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Education

PhD, National University of Singapore, Singapore, 2006
Bachelor of Computing, National University of Singapore, Singapore, 2002

Academic Appointments

Professor of Computer Science, School of Computing and Information Systems, SMU, Jan 2022 - Present
Associate Professor of Computer Science, School of Computing and Information Systems, SMU, Apr 2021 - Dec 2021
Associate Professor of Information Systems, School of Computing and Information Systems, SMU, Apr 2019 - Mar 2021

Academic Administrative Positions

Co-Director, Centre for Research for Intelligent Software Engineering (RISE), Centre for Research for Intelligent Software Engineering, SMU, Apr 2023 - Present
Director, Research Lab for Intelligent Software Engineering, Centre for Research for Intelligent Software Engineering, SMU, Apr 2022 - Mar 2023
Lead Principal Investigator, School of Computing and Information Systems, SMU, Apr 2021 - Present
Deputy Director, Research Lab for Intelligent Software Engineering, Centre for Research for Intelligent Software Engineering, SMU, Apr 2020 - Mar 2022

RESEARCH

Research and Project Areas

Formal Methods, Software Engineering, and Cyber-Security

Publications

[Journal Articles \[Refereed\]](#)

Refinement-based Specification and Analysis of Multi-core ARINC 653 Using Event-B, by ZHANG, Feng; ZHANG, Leping; ZHAO, Yongwang; LIU, Yang; SUN, Jun. (2023). *Formal Aspects of Computing*, 35 (4), 1-29. <https://doi.org/10.1145/3617183> (Published)

Formalizing UML State Machines for Automated Verification - A Survey, by ETIENE, Andre; LIU, Shuang; LIU, Yang; CHOPPY, Christine; SUN, Jun; DONG, Jinsong. (2023). *ACM Computing Surveys*, 55 (13S), 1-47. <https://doi.org/10.1145/3579821> (Published)

Boosting adversarial training in safety-critical systems through boundary data selection, by JIA, Yifan; POSKITT, Christopher M.; ZHANG, Peixin; WANG, Jingyi; SUN, Jun; CHATTOPADHYAY, Sudipta. (2023). *IEEE Robotics and Automation Letters*, 8 (12), 8350-8357. <https://doi.org/10.1109/LRA.2023.3327934> (Published)

Constructing Cyber-Physical System Testing Suites Using Active Sensor Fuzzing, by ZHANG, Fan; WU, Qianmei; XUAN, Bohan; CHEN, Yuqi; LIN, Wei; POSKITT, Christopher M.; SUN, Jun; CHEN, Binbin. (2023). *IEEE Transactions on Software Engineering*, 49 (11), 4829-4845. <https://doi.org/10.1109/TSE.2023.3309330> (Published)

Interpretable testing of neural networks against subtle group discrimination, by ZHANG, Mengdi; SUN, Jun; WANG, Jingyi; SUN, Bing. *ACM Transactions on Software Engineering and Methodology*, (Accepted)

K-ST: A Formal Executable Semantics of the Structured Text Language for PLCs, by WANG, Kun; WANG, Jingyi; POSKITT, Christopher M.; CHEN, Xiangxiang; SUN, Jun; CHENG, Peng. (2023). *IEEE Transactions on Software Engineering*, 49 (10), 4796-4813. <https://doi.org/10.1109/TSE.2023.3315292> (Published)

TESTSGD: Interpretable Testing of Neural Networks against Subtle Group Discrimination, by ZHANG, Mengdi; SUN, Jun; WANG, Jingyi; SUN, Bin. (2023). *ACM Transactions on Software Engineering and Methodology*, 32 (6), 1-24. <https://doi.org/10.1145/3591869> (Published)

QuoTe: Quality-oriented Testing for Deep Learning Systems, by CHEN, Jialuo; WANG, Jingyi; MA, Xingjun; SUN, Youcheng; SUN, Jun; ZHANG, Peixin; CHENG, Peng. (2023). *ACM Transactions on Software Engineering and Methodology*, 32 (5), 1-33. <https://doi.org/10.1145/3582573> (Published)

Seed selection for testing deep neural networks, by ZHI, Yuhan; XIE, Xiaofei; SHEN, Chao; SUN, Jun; ZHANG, Xiaoyu; GUAN, Xiaohong. (2023). *ACM Transactions on Software Engineering and Methodology*, 1-33. <https://doi.org/10.1145/3607190> (Published)

Specification-Based Autonomous Driving System Testing, by ZHOU, Yuan; SUN, Yang; TANG, Yun; CHEN, Yuqi; SUN, Jun; POSKITT, Christopher M.; LIU, Yang; YANG, Zijiang. (2023). *IEEE Transactions on Software Engineering*, 49 (6), 3391-3410. <https://doi.org/10.1109/TSE.2023.3254142> (Published)

Which neural network makes more explainable decisions? An approach towards measuring explainability, by ZHANG, Mengdi; SUN, Jun; WANG, Jingyi. (2022). *Automated Software Engineering*, 29 (2), 1-26. <https://doi.org/10.1007/s10515-022-00338-w> (Published)

Guaranteeing Timed Opacity using Parametric Timed Model Checking, by ANDRÉ Étienne; LIME, Didier; MARINHO, Dylan; SUN, Jun. (2022). *ACM Transactions on Software Engineering and Methodology*, 31 (4), 1-36. <http://doi.org/10.1145/3502851> (Published)

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A Quantum Interpretation of Separating Conjunction for Local Reasoning of Quantum Programs Based on Separation Logic, by LE, Xuan-Bach; LIN, Shang-Wei; SUN, Jun; SANAN, David. (2022). *Proceedings of the ACM on Programming Languages*, 6 1-27. <https://doi.org/10.1145/3498697> (Published)

Delta Debugging Microservice Systems with Parallel Optimization, by ZHOU, Xiang; PENG, Xin; XIE, Tao; SUN, Jun; JI, Chao; LI, Wenha; DING, Dan. (2022). *IEEE Transactions on Services Computing*, 15 (1), 16-29. <https://doi.org/10.1109/TSC.2019.2919823> (Published)

Enjoy your observability: an industrial survey of microservice tracing and analysis, by LI, Bowen; PENG, Xin; XIANG, Qilin; WANG, Hanzhang; XIE, Tao; SUN, Jun; LIU, Xuanzhe. (2022). *Empirical Software Engineering*, 27 (1), 1-28. <https://doi.org/10.1007/s10664-021-10063-9> (Published)

Achieving High MAP-Coverage Through Pattern Constraint Reduction, by ZHAO, Yingquan; WANG, Zan; LIU, Shuang; SUN, Jun; CHEN, Junjie; CHEN, Xiang. (2023). *IEEE Transactions on Software Engineering*, 49

(1), 1-14. <https://doi.org/10.1109/TSE.2022.3144480> (Advance Online)

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Adversarial attacks and mitigation for anomaly detectors of cyber-physical systems, by JIA, Yifan; WANG, Jingyi; POSKITT, Christopher M.; CHATTOPADHYAY, Sudipta; SUN, Jun; CHEN, Yuqi. (2021). *International Journal of Critical Infrastructure Protection*, 34 1-13. <https://doi.org/10.1016/j.ijcip.2021.100452> (Published)

Automatic Fairness Testing of Neural Classifiers Through Adversarial Sampling, by ZHANG, Peixin; WANG, Jingyi; SUN, Jun; WANG, Xinyu; DONG, Guoliang; WANG, Xinggen; DAI, Ting; DONG, Jinsong. (2022). *IEEE Transactions on Software Engineering*, 48(9), 1-20. <https://doi.org/10.1109/TSE.2021.3101478> (Advance Online)

hPRESS: A Hardware-Enhanced Proxy Re-Encryption Scheme Using Secure Enclave, by ZHANG, Fan; LIANG, Ziyuan; ZUO, Cong; SHAO, Jun; NING, Jianting; SUN, Jun; LIU, Joseph K.; BAO, Yibao. (2021). *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*, 40(6), 1144-1157. <https://doi.org/10.1109/TCAD.2020.3022841> (Published)

Holistic Combination of Structural and Textual Code Information for Context Based API Recommendation, by CHEN, Chi; PENG, Xin; XING, Zhengchang; SUN, Jun; WANG, Xin; ZHAO, Yifan; ZHAO, Wenyun. (2022). *IEEE Transactions on Software Engineering*, 48(8), 1-23. <https://doi.org/10.1109/TSE.2021.3074309> (Advance Online)

Fault Analysis and Debugging of Microservice Systems: Industrial Survey, Benchmark System, and Empirical Study, by ZHOU, Xiang; PENG, Xin; XIE, Tao; SUN, Jun; JI, Chao; LI, Wenhai; DING, Dan. (2021). *IEEE Transactions on Software Engineering*, 47(2), 243-260. <https://doi.org/10.1109/TSE.2018.2887384> (Published)

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Explaining Regressions via Alignment Slicing and Mending, by WANG, Haijun; LIN, Yun; YANG, Zijiang; SUN, Jun; LIU, Yang; DONG, Jinsong; ZHENG, Qinghua; LIU, Ting. (2021). *IEEE Transactions on Software Engineering*, 47(11), 1-17. <https://doi.org/10.1109/TSE.2019.2949568> (Published)

Automatically 'Verifying' Discrete-Time Complex Systems through Learning, Abstraction and Refinement, by WANG, Jingyi; SUN, Jun; QIN, Shengchao; JEGOUREL, Cyrille. (2021). *IEEE Transactions on Software Engineering*, 47(1), 1-15. <https://doi.org/10.1109/TSE.2018.2886898> (Published)

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An Adaptive Markov Strategy for Defending Smart Grid False Data Injection From Malicious Attackers, by HAO, Jianye; KANG, Eunsuk; SUN, Jun; WANG, Zan; MENG, Zhaopeng; LI, Xiaohong; MING, Zhong. (2018). *IEEE Transactions on Smart Grid*, 9(4), 2398-2408. <https://doi.org/10.1109/TSG.2016.2610582> (Published)

A Formal Specification and Verification Framework for Timed Security Protocols, by LI, Li; SUN, Jun; LIU, Yang; SUN, Meng; DONG, Jin Song. (2018). *IEEE Transactions on Software Engineering*, 44(8), 725-746. <https://doi.org/10.1109/TSE.2017.2712621> (Published)

Towards Model Checking Android Applications, by BAI, Guangdong; YE, Quanqi; WU, Yongzheng; BOTHA, Heila; SUN, Jun; LIU, Yang; DONG, Jin Song; VISSER, Willem. (2018). *IEEE Transactions on Software*

Engineering, 44 (6), 595-612. <https://doi.org/10.1109/TSE.2017.2697848> (Published)

A UTP semantics for communicating processes with shared variables and its formal encoding in PVS, by SHI, Ling; ZHAO, Yongxin; LIU, Yang; SUN, Jun; DONG, Jin Song; QIN, Shengchao. (2018). *Formal Aspects of Computing*, 30 351-380. (Published)

CrowdService: Optimizing Mobile Crowdsourcing and Service Composition, by PENG, Xin; GU, Jingxiao; TAN, Tian Huat; SUN, Jun; YU, Yijun; NUSEIBEH, Bashar; ZHAO, Wenyun Zhao. (2018). *ACM Transactions on Internet Technology*, 18 (2), A1-A23. <https://doi.org/10.1145/3108935> (Published)

Language Inclusion Checking of Timed Automata with Non-Zenoness, by WANG, Xinyu; SUN, Jun; WANG, Ting; QIN, Shengchao. (2017). *IEEE Transactions on Software Engineering*, 43 (11), 995-1008. <https://doi.org/10.1109/TSE.2017.2653778> (Published)

Efficient and Robust Emergence of Norms through Heuristic Collective Learning, by HAO, Jianye; SUN, Jun; CHEN, Guangyong; WANG, Zan; YU, Chao; MING, Zhong. (2018). *ACM Transactions on Autonomous and Adaptive Systems*, 12 (4), 23:1-23:20. <https://doi.org/10.1145/3127498> (Published)

Auditing Anti-Malware Tools by Evolving Android Malware and Dynamic Loading Technique, by XUE, Yinxing; MENG, Guozhu; LIU, Yang; TAN, Tian Huat; CHEN, Hongxu; SUN, Jun; ZHANG, Jie. (2017). *IEEE Transactions on Information Forensics and Security*, 12 (7), 1529-1544. <https://doi.org/10.1109/TIFS.2017.2661723> (Published)

Battery-Aware Mobile Data Service, by HE, Liang; MENG, Guozhu; GU, Yu; LIU, Cong; SUN, Jun; ZHU, Ting; LIU, Yang; SHIN, Kang G.. (2017). *IEEE Transactions on Mobile Computing*, 16 (6), 1544-1558. <https://doi.org/10.1109/TMC.2016.2597842> (Published)

IBED: Combining IBEA and DE for optimal feature selection in software product line engineering, by XUE, Yinxing; ZHONG, Jinghui; TAN, Tian Huat; LIU, Yang; CAI, Wentong; CHEN, Manman; SUN, Jun. (2016). *Applied Soft Computing*, 49 1215-1231. <https://doi.org/10.1016/j.asoc.2016.07.040> (Published)

Formalizing and verifying stochastic system architectures using Monterey Phoenix, by SONG, Songzheng; ZHANG, Jiexin; LIU, Yang; AUGUSTON, Mikhail; SUN, Jun; DONG, Jin Song; CHEN, Tieming. (2016). *Software and Systems Modeling*, 15 (2), 453-471. <https://doi.org/10.1007/s10270-014-0411-7> (Published)

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A Systematic Study on Explicit-State Non-Zenoness Checking for Timed Automata, by WANG, Ting; SUN, Jun; WANG, Xinyu; LIU, Yang; SI, Yuanjie; DONG, Jin Song; YANG, Xiaohu; LI, Xiaohong. (2015). *IEEE Transactions on Software Engineering*, 41 (1), 3-18. <https://doi.org/10.1109/TSE.2014.2359893> (Published)

Parameter synthesis for hierarchical concurrent real-time systems, by ANDRÉ, Étienne; LIU, Yang; SUN, Jun; DONG, Jin Song. (2014). *Real-Time Systems*, 50 (5-6), 620-679. <https://doi.org/10.1007/s11241-014-9208-6> (Published)

Towards verification of computation orchestration, by DONG, Jin Song; LIU, Yang; SUN, Jun; ZHANG, Xian. (2014). *Formal Aspects of Computing*, 26 (4), 729-759. <https://doi.org/10.1007/s00165-013-0280-9> (Published)

Model checking approach to automated planning, by LI, Yi; DONG, Jin Song; SUN, Jing; LIU, Yang; SUN, Jun. (2014). *Formal Methods in System Design*, 44 (2), 176-202. <https://doi.org/10.1007/s10703-013-0197-1> (Published)

Towards Formal Modelling and Verification of Pervasive Computing Systems, by LIU, Yan; ZHANG, Xian; LIU, Yang; DONG, Jin Song; SUN, Jun; BISWAS, Jit; MOKHTARI, Mounir. (2014). *Lecture Notes in Artificial Intelligence*, 8780 62-91. https://doi.org/10.1007/978-3-662-44871-7_3 (Published)

Learning Assumptions for Compositional Verification of Timed Systems, by LIN, Shang-Wei Lin, ANDRÉ, Étienne; LIU, Yang; SUN, Jun; DONG, Jin Song. (2014). *IEEE Transactions on Software Engineering*, 40 (2), 137-153. <https://doi.org/10.1109/TSE.2013.57> (Published)

Complexity of the Soundness Problem of Workflow Nets, by LIU, Guan Jun; SUN, Jun; LIU, Yang; DONG, Jin Song. (2014). *Fundamenta Informaticae*, 131 (1), 81-101. <https://doi.org/10.3233/FI-2014-1005> (Published)

Verifying Linearizability via Optimized Refinement Checking, by LIU, Yang; CHEN, Wei; LIU, Yanhong A.; SUN, Jun; ZHANG, Shao Jie; DONG, Jin Song Dong. (2013). *IEEE Transactions on Software Engineering*, 39 (7), 1018-1039. <https://doi.org/10.1109/TSE.2012.82> (Published)

Modeling and Verifying Hierarchical Real-Time Systems Using Stateful Timed CSP, by SUN, Jun; LIU, Yang; DONG, Jin Song; LIU, Yan; SHI, Ling; ANDRÉ, Étienne. (2013). *ACM Transactions on Software Engineering and Methodology*, 22 (1), 3:1-3:29. <https://doi.org/10.1145/2430536.2430537> (Published)

Formal modeling and validation of Stateflow diagrams, by CHEN, Chunqing; SUN, Jun; LIU, Yang; DONG, Jin Song; ZHENG, Manchun. (2012). *International Journal on Software Tools for Technology Transfer*, 14 653-671. <https://doi.org/10.1007/s10009-012-0235-0> (Published)

A Verification System for Interval-Based Specification Languages, by CHEN, Chunqing; DONG, Jin Song; SUN, Jun; MARTIN, Andrew P.. (2010). *ACM Transactions on Software Engineering and Methodology*, 19 (4), 13:1-13:36. <https://doi.org/10.1145/1734229.1734232> (Published)

A formal framework for modeling and validating Simulink diagrams, by CHEN, Chunqing; DONG, Jin Song; SUN, Jun. (2009). *Formal Aspects of Computing*, 21 (5), 451-483. <https://doi.org/10.1007/s00165-009-0108-9> (Published)

Timed Automata Patterns, by DONG, Jin Song; HAO, Ping; QIN, Shengchao; SUN, Jun; YI, Wang. (2008). *IEEE Transactions on Software Engineering*, 34 (6), 844-859. <https://doi.org/10.1109/TSE.2008.52> (Published)

Design synthesis from interaction and state-based specifications, by SUN, Jun; DONG, Jin Song. (2006). *IEEE Transactions on Software Engineering*, 32 (6), 349-364. <https://doi.org/10.1109/TSE.2006.55> (Published)

Edited Books

FM 2014: Formal methods: 19th international symposium, edited by JONES, Cliff B.; PIHLAJASAARI, Pekka; SUN, Jun. (2014). Springer. (Published)

Conference Proceedings

ACAV: A Framework for Automatic Causality Analysis in Autonomous Vehicle Accident Recordings, by SUN, Huijia; POSKITT, Christopher M.; SUN, Yang; SUN, Jun; CHEN, Yuqi. (2024.0). *Proc. 46th International Conference on Software Engineering (ICSE 2024)*, New York City, United States: ACM. (Accepted)

REDriver: Runtime Enforcement for Autonomous Vehicles, by SUN, Yang; POSKITT, Christopher M.; ZHANG, Xiaodong; SUN, Jun. (2024.0). *Proc. 46th International Conference on Software Engineering (ICSE 2024)*, New York City, United States: ACM. (Accepted)

Neural Network Semantic Backdoor Detection and Mitigation: A Causality-Based Approach, by Bing Sun, Jun Sun, Wayne Koh, and Jie Shi. *Proceedings of USENIX Security 2024, USA*: (Accepted)

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Learning program semantics for vulnerability detection via vulnerability-specific inter-procedural slicing, by Bozhi Wu, Shangqing Liu, Yang Xiao, Zhiming Li, Jun Sun, and Shang-Wei Lin. *Proceedings of ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE) 2023, USA*: (Accepted)

Software composition analysis for vulnerability detection: An empirical study on Java projects, by ZHAO, Lida; CHEN, Sen; XU, Zhengzi; ZHANG, Lyuye; WU, Jiahui; SUN, Jun; LIU, Yang. *ESEC/FSE 2023, USA*: (Accepted)

An idealist's approach for smart contract correctness, by NGUYEN, Tai D.; PHAM, Long H.; SUN, Jun; LE, Quang Loc. (2023.0). *Formal methods and software engineering: 24th International Conference on Formal Engineering Methods, ICFEM 2022, Brisbane, November 21-24: Proceedings*, (pp. 1-18) Cham: Springer. https://doi.org/10.1007/978-981-99-7584-6_2 (Published)

Configuring timing parameters to ensure execution-time opacity in timed automata, by André, Étienne; Lefauchaux, Engel; Lime, Didier; Marinho, Dylan; SUN, Jun. (2023.0). *Proceedings of the First Workshop on Trends in Configurable Systems Analysis (TiCSA '23): Paris, April 23*, (pp. 1-26) Paris: Open Publishing Association. <https://doi.org/10.4204/EPTCS.392.1> (Published)

QEBVerif: Quantization error bound verification of neural networks, by ZHANG, Yedi; SONG, Fu; SUN, Jun. (2023.0). *Proceedings of the 35th International Conference on Computer Aided Verification, Paris, France, 2023 July 17-22*, (pp. 413-437) Cham: Springer. https://doi.org/10.1007/978-3-031-37703-7_20 (Published)

Silent compiler bug de-duplication via three-dimensional analysis, by YANG, Chen; CHEN, Junjie; FAN, Xingyu; JIANG, Jiajun; SUN, Jun. (2023.0). *ISSTA 2023: Proceedings of the 32nd ACM SIGSOFT International Symposium on Software Testing and Analysis, Seattle, Washington, 2023 July 17-21*, (pp. 677-689) New York: ACM. <https://doi.org/10.1145/3597926.3598087> (Published)

Semantic-based neural network repair, by SCHUMI, Richard; SUN, Jun. (2023.0). *ISSTA 2023: Proceedings of the 32nd ACM SIGSOFT International Symposium on Software Testing and Analysis, Seattle, WA, July 17-21*, (pp. 150-162) New York: ACM. <https://doi.org/10.1145/3597926.3598045> (Published)

Testing automated driving systems by breaking many laws efficiently, by ZHANG, Xiaodong; ZHAO, Wei; SUN, Yang; SUN, Jun; SHEN, Yulong; DONG, Xuwen; YANG, Zijiang. (2023.0). *ISSTA 2023: Proceedings of the 32nd ACM SIGSOFT International Symposium on Software Testing and Analysis, Seattle, WA, July 17-21*, (pp. 942-953) New York: ACM. <https://doi.org/10.1145/3597926.3598108> (Published)

Finding causally different tests for an industrial control system, by POSKITT, Christopher M.; CHEN, Yuqi; SUN, Jun; JIANG, Yu. (2023.0). *ICSE '23: Proceedings of the 45th International Conference on Software Engineering, Melbourne, Australia, 2023 May 14-20*, (pp. 2578-2590) Melbourne, Australia: IEEE. <https://doi.org/10.1109/ICSE48619.2023.00215> (Published)

Two sides of the same coin: Exploiting the impact of identifiers in neural code comprehension, by GAO, Shuzheng; GAO, Cuiyun; WANG, Chaozheng; SUN, Jun; LO, David; YU, Yue. (2023.0). *Proceedings of ICSE 2023, Melbourne*: (Accepted)

Adaptive fairness improvement based causality analysis, by ZHANG, Mengdi; SUN, Jun. (2022.0). *Proceedings of ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE) 2022, Singapore, November 14-16*, (pp. 1-12) Singapore: ACM. <http://doi.org/10.1145/3540250.3549103> (Accepted)

LawBreaker: An approach for specifying traffic laws and fuzzing autonomous vehicles, by SUN, Yang; POSKITT, Christopher M.; SUN, Jun; CHEN, Yuqi; YANG, Zijiang. (2022.0). *ASE '22: Proceedings of the 37th IEEE/ACM International Conference on Automated Software Engineering, Rochester, MI, October 10-14*, (pp. 1-12) New York: ACM. <https://doi.org/10.1145/3551349.3556897> (Published)

QVIP: An ILP-based formal verification approach for quantized neural networks, by ZHANG, Yedi; ZHAO, Zhe; CHEN, Guangke; SONG, Fu; ZHANG, Min; CHEN, Taolue; SUN, Jun. (2022.0). *Proceedings of 37th IEEE/ACM International Conference on Automated Software Engineering, Rochester, USA, 2022 October 10-14*, (pp. 1-13) Rochester, USA: ACM. <http://doi.org/10.1145/3551349.3556916> (Published)

Verifying neural networks against backdoor attacks, by PHAM, Long Hong; SUN, Jun. (2022.0). *Computer Aided Verification: 34th International Conference, CAV 2022, Haifa, Israel, August 7-10: Proceedings*, (pp. 171-192) Cham: Springer. https://doi.org/10.1007/978-3-031-13185-1_9 (Published)

ExAIs: Executable AI semantics, by SCHUMI, Richard; SUN, Jun. (2022.0). *ICSE '22: Proceedings of the 44th International Conference on Software Engineering, Virtual, May 21-29*, (pp. 859-870) New York: ACM. <https://doi.org/10.1145/3510003.3510112> (Published)

Causality-based neural network repair, by SUN, Bing; SUN, Jun; PHAM, Long Hong; SHI, Jie. (2022.0). *ASCE '22: Proceedings of the 44th International Conference on Software Engineering, Pittsburgh, May 8-20*, (pp. 338-349) New York: ACM. <https://doi.org/10.1145/3510003.3510080> (Published)

Quantum separation logic: A framework for local reasoning of quantum programs, by LE, Xuan Bach; LIN, Shang-Wei; SUN, Jun; SANAN, David. (2022.0). *POPL 2022: Proceedings of the 49th ACM SIGPLAN Symposium on Principles of Programming Languages, Philadelphia, Virtual, January 16-22*, New York: ACM. (Accepted)

Verification assisted gas reduction for smart contracts, by GAO, Bo; SHEN, Siyuan; SHI, Ling; LI, Jiaying; SUN, Jun; BU, Lei. (2021.0). *Proceedings of the 28th Asia-Pacific Software Engineering Conference (APSEC*

2021), *Virtual Conference, December 6-9*, (pp. 1-11) Virtual Conference: (Published)

Probabilistic verification of neural networks against group fairness, by SUN, Bing; SUN, Jun; DAI, Ting; ZHANG, Lijun. (2021.0). *Proceedings of 24th International Symposium on Formal Methods (FM 2021), Beijing China, November 20-26*, (pp. 1-23) China: (Published)

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Towards a model checker for NesC and wireless sensor networks, by ZHENG, Manchun; SUN, Jun; LIU, Yang; DONG, Jin Song; GU, Yu. (2011.0). *Proceedings of the 13th International Conference on Formal Engineering Methods, ICFEM 2011, Durham, UK, October 26-28*, (pp. 372-387) Durham, UK: Springer Link. https://doi.org/10.1007/978-3-642-24559-6_26 (Published)

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On combining state space reductions with global fairness assumptions, by ZHANG, Shao Jie; SUN, Jun; PANG, Jun; LIU, Yang; DONG, Jin Song. (2011.0). *Proceedings of the 17th International Symposium on Formal Methods, Limerick, Ireland, June 20-24*, (pp. 432-447) Ireland: Springer Link. https://doi.org/10.1007/978-3-642-21437-0_32 (Published)

Model-based methods for linking web service choreography and orchestration, by SUN, Jun; LIU, Yang; DONG, Jin Song; PU, Geguang; TAN, Tian Huat. (2010.0). *Proceedings of the 17th Asia Pacific Software Engineering Conference, APSEC 2010, Sydney, Australia, November 30 - December 3*, (pp. 166-175) Australia: IEEE. <https://doi.org/10.1109/APSEC.2010.28> (Published)

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Model checking a model checker: A code contract combined approach, by SUN, Jun; LIU, Yang; CHENG, Bin. (2010.0). *Proceedings of the 12th International Conference on Formal Engineering Methods, ICFEM 2010, Shanghai, China, November 17-19*, (pp. 518-533) Shanghai, China: Springer Link. https://doi.org/10.1007/978-3-642-16901-4_34 (Published)

Developing model checkers using PAT, by LIU, Yang; SUN, Jun; DONG, Jin Song. (2010.0). *Proceedings of the 8th International Symposium, ATVA 2010, Singapore, September 21-24*, (pp. 371-377) Singapore: Springer Link. https://doi.org/10.1007/978-3-642-15643-4_30 (Published)

Scalable multi-core model checking fairness enhanced systems, by LIU, Yang; SUN, Jun; DONG, Jin Song. (2009.0). *Proceedings of the 11th International Conference on Formal Engineering Methods, ICFEM 2009, Rio de Janeiro, Brazil, December 9-12*, (pp. 426-445) Rio de Janeiro, Brazil: Springer Link. https://doi.org/10.1007/978-3-642-10373-5_22 (Published)

Verifying stateful timed CSP using implicit clocks and zone abstraction, by SUN, Jun; LIU, Yang; DONG, Jin Song; ZHANG, Xian. (2009.0). *Proceedings of the 11th International Conference on Formal Engineering Methods, ICFEM 2009, Rio de Janeiro, Brazil, December 9-12*, (pp. 581-600) Rio de Janeiro, Brazil: Springer Link. https://doi.org/10.1007/978-3-642-10373-5_30 (Published)

- Fair model checking with process counter abstraction, by SUN, Jun; LIU, Yang; ROYCHOUDHURY, Abhik; LIU, Shanshan; DONG, Jin Song. (2009.0). *Proceedings of the Second World Congress Eindhoven, The Netherlands, 2009 November 2-6*, (pp. 123-139) Eindhoven, The Netherlands: Springer Link. https://doi.org/10.1007/978-3-642-05089-3_9 (Published)
- Model checking linearizability via refinement, by LIU, Yang; CHEN, Wei; LIU, Yanhong A.; SUN, Jun Sun. (2009.0). *Proceedings of the Second World Congress Eindhoven, The Netherlands, 2009 November 2-6*, (pp. 321-337) Eindhoven, The Netherlands: Springer Link. https://doi.org/10.1007/978-3-642-05089-3_21 (Published)
- Verification of population ring protocols in PAT, by LIU, Yang; PANG, Jun; SUN, Jun; ZHAO, Jianhua. (2009.0). *Proceedings of the 2009 Third IEEE International Symposium on Theoretical Aspects of Software Engineering, Tianjin, China, July 29-31*, (pp. 81-89) Tianjin, China: IEEE. <https://doi.org/10.1109/TASE.2009.51> (Published)
- Towards expressive specification and efficient model checking, by DONG, Jin Song; SUN, Jun. (2009.0). *Proceedings of the 2009 Third IEEE International Symposium on Theoretical Aspects of Software Engineering, Tianjin, China, July 29-31*, (pp. 9-9) Tianjin, China: IEEE. <https://doi.org/10.1109/TASE.2009.63> (Published)
- Integrating specification and programs for system modeling and verification, by SUN, Jun; LIU, Yang; DONG, Jin Song; CHEN, Chunqing. (2009.0). *Proceedings of the 2009 Third IEEE International Symposium on Theoretical Aspects of Software Engineering, Tianjin, China, July 29-31*, (pp. 127-135) Tianjin, China: IEEE. <https://doi.org/10.1109/TASE.2009.32> (Published)
- Formal verification of scalable nonzero indicators, by ZHANG, Shao Jie; LIU, Yang; SUN, Jun; DONG, Jin Song; CHEN, Wei; LIU, Yanhong A.. (2009.0). *Proceedings of the 21st International Conference on Software Engineering & Knowledge Engineering (SEKE'2009), Boston, July 1-3*, (pp. 406-411) USA: (Published)
- PAT: Towards flexible verification under fairness, by SUN, Jun; LIU, Yang; DONG, Jin Song; PANG, Jun. (2009.0). *Proceedings of the 21st International Conference, CAV 2009, Grenoble, France, June 26 - July 2*, (pp. 709-714) Grenoble, France: Springer Link. https://doi.org/10.1007/978-3-642-02658-4_59 (Published)
- Specifying and verifying event-based fairness enhanced systems, by SUN, Jun; LIU, Yang; DONG, Jin Song; WANG, Hai H.. (2008.0). *Proceedings of the 10th International Conference on Formal Engineering Methods, ICFEM 2008, Kitakyushu-City, Japan, October 27-31*, (pp. 5-24) Kitakyushu-City, Japan: Springer Link. https://doi.org/10.1007/978-3-540-88194-0_4 (Published)
- Specifying and verifying sensor networks: An experiment of formal methods, by DONG, Jin Song; SUN, Jing; SUN, Jun; TAGUCHI, Kenji; ZHANG, Xian. (2008.0). *Proceedings of the 10th International Conference on Formal Engineering Methods, ICFEM 2008, Kitakyushu-City, Japan, October 27-31*, (pp. 318-337) Kitakyushu-City, Japan: Springer Link. https://doi.org/10.1007/978-3-540-88194-0_20 (Published)
- Model checking CSP revisited: Introducing a process analysis toolkit, by SUN, Jun; LIU, Yang; DONG, Jin Song. (2008.0). *Proceedings of Third International Symposium, ISoLA 2008, Porto Sani, Greece, October 13-15*, (pp. 307-322) Greece: Springer Link. https://doi.org/10.1007/978-3-540-88479-8_22 (Published)
- Bounded model checking of compositional processes, by SUN, Jun; LIU, Yang; DONG, Jin Song; SUN, Jing. (2008.0). *Proceedings of the 2nd IFIP/IEEE International Symposium on Theoretical Aspects of Software Engineering, TASE 2008, Nanjing, China, June 17-19*, (pp. 1-8) Nanjing, China: IEEE. <https://doi.org/10.1109/TASE.2008.12> (Published)
- A verification system for timed interval calculus, by CHEN, Chunqing; DONG, Jin Song; SUN, Jun. (2008.0). *Proceedings of the 30th International Conference on Software Engineering (ICSE 2008), Leipzig, Germany, 2008 May 10-18*, (pp. 271-280) Germany: IEEE. <https://doi.org/10.1145/1368088.1368126> (Published)
- A formal model of semantic Web Service Ontology (WSMO) execution, by WANG, Hai H.; GIBBINS, Nick; PAYNE, Terry R.; SALEH, Ahmed; SUN, Jun. (2008.0). *Proceedings of the 13th International Conference on Engineering of Complex Computer Systems (ICECCS 2008), Belfast, Northern Ireland, March 31 - April 4*, (pp. 111-120) Belfast, Northern Ireland: IEEE. <https://doi.org/10.1109/ICECCS.2008.25> (Published)
- A scalable approach to multi-style architectural modeling and verification, by WONG, Stephen; SUN, Jing; WARREN, Ian; SUN, Jun. (2008.0). *Proceedings of the 13th International Conference on Engineering of Complex Computer Systems (ICECCS 2008), Belfast, Northern Ireland, March 31 - April 4*, (pp. 25-34) Belfast, Northern Ireland: IEEE. <https://doi.org/10.1109/ICECCS.2008.16> (Published)

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Realizing live sequence charts in system verilog, by WANG, Hai H.; QIN, Shengchao; SUN, Jun; DONG, Jin Song. (2007.0). *Proceedings of the First Joint IEEE/IFIP Symposium on Theoretical Aspects of Software Engineering, TASE 2007, Shanghai, China, June 6-8*, (pp. 379-388) Shanghai, China: <https://doi.org/10.1109/TASE.2007.41> (Published)

Synthesis of distributed processes from scenario-based specifications, by SUN, Jun; DONG, Jin Song. (2005.0). *Proceedings of 2005 International Symposium of Formal Methods Europe, Newcastle, UK, July 18-22*, (pp. 415-431) Newcastle, UK: Springer Link. https://doi.org/10.1007/11526841_28 (Published)

Research Grants

Singapore Management University

Executable AI Semantics for AI Framework Analysis, Academic Research Fund (AcRF) Tier 2, Ministry of Education (MOE) , PI (Project Level): SUN Jun, 2023, S\$648,713

Trustworthy AI Centre NTU (TAICeN), Cyber Security Agency of Singapore (CSA) , Co-PI (Project Level): XIE Xiaofei, SUN Jun, 2023

The Science of Certified AI Systems, Academic Research Fund (AcRF) Tier 3, Ministry of Education (MOE) , PI (Project Level): SUN Jun , Co-PI (Project Level): David LO, JIANG Lingxiao, 2021, S\$9,340,776

Trust to Train and Train to Trust: Agent Training Programs for Safety-Critical Environments, AI Singapore Research Programme, AI Singapore , PI (Project Level): Pradeep Reddy VARAKANTHAM , Co-PI (Project Level): Akshat KUMAR, Arunesh SINHA, David LO, 2021, S\$6,086,963.76

Research Programme on Computational Law, Smart Systems Strategic Research Programme, Industry Alignment Fund – Pre-Positioning (IAF-PP) Funding Initiative, Info-communications Media Development Authority of Singapore (IMDA) , PI (Project Level): WONG Meng Weng , Co-PI (Project Level): GOH Yihan, SC, LAU Kwan Ho, LIM How Khang, Jerrold SOH, 2019, S\$15,189,082

Explaining AI with the Right Level of Abstraction, AI Singapore Research Programme, AI Singapore , PI (Project Level): SUN Jun, 2019, S\$749,904

SpecTest: Specification-based Compiler Fuzzing, NSoE TSS Grant Call, National Satellite of Excellence - Trustworthy Software Systems , PI (Project Level): SUN Jun, 2019, S\$715,000

Monitor Only if You Cannot Verify, Academic Research Fund (AcRF) Tier 2, Ministry of Education (MOE) , PI (Project Level): SUN Jun, 2019, S\$577,800

Towards Practical Attestation Solutions for Countering Advanced Attacks to Industrial Control Systems, NSoE DeST-SCI Grant Call, National Satellite of Excellence - Design Science and Technology for Secure Critical Infrastructure , Co-PI (Project Level): SUN Jun, 2019, S\$939,180

Provable Mitigation of Side Channel through Parametric Verification, NRF-ANR Joint Grant Call, National Research Foundation (NRF) , PI (Project Level): SUN Jun, 2019, S\$450,000

Automatic non-linear loop summarization and its applications, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): XIE Xiaofei, 2021, S\$100,000

Testing and Verification of Artificial Intelligence Systems, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): David LO , Co-PI (Project Level): JIANG Lingxiao, SUN Jun, 2019, S\$468,035

"Follow the Money": Targeted Smart Contracts Analysis, SMU Internal Grant, Ministry of Education (MOE) Tier 1 , PI (Project Level): SUN Jun, 2018, S\$100,000

Other Institutions

Testing and Defending AI-Systems Holistically, Huawei, Huawei PI (Project Level): SUN Jun, 2019,

SGD339,000

Provable Mitigation of Side Channel through Parametric Verification, ProMIS, NRF-ANR PI (Project Level):
SUN Jun, 2019, SGD450,000

Constraint Solving based on Optimization, industry grant, Singapore Huawei PI (Project Level): SUN Jun,
SGD500,000

TEACHING

Courses Taught

Singapore Management University

Undergraduate Programmes :

- Computational Thinking
- Design and Analysis of Algorithms
- Fairness in Socio-technical Systems
- Guided Advanced Research in Computer Science
- Guided Advanced Research in Computing
- Guided Research in Computer Science
- Guided Research in Computer Science II
- Guided Research in Computing
- Guided Research in Computing 2
- Software Project Management
- Web Application Development II

Postgraduate Professional Programmes :

- AI System Evaluation
- Capstone Project - Cybersecurity
- Capstone Project - Data Science and Engineering
- Empirical Research Project 2

Postgraduate Research Programmes :

- Empirical Research Project 1
- Empirical Research Project 2
- Empirical Research Project 3
- Empirical Research Project 4

Consultancy

Huawei Pte Ltd, Apr 2019 - Mar 2020

EXTERNAL SERVICE – PROFESSIONAL

Committee Member, FM 2021, 2021

Committee Member, ASE 2021, 2021

Committee Member, FSE 2021, 2021

Committee Member, ICSE 2021, 2021

Committee Chair, Internetwork 2020, 2021

Presenter Keynote Address, International Conference on Formal Engineering Methods (ICFEM2021), 2021

Committee Chair, General Chair, APSEC 2020, 2020

Committee Member, ICSE 2020, 2019 - Present

Committee Member, ICSE 2019, 2019 - Present

Committee Member, ASE2019, 2019 - Present

Committee Member, FM 2019, 2019 - Present

Conference Chair, SETTA 2019, 2019 - Present

Committee Member, ISSTA 2019, 2019 - Present

Committee Member, International Conferences: ATVA 2019, FORMATS 2019, QRS 2019, ICSE SRC 2019, TASE 2019, ICFEM 2019, 2019 - Present

Conference Chair, Program Chair, International Symposium on Formal Methods 2014, 2014