

## SHAR Lwin Khin

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## 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

## RESEARCH

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### Research Interests

Security analysis  
Software testing

### Research and Project Areas

Cybersecurity  
Software Engineering

## Publications

### Journal Articles [Refereed]

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

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): Echnernach, 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](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

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**

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### **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 4  
Empirical Research Project I  
Empirical Research Project II  
Empirical Research Project III

Executive Development :

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

## UNIVERSITY SERVICE

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### Singapore Management University

Committee Member, REC/SEC, Apr 2022 - Oct 2024  
Faculty Advisor, CS Admission Interviews, May 2020

## EXTERNAL SERVICE – PROFESSIONAL

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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 Committee, 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**

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