.2844343 (Published)

Modeling Security and Privacy Requirements: a Use Case-Driven Approach, by MAI, Phu Xuan; GOKNIL, Arda; SHAR, Lwin Khin; PASTORE, Fabrizio; BRIAND, Lionel; SHAAME, Shaban. (2018). *Information and Software Technology, 100* 165-182. https://doi.org/10.1016/j.infsof.2018.04.007 (Published)

Security slicing for auditing common injection vulnerabilities, by THOME, Julian; SHAR, Lwin Khin; BIANCULLI, Domenico; BRIAND, Lionel. (2018). *Journal of Systems and Software, 137* 766-783. https://doi.org/10.1016/j.jss.2017.02.040 (Published)

Web Application Vulnerability Prediction Using Hybrid Program Analysis and Machine Learning, by SHAR, Lwin Khin; BRIAND, Lionel; TAN, Hee Beng Kuan. (2015). *IEEE Transactions on Dependable and Secure Computing, 12* (6), 688-707. https://doi.org/10.1109/TDSC.2014.2373377 (Published)

Predicting SQL injection and cross site scripting vulnerabilities through mining input sanitization patterns, by SHAR, Lwin Khin; TAN, Hee Beng Kuan. (2013). *Information and Software Technology, 55* (10), 1767-1780. https://doi.org/10.1016/j.infsof.2013.04.002 (Published)

Auditing the XSS defence features implemented in web application programs, by SHAR, Lwin Khin; TAN, Hee Beng Kuan. (2012). *IET Software, 6* (4), 377-390. https://doi.org/10.1049/iet-sen.2011.0084 (Published)

Defeating SQL Injection, by SHAR, Lwin Khin; TAN, Hee Beng Kuan. (2013). *Computer, 46* (3), 69-77. https://doi.org/10.1109/MC.2012.283 (Published)

Automated removal of cross site scripting vulnerabilities in web applications, by SHAR, Lwin Khin; TAN, Hee Beng Kuan. (2012). *Information and Software Technology, 54* (5), 467-478. https://doi.org/10.1016/j.infsof.2011.12.006 (Published)

Defending against Cross-Site Scripting Attacks, by SHAR, Lwin Khin; TAN, Hee Beng Kuan. (2012). *Computer, 45* (3), 55-62. https://doi.org/10.1109/MC.2011.261 (Published)

Conference Proceedings

Runtime anomaly detection for drones: An integrated rule-mining and unsupervised learning approach, by TAN, Ivan; MINN, Wei; POSKITT, Christopher M.; SHAR, Lwin Khin; JIANG, Lingxiao. (2025.0). *Proceedings of the 29th International Conference on Engineering of Complex Computer Systems (ICECCS 2025), Hangzhou, China, July 2-4,* (pp. 3-23) Cham: Springer. https://doi.org/10.1007/978-3-032-00828-2_1 (Published)

DynDebloater: Dynamically debloating unwanted features of Android apps without APK modification, by ZHANG, Zicheng, LIU, Jiakun, THUNG, Ferdian, HU, Xing, MINN, Wei, TUN, Yan Naing, SHAR, Lwin Khin, LO, David, GAO, Debin. (2025.0). *FSE Companion '25: Proceedings of the 33rd ACM International Conference on the Foundations of Software Engineering, Trondheim, Norway, June 23-28,* (pp. 1055-1059) New York: ACM. https://doi.org/10.1145/3696630.3728580 (Published)

DronLomaly: Runtime log-based anomaly detector for DJI drones, by MINN, Wei; TUN, Yan Naing; SHAR, Lwin Khin; JIANG, Lingxiao. (2024.0). *2024 IEEE/ACM 46th International Conference on Software Engineering: Companion Proceedings (ICSE-Companion), Lisbon, April 14-20,* (pp. 6-10) Washington, DC: IEEE Computer Society. https://doi.org/10.1145/3639478.3640042 (Published)

Fine-grained in-context permission classification for Android apps using control-flow graph embedding, by MALVIYA, Vikas K.; TUN, Yan Naing; LEOW, Chee Wei; XYNYN, Ailys Tee; SHAR, Lwin Khin; JIANG, Lingxiao. (2023.0). *2023 38th IEEE/ACM International Conference on Automated Software Engineering: Luxembourg, September 11-15: Proceedings,* (pp. 1225-1237) Piscataway, NJ: IEEE. https://doi.org/10.1109/ASE56229.2023.00056 (Published)

An industrial practice for securing Android apps in the banking domain, by MALVIYA, Vikas K.; PHAN, Phong; YAN, Naing Tun; CHING, Albert; SHAR, Lwin Khin. (2023.0). *2023 38th IEEE/ACM International Conference on Automated Software Engineering (ASE): Echternach, September 11-15: Proceedings,* (pp. 1870-1875) Piscataway, NJ: IEEE. https://doi.org/10.1109/ASE56229.2023.00057 (Published)

AutoConf: Automated configuration of unsupervised learning systems using metamorphic testing and Bayesian optimization, by SHAR, Lwin Khin; GOKNIL Arda; HUSOM, Erik Johannes; SEN, Sagar Sen; TUN, Yan Naing; KIM, Kisub. (2023.0). *2023 38th IEEE/ACM International Conference on Automated Software Engineering: Luxembourg, September 11-15: Proceedings,* (pp. 1326-1338) Piscataway, NJ: IEEE. https://doi.org/10.1109/ASE56229.2023.00094 (Published)

Differentiated security architecture for secure and efficient infotainment data communication in IoV networks, by FAN, Jiani; SHAR, Lwin Khin; GUO, Jiale; YANG, Wenzhuo; NIYATO, Dusit; LAM, Kwok-Yan. (2022.0). *Network and System Security: 16th International Conference NSS 2022, Denarau Island, Fiji, December 9-12: Proceedings,* (pp. 283-304) Cham: Springer. https://doi.org/10.1007/978-3-031-23020-2_16 (Published)

DronLomaly: Runtime detection of anomalous drone behaviors via log analysis and deep learning, by

SHAR, Lwin Khin; MINN, Wei; TA, Nguyen Binh Duong; FAN, Jiani; JIANG, Lingxiao; LIM, Wai Kiat Daniel. (2022.0). *2022 29th Asia-Pacific Software Engineering Conference (APSEC): Virtual, December 6-9: Proceedings,* (pp. 119-128) Piscataway, NJ: IEEE. https://doi.org/10.1109/APSEC57359.2022.00024 (Published)

AP-coach: Formative feedback generation for learning introductory programming concepts, by TA, Duong; SHAR, Lwin Khin; SHANKARARAMAN, Venky. (2022.0). *2022 IEEE International Conference on Teaching, Assessment and Learning for Engineering, Hong Kong, December 4-7: Proceedings,* (pp. 323-330) Piscataway, NJ: IEEE. https://doi.org/10.1109/TALE54877.2022.00060 (Published)

Right to know, right to refuse: Towards UI perception-based automated fine-grained permission controls for Android apps, by MALVIYA, Vikas Kumar; LEOW, Chee Wei; KASTHURI, Ashok; TUN, Yan Naing; SHAR, Lwin Khin; JIANG, Lingxiao. (2022.0). *Proceedings of the 37th IEEE/ACM International Conference on Automated Software Engineering (ASE), Ann Arbor, Michigan, 2022 October 10-14,* (pp. 1-6) Ann Arbor, Michigan: ACM. https://doi.org/10.1145/3551349.3559556 (Published)

XSS for the masses: Integrating security in a web programming course using a security scanner, by SHAR, Lwin Khin; POSKITT, Christopher M.; SHIM, Kyong Jin; WONG, Li Ying Leonard. (2022.0). *ITiCSE 2022: Proceedings of the 27th ACM Conference on Innovation and Technology in Computer Science Education, Dublin, July 8-13,* (pp. 463-469) New York: ACM. https://doi.org/10.1145/3502718.3524795 (Published)

UIPDroid: Unrooted dynamic monitor of Android app UIs for fine-grained permission control, by DUAN, Mulin; JIANG, Lingxiao; SHAR, Lwin Khin; GAO, Debin. (2022.0). *Proceedings of the 44th International Conference on Software Engineering, Pittsburgh, USA, 2022 May 21-29,* (pp. 227-231) Pittsburgh: IEEE. http://doi.org/10.1109/ICSE-Companion55297.2022.9793833 (Published)

Empirical evaluation of minority oversampling techniques in the context of Android malware detection, by SHAR, Lwin Khin; DUONG, Ta Nguyen Binh; LO, David. (2021.0). *2021 28th Asia-Pacific Software Engineering Conference (APSEC): Taiwan, December 6-9: Proceedings,* (pp. 349-359) Los Alamitos, CA: IEEE Computer Society. https://doi.org/10.1109/APSEC53868.2021.00042 (Published)

SmartFuzz: An automated smart fuzzing approach for testing SmartThings apps, by SHAR, Lwin Khin; TA, Nguyen Binh Duong; JIANG, Lingxiao; LO, David; WEI, Minn; YEO, Kiah Yong Glenn; KIM, Eugene. (2020.0). *2020 27th Asia-Pacific Software Engineering Conference (APSEC): December 1-4, Singapore: Proceedings,* (pp. 365-374) Piscataway, NJ: IEEE. https://doi.org/10.1109/APSEC51365.2020.00045 (Published)

Experimental comparison of features and classifiers for Android malware detection, by SHAR, Lwin Khin; DEMISSIE, Biniam Fisseha; CECCATO, Mariano; WEI, Minn. (2020.0). *MOBILESoft 2020: Proceedings of the 7th IEEE/ACM International Conference on Mobile Software Engineering and Systems, Seoul, South Korea,* (pp. 50-60) New York: ACM. https://doi.org/10.1145/3387905.3388596 (Published)

AnFlo: Detecting anomalous sensitive information flows in Android apps, by DEMISSIE, Biniam Fisseha; CECCATO, Mariano; SHAR, Lwin Khin. (2018.0). *MOBILESoft '18: Proceedings of the 5th International Conference on Mobile Software Engineering and Systems, Gothenburg, Sweden, May 27-28,* (pp. 24-34) New York: ACM. https://doi.org/10.1145/3197231.3197238 (Published)

JoanAudit: A tool for auditing common injection vulnerabilities, by THOME, Julian; SHAR, Lwin Khin; BIANCULLI, Domenico; BRIAND, Lionel. (2017.0). *Proceedings of 2017 11th Joint Meeting of the European Software Engineering Conference and the ACM SIGSOFT Symposium on the Foundations of Software Engineering, Paderborn, Germany, September 4–8,* (pp. 1004-1008) Paderborn, Germany: https://doi.org/10.1145/3106237.3122822 (Published)

Search-driven string constraint solving for vulnerability detection, by THOME, Julian; SHAR, Lwin Khin; BIANCULLI, Domenico; BRIAND, Lionel. (2017.0). *Proceedings of the 2017 IEEE/ACM 39th International Conference on Software Engineering (ICSE), Buenos Aires, Argentina, May 20-28,* (pp. 1-11) Buenos Aires, Argentina: IEEE. https://doi.org/10.1109/ICSE.2017.26 (Published)

Security slicing for auditing XML, XPath, and SQL injection vulnerabilities, by THOME, Julian; SHAR, Lwin Khin; BRIAND, Lionel. (2016.0). *Proceedings of the 26th International Symposium on Software Reliability Engineering (ISSRE), Gaithersbury, USA, 2015 November 2-5,* (pp. 553-564) Gaithersbury, USA: IEEE. https://doi.org/10.1109/ISSRE.2015.7381847 (Published)

Mining patterns of unsatisfiable constraints to detect infeasible paths, by DING, Sun; TAN, Hee Beng Kuan; SHAR, Lwin Khin. (2015.0). *Proceedings of the 2015 IEEE/ACM 10th International Workshop on Automation of Software Test, Florence, Italy, May 23-24,* (pp. 65-69) Italy: ACM. https://doi.org/10.1109/AST.2015.21 (Published)

Towards a hybrid framework for detecting input manipulation vulnerabilities, by DING, Sun; TAN, Hee Beng Kuan; SHAR, Lwin Khin; PADMANABHUNI, Bindu Madhavi. (2013.0). *2013 20th Asia-Pacific Software Engineering Conference (APSEC), Bangkok, Thailand, December 2-5: Proceedings,* (pp. 363-370) Piscataway, NJ: IEEE. https://doi.org/10.1109/APSEC.2013.56 (Published)

A scalable approach for malware detection through bounded feature space behavior modeling, by CHANDRAMOHAN, Mahinthan; TAN, Hee Beng Kuan; BRIAND, Lionel C; SHAR, Lwin Khin; PADMANABHUNI, Bindu Madhavi. (2014.0). *Proceedings of the 2013 28th IEEE/ACM International Conference on Automated Software Engineering (ASE), Silicon Valley, USA, November 11-15,* (pp. 1-11) USA: IEEE. https://doi.org/10.1109/ASE.2013.6693090 (Published)

Mining SQL injection and cross site scripting vulnerabilities using hybrid program analysis, by SHAR, Lwin Khin; TAN, Hee Beng Kuan; BRIAND, Lionel C.. (2013.0). *Proceedings of the 35th ACM/IEEE International Conference on Software Engineering (ICSE), San Francisco, 2013 May 18-26,* (pp. 1-10) San Francisco, USA: IEEE. https://doi.org/10.1109/ICSE.2013.6606610 (Published)

Semi-automated verification of defense against SQL injection in web applications, by LIU, Kaiping; TAN, Hee Beng Kuan; SHAR, Lwin Khin. (2012.0). *Proceedings of the 19th Asia-Pacific Software Engineering Conference, APSEC 2012, Hong Kong, China, December 4-7,* (pp. 91-96) Los Alamitos, CA: IEEE Computer Society. https://doi.org/10.1109/APSEC.2012.18 (Published)

Scalable malware clustering through coarse-grained behavior modeling, by CHANDRAMOHAN, Mahinthan; TAN, Hee Beng Kuan; SHAR, Lwin Khin. (2012.0). *Proceedings of the 20th ACM SIGSOFT Symposium on the Foundations of Software Engineering, Cary, USA, 2012 November 11-16,* (pp. 1-4) USA: https://doi.org/10.1145/2393596.2393627 (Published)

Predicting common web application vulnerabilities from input validation and sanitization code patterns, by SHAR, Lwin Khin; TAN, Hee Beng Kuan. (2013.0). *ASE '12: Proceedings of the 27th IEEE/ACM International Conference on Automated Software Engineering: Essen, Germany, September 3-7,* (pp. 310-313) New York: ACM. https://doi.org/10.1145/2351676.2351733 (Published)

Mining input sanitization patterns for predicting SQL injection and cross site scripting vulnerabilities, by SHAR, Lwin Khin; TAN, Hee Beng Kuan. (2012.0). *2012 34th International Conference on Software Engineering (ICSE): Zurich, June 2-9: Proceedings,* (pp. 1293-1296) Piscataway, NJ: IEEE. https://doi.org/10.1109/ICSE.2012.6227096 (Published)

Conference Papers

Auditing the defense against cross site scripting in web applications, by SHAR, Lwin Khin; TAN, Hee Beng Kuan. (2010.0). *International Conference on Security and Cryptography,* Greece. https://ieeexplore.ieee.org/document/5741657 (Published)

Research Grants

Singapore Management University

Titan Code Analysis: Vulnerability Discovery with Large Code Models, Translational R&D 2.0 Grant (TRANS2.0), Smart Nation Group , PI (Project Level): David LO , Co-PI (Project Level): SHAR Lwin Khin, OUH Eng Lieh, 2023, S$3,877,744

AP-Coach: AI-based formative feedback generation to improve student learning outcomes in introductory programming courses, Tertiary Education Research Fund (TRF), Ministry of Education (MOE) , PI (Project Level): Don TA , Co-PI (Project Level): SHAR Lwin Khin, Venky SHANKARARAMAN, 2022, S$200,741.6

ADrone: Auditing Drone Behaviours for Accountability of Criminal/Malicious Activities, NSoE MSS-CS Research Programme, National Satellite of Excellence - Mobile Systems Security and Cloud Security , PI (Project Level): SHAR Lwin Khin , Co-PI (Project Level): Don TA, JIANG Lingxiao, 2021, S$594,220

AutoPrivacyModel: Automated Feature Modelling for Identifying Illegitimate Uses of Privacy-Sensitive Data in Mobile Applications, NSoE MSS-CS Research Programme, National Satellite of Excellence - Mobile Systems Security and Cloud Security , PI (Project Level): JIANG Lingxiao , Co-PI (Project Level): David LO, SHAR Lwin Khin, DING Xuhua, Debin GAO, 2019, S$700,403

A-Things: Anomaly Analysis of the Internet of Things Applications, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): SHAR Lwin Khin , Co-PI (Project Level): David LO, JIANG Lingxiao, 2020, S$99,057

TEACHING

Teaching Areas

Cybersecurity
Web Application Development

Courses Taught

Singapore Management University

Undergraduate Programmes :

- Data Security and Privacy
- Foundations of Cybersecurity
- IS Project Experience (Research)
- Web Application Development I
- Web Application Development II

Postgraduate Professional Programmes :

- Capstone Project - Cybersecurity
- Capstone Project - Data Science and Engineering
- Cybersecurity Technology and Applications

Postgraduate Research Programmes :

- Empirical Research Project 1
- Empirical Research Project 2
- Empirical Research Project I
- Empirical Research Project II
- Empirical Research Project III

Executive Development :

- Emerging Technologies in Cybersecurity, online course, 27 Jul 2021-Present
- Blockchain, online course, 27 Jul 2021-Present

UNIVERSITY SERVICE

Singapore Management University

Committee Member, REC/SEC, Apr 2022 - Oct 2024

Faculty Advisor, CS Admission Interviews, May 2020

EXTERNAL SERVICE – PROFESSIONAL

Program Organizer, ShieldCon 2024, 2024

Committee Member, IEEE/ACM International Conference on Software Engineering 2025, 2024

Program Organizer, ShieldCon 2023, 2023

Committee Member, Industry Showcase Program Comittee, 38th IEEE/ACM International Conference on Automated Software Engineering (ASE 2023), 2023

Session Chair, NSS Conference 2022, 2022

Session Chair, ESEC/FSE Conference 2022, 2022

Session Chair, APSEC 2022, 2021

Committee Member, Program Committee, MobileSoft Conference, 2020 - Present

Committee Member, ICST 2020, Poster track, ICST, 2019 - 2020

Committee Chair, Vision Track, MobileSoft 2020, 2018 - 2020

EXTERNAL SERVICE – PUBLIC SECTOR AND COMMUNITY SERVICE

Judge, Singapore Science & Engineering Fair (SSEF), Ministry of Education, 2019 - Present