Shin Hwei Tan
Associate Professor (Gina Cody Research Chair)
Concordia University
shinhwei.tan@concordia.ca
Webpage: http://www.shinhwei.com/
DBLP: https://dblp.uni-trier.de/pers/hd/t/Tan:Shin_Hwei
Google Scholar: https://scholar.google.com/citations?user=1eFjFs8AAAAJ&hl=en

Highlights of Qualifications

- Well-cited top tier publications (ICSE, FSE, ISSTA, ASE, PLDI) at conferences across **two fields in Computer Science** (Software Engineering and Programming Languages).
- Recipient of several prestigious research awards (ACM-W Rising Star Award, ICSE 2025 Distinguished Paper Award, ICST 2025 Distinguished Paper Award, SANER 2024 Distinguished Paper Award, ISSTA 2021 Distinguished Artifact Award, Google Anita Borg Memorial Scholarship, David J. Kuck Outstanding MS Thesis Award).
- Service Award: Recipient of 3 **best reviewers awards** (ICSE-NIER 2022, FSE 2020, ASE 2020)
- General Chair for FSE 2026, and editor/review board member of 2 top-tier journals (among the youngest Guest Editor-in-Chief for TOSEM "New Frontier in Software Engineering" and Associate Editors for ACM Transactions on Software Engineering and Methodology and Empirical Software Engineering Journal Review Board)
- Founded and co-organized 5 editions of International Workshop for Automated Program Repair (APR), co-organized the Genetic Improvement (GI) workshop
- Proven HQP supervision record (graduated undergraduate students received top prizes for ACM Student Research Competition at ASE 2020 and ICSE 2019)
- Research outcome impacting practice across multiple countries (Fujitsu Laboratories of America, and Singtel)
- Education impact (GitHub-OSS-Fixit project has helped students in contributing hundreds of patches to open-source projects, and adapted as a course project for software engineering class in UIUC)
- Successful external research funding application record across countries (NSERC in Canada, NSFC in China)

Highlights of Publications

H1. Z. Xu*, Q. Li, S. H. Tan. *Understanding and Enhancing Attribute Prioritization in Fixing Web UI Test with LLMs.* In: 18th IEEE International Conference on Software Testing, Verification and Validation (ICST 2025). (acceptance rate 21.4%) **Won IEEE TCSE Distinguished Paper Award**.

H2. S. H. Tan, D. Marinov, L. Tan, and G. T. Leavens. *@tComment: Testing Javadoc Comments to Detect Comment-Code Inconsistencies*. In: International Conference on Software Testing, Verification, and Validation (ICST'12), (acceptance: 27%), **Won David J. Kuck Outstanding MS Thesis Award.**

H3. S. H. Tan, A. Roychoudhury. *Relifix: Automated Repair of Software Regressions*. In: International Conference on Software Engineering (ICSE'15) (acceptance: 18.5%). A **pioneering technique and tool** for fixing software regression. Well-cited (more than 160+ times).

H4. S. H. Tan, H. Yoshida, M. Prasad and A. Roychoudhury. *Anti-patterns in Search-based Program Repair*, In: Foundations of Software Engineering (FSE'16) (acceptance: 27.1%). Collaborated with Fujitsu Laboratories of America for a well-cited **US** and **Japan software patent 2018-2035**.

H5. S. H. Tan, Z. Li, *Collaborative Bug Finding for Android Apps.* In: International Conference on Software Engineering (ICSE'20) (acceptance: 23.5%). **Adapted for >5 years** in Software Testing classes in China and Canada. Helped >**100 students per semester** to find **new bugs** in more than **40** open-source apps.

H6. S. H. Tan, Z. Li, C. Hu, Z. Li, X. Zhang, Y. Zhou. *GitHub-OSS Fixit: Fixing bugs at scale in a Software Engineering Course.* In: International Conference on Software Engineering, Joint Track on Software Engineering Education and Training (ICSE-JSEET'21) (acceptance: 33.3%). Won "**World Teacher Day Challenge 2020**".

H7. S. Hong, H. Sun, X. Gao, H. Zhang, S. H. Tan. *Investigating and Detecting Silent Bugs in PyTorch Programs.* In: IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER'24), (acceptance: 25.6%) **Won Distinguished Paper Award.**

H8. R. Shariffdeen, X. Gao, G. Duck, S. H. Tan, J. Lawall, A. Roychoudhury. *Automated Patch Backporting in Linux (Experience Paper)*. In: ACM SIGSOFT International Symposium on Software Testing and Analysis, July 2021. (acceptance: 21.8%), **Won ISSTA Distinguished Artifact Award.**

H9. S. H. Tan, Z. Dong. X. Gao, A. Roychoudhury. *Repairing Crashes in Android Apps*. In: International Conference on Software Engineering (ICSE'18), May 2018. (acceptance: 20.9%), **Nominated for "Humies" Awards.**

H10. Z. Fan*, X. Gao, M. Mirchev, A. Roychoudhury, S. H. Tan. *Automated Repair of Program from Large Language Models.* In: International Conference on Software Engineering (ICSE 2023) (acceptance: 26.3%). First study that improves auto-generated code by Large Language Models. **Well-cited** paper (>225 times).

H11. H. Zhang*, Y. Pei, J. Chen, S. H. Tan. *Statfier: Automated Testing of Static Analyzers via Semantic-preserving Program Transformations.* In: Foundations of Software Engineering (FSE 2023), (acceptance: 20.6%) A **pioneering technique and tool** by my **PhD student** for testing program analyzers.

Research Interests

My research interest lies in the intersections between Software Engineering,Nature-inspired Artificial Intelligence Algorithms (including genetic algorithm and evolutionary algorithm), and Software Security. Specifically, it includes:

- **Software Engineering:** Automated Program Repair, Automated Software Testing, Mobile App Analysis, Program Analysis, Program Synthesis
- **Nature-inspired Artificial Intelligence Algorithms:** Genetic Improvement, Search-based Software Engineering, Self-healing Software System
- **Software Security:** Finding and fixing security vulnerabilities

Education

National University of Singapore, Singapore
Ph.D., School of Computing, August 2012-March 2018
Thesis Topic: Design of Repair Operators for Automated Program Repair
Adviser: Abhik Roychoudhury

University of Illinois at Urbana-Champaign, Champaign, IL
M.S., Computer Science, May 2012
Thesis Topic: @tComment: Testing Javadoc Comments to Detect Comment-Code Inconsistencies
(Won David J. Kuck Outstanding MS Thesis Award)
Advisers: Darko Marinov, Lin Tan
B.S. (Hons), Computer Science, May 2010
Thesis Topic: Theories/Parameterized tests for JUnit
Adviser: Darko Marinov

Work Experience

Concordia University, Canada
Associate Professor (Tenured) **May 2023 to Present**

- Participated in several internal services including, chair of hiring committee, graduate thesis defense committee
- Supervised 6 graduate students

Southern University of Science and Technology, Shenzhen, China
Assistant Professor (Tenure-Track) **June 2018 to April 2023**

- Participated in several internal services including, faculty recruitment committee, postdoc thesis proposal committee, and master thesis proposal committee
- Supervised 8 undergraduate students for their senior thesis. One of them won the best senior thesis.

NUS-Singtel Cyber Security Research and Development Lab, Singapore
Research Assistant **Nov. 2017 to May 2018**

- Developed and invented techniques for automated repair of crashes for Android apps

Fujitsu Laboratories of America, Sunnyvale, CA, USA
Research Intern **Feb. 2015 to May 2015**

- Conducted a study of the common characteristics of automatically generated patches
- Developed techniques for improving search-based automated program repair

Intel Corporation, Penang, Malaysia
Summer Intern for Testing Hole Resolution (THR) **June 2011 to Aug. 2011**
- Developed automation for improving efficiency in running automated tests for CPU caches
- Implemented features and developed error handling for program in Perl and Tcl

Railroad Department, Champaign, IL, USA
Undergraduate Assistant **Aug. 2007 to May 2009**
- Maintained MS Access database for daily tank car accident reports
- Debugged and programmed using Visual Basic, Ruby, and HTML

Teaching Experience

Concordia University, **Canada**
SOEN345 Software Testing, Verification and Quality Assurance **Jan. 2024 to Present**
- Conducted weekly lectures for more than 100 students
- Prepared teaching materials for 3 hours weekly lectures
- Designed the Collaborative bug finding and prompt projects
    - Students have submitted more than 20 GitHub issues to open-source Android apps

Southern University of Science and Technology, China
CS 304 Software Engineering **Feb. 2019 to April 2023**
- Conducted lectures and labs for up to 210 students
- Prepared teaching materials for 2 hours weekly lectures and 2 hours weekly labs
- Designed the GitHub-OSS project for fixing bugs in Java and Android projects
    - 154 students have submitted 214 pull requests to 24 different projects in GitHub
    - Project adapted by CS427 Fall 2021 in UIUC

CS 409 Software Testing **Aug. 2018 to May 2018**
- Proposed the first course in Software Testing in SUSTech
- Prepared teaching materials for 2 hours weekly lectures and 2 hours weekly labs
- Designed course syllabus and prepared teaching materials for 50 students
- Designed course project for finding bugs in open-source Android apps
    - 29 students found and reported 17 new bugs

National University of Singapore, Singapore
Teaching Assistant for *CS 4218 Software Testing* **Aug. 2012 to May 2013**
- Designed courses structure and prepared material for first software testing class
- Graded weekly programming homework

University of Illinois at Urbana-Champaign, Champaign, IL
Teaching Assistant for CS242: Programming Studio Laboratory **Aug. 2011 to May 2012**
- Supervised programming assignments presentation for 5-6 students per section

Teaching Assistant for CS427: Software Engineering I **Aug. 2010 to May 2011**
Fall 2010 and Fall 2011
- Advised students for course project for Eclipse refactoring engines
- Graded bi-weekly programming assignments for 20 groups of students

Teaching Assistant for CS428: Software Engineering II **Jan. 2010 to Dec. 2011**
Spring 2011
- Provided support for online students through the Illinois Internet Computer Science Program (I2CS)
- Conducted bi-weekly meetings with students for course projects to develop games, mobile applications, websites.

Laboratory Helper for CS 102: Little Bits to Big Ideas **Aug. 2009 to May 2009**
- Assisted non-CS majors in two consecutive laboratory sessions per week
- Graded student programming assignments

Grants

- "Ethics Testing: Proactive Identification of Generative AI System Harms", New Frontiers in Research Fund (NFRF) Exploration Grant, Social Sciences and Humanities Research Council (SSHRC), $250,000, 2027
- "Automated Program Generation for Testing and Repair" PI for Discovery Grant, *Natural Sciences and Engineering Research Council of Canada (NSERC)*, $212,500 ($40k/year+12,500 ECR), 2025-2029
- "Research on patch generation algorithm and automated repair system for Android apps", Young Researcher Fund 2019, *National Natural Science Foundation of China*, Grant No. 61902170, $270k
- "Automated Testing and Repair for Android Apps", PI for General Program 2020, *Natural Science Foundation of Guangdong Province*, $100k
- "3D fast simulation and imaging software for marine controlled source electromagnetic exploration", Main Participant for General Program 2020, *Natural Science Foundation of Guangdong Province*, $100k
- "Sifakis Trustworthy Autonomous System Research Institute", Member of the Nobel Prize Key Laboratory of Shenzhen Top Ten Action Plans, $100m

Awards and Honors

- ACM-W Rising Star Award 2025
- ICST 2025 IEEE TCSE Distinguished Paper Award
- ICSE 2025 ACM SIGSOFT Distinguished Paper award
- SANER 2024 Distinguished Paper Award
- ICSE NIER 2022 Best Reviewer Award
- ISSTA 2021 Distinguished Artifact Award
- FSE 2020 Distinguished Reviewer Award
- ASE 2020 Distinguished PC Member
- Winner of the World Teacher Day Challenge 2020 (The GitHub Fixit project)
- Participants of Heidelberg Laureate Forum 2019, Nominated by Joseph Sifakis
- SIGSOFT Caps for attending ASE 2019
- Finalist for Human Competitive Awards @ GECCO 2018
- Dean's Graduate Research Excellence Award (2016)
- Google Anita Borg Memorial Scholarship (2015)
- Research Achievement Award (2015)
- David J. Kuck Outstanding MS Thesis Award (2013)
- Singapore International Graduate Award (2012-2015)
- ACM-W Scholarship (2012) for attendance of conference for female researchers
- Malaysian Government Scholarship (2006-2010)
- Rockwell Collins Scholarship (2009)
- Motorola Academic Scholarship (2008)

Internal Services (Concordia/ SUSTech)

- CSE Departmental Hiring Committees in Concordia University
  - DHC chair of the Gina Cody research chair position
  - DHC member of the AI position
- Faculty Research Committee (Alternative member) in Concordia University
- Thesis Committee Members for graduate students in Concordia University
  - Wei Li (Comprehensive Exam, Doctoral Research Proposal), May 2024
  - Cheng Chen (Master Thesis Defense, Chair), October 2024
  - Maedeh Safar (Master Thesis Defense, Chair), May 2024
  - Pedram Nouri (Master Thesis Defense, Chair), November 2023
  - Hubert Normandin-Taillon (Master Thesis Defense), December 2023
- Founder and Advisor for *Women in Engineering* in SUSTech
- ACM Student Research Competition @ASE 2020
  - *Anti-patterns for Java automated program repair tools.*
  - My undergraduate student (Yi Wu) won the first prize in the competition

- ACM Student Research Competition @ICSE 2019
  - *A systematic evaluation of problematic tests generated by EvoSuite.*
  - My undergraduate student (Zhiyu Fan) won a bronze medal in the competition
- Coach for National Student Contest for Software Testing Competition in SUSTech
  - My student (Zhiyu Fan) won first prize in 2018 contest
  - My student (Xiaowen Zhang) won second prize in the 2019 contest
- Maintainer of a blog, https://cstrigirls.blogspot.sg/ , that focuses on giving academic advice to female computing students in Asia-Pacific countries.
- Mentor in *Women in Engineering* in University of Illinois at Urbana-Champaign

Conference Publications (*Student Author)

1. H. Wang*, Z. Xing*, C. Sun, Z. Wang, S. H. Tan. *Towards Diverse Program Transformations for Program Simplification*. In: Foundations of Software Engineering (FSE 2025). (acceptance rate 11.7%)
2. M. Wu, J. Xiang, K. Chen, P. Di, S. H. Tan, H. Cui, Y. Zhang. *Tumbling Down the Rabbit Hole: How do Assisting Exploration Strategies Facilitate Grey-box Fuzzing?* In: 47th International Conference on Software Engineering (ICSE 2025). (acceptance: 21.41%) **Won Distinguished Paper Award.**
3. Z. Xu*, Q. Li, S. H. Tan. *Understanding and Enhancing Attribute Prioritization in Fixing Web UI Test with LLMs*. In: 18th IEEE International Conference on Software Testing, Verification and Validation (ICST 2025). (acceptance rate 21.4%) **Won IEEE TCSE Distinguished Paper Award**.
4. J. Xu, Y. Fu, S. H. Tan, P. He. *Aligning the Objective of LLM-based Program Repair. 47th International Conference on Software Engineering (ICSE 2025)*. (acceptance: 21.41%)
5. Z. Xu*, Qiushi Li, S. H. Tan. *Understanding and Enhancing Attribute Prioritization in Fixing Web UI Tests with LLMs.* In: 18th IEEE International Conference on Software Testing, Verification and Validation (ICST).
6. H. Zhang*, Y. Pei, S. Liang*, Z. Xing*, S. H. Tan. *Characterizing and Detecting Program Representation Faults of Static Analysis Frameworks.* In: ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2024), September 2024.
7. T. Hu, G. Ye, Z. Tang, S. H. Tan, H. Wang, M. Li, Z. Wang. *UPBEAT: Test Input Checks of Q# Quantum Libraries.* In: ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2024), September 2024.
8. M. Zhang, Y. Tian, Z. Xu, Y. Dong, S. H. Tan, C. Sun. *LPR: Large Language Models-Aided Program Reduction.* In: ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA 2024), September 2024.
9. H. Zhang*, S. Liang*, Y. Pei, S. H. Tan. *Understanding and Detecting Annotation-Induced Faults of Static Analyzers.* In: Foundations of Software Engineering (FSE 2024), July 2024.
10. S. Hong, H. Sun, X. Gao, H. Zhang, S. H. Tan. *Investigating and Detecting Silent Bugs in PyTorch Programs.* In: IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2024), March 2024. (acceptance: 25.6%) **Won Distinguished Paper Award.**
11. H. Wang*, Z. Tang, S. H. Tan, J. Wang, Y. Liu, H. Fang, C. Xia, Z. Wang. *Combining Structured Static Code Information and Dynamic Symbolic Traces for Software Vulnerability Prediction.* In: International Conference on Software Engineering (ICSE 2024), April 2024.
12. H. Zhang*, Y. Pei, J. Chen, S. H. Tan. *Statfier: Automated Testing of Static Analyzers via Semantic-preserving Program Transformations.* In: Foundations of Software Engineering (FSE 2023), July 2023.
13. G, Ye, T. Hu, Z. Tang, Z. Fan, S. H. Tan, B. Zhang, W. Qian, Z. Wang. *A Generative and Mutational Approach for Synthesizing Bug-exposing Test Cases to Guide Compiler Fuzzing.* In: Foundations of Software Engineering (FSE 2023), July 2023.
14. H. M. Win*, H. Wang, S. H. Tan. *Towards Automated Detection of Unethical Behavior in Open-source Software Projects.* In: Foundations of Software Engineering (FSE 2023), July 2023.

15. Z. Fan*, S. H. Tan, A. Roychoudhury. *Concept-based Automated Grading of CS-1 Programming Assignments.* In:International Symposium on Software Testing and Analysis (ISSTA 2023), July 2023.
16. Y. Lei, Y. Sui, S. H. Tan, Q. Zhang. *Recursive State Machine Guided Graph Folding for Context-Free Language Reachability.* In: ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI 2023), June 2023.
17. Z. Fan*, X. Gao, M. Mirchev, A. Roychoudhury, S. H. Tan. *Automated Repair of Program from Large Language Models.* In: International Conference on Software Engineering (ICSE 2023), May 2023. (acceptance: 26.3%).
18. X. Zhang*, Y. Zhou, S. H. Tan. *Efficient Pattern-based Static Analysis Approach via Regular-Expression Rules.* In: IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2023), March 2023.
19. R. Shariffdeen, X. Gao, G. Duck, S. H. Tan (corresponding author), J. Lawall, A. Roychoudhury. *Automated Patch Backporting in Linux (Experience Paper).* In: ACM SIGSOFT International Symposium on Software Testing and Analysis, July 2021. (acceptance: 21.8%), **Won Distinguished Artifact Award.**
20. G. Ye, Z. Tang, S. H. Tan, S. Huang, D. Fang, X. Sun, L. Bian, H. Wang, Z. Wang. *Automated Conformance Testing for JavaScript Engines via Deep Compiler Fuzzing.* In: ACM SIGPLAN Conference on Programming Language Design and Implementation (PLDI 2021), June 2021.
21. S. H. Tan, Z. Li, *Collaborative Bug Finding for Android Apps.* In: International Conference on Software Engineering (ICSE 2020), July 2020. (acceptance: 23.5%)
22. M. Wu, L. Zhang, C. Liu, S. H. Tan, Y. Zhang. *Automating CUDA Synchronization via Program Transformation.* In: Automated Software Engineering (ASE 2019), Nov 2019. (acceptance: 20.9%)
23. Y. Wang, M. Wen, R. Wu, Z. Liu, S.H. Tan, Z. Zhu, H. Yu and S.C Cheung. *Can I Have a Stack Trace to Examine the Dependency Conflict Issue?* In: International Conference on Software Engineering (ICSE 2019), May 2019. (acceptance: 20.6%)
24. X. Gao, S.H. Tan, Z. Dong, and A. Roychoudhury. *Android Testing via Synthetic Symbolic Execution.* In: 33rd IEEE/ACM International Conference on Automated Software Engineering (ASE 2018), Nov 2018. (acceptance: 19.9%)
25. S. H. Tan, Z. Dong. X. Gao, A. Roychoudhury. *Repairing Crashes in Android Apps*. In: International Conference on Software Engineering (ICSE 2018), May 2018. (acceptance: 20.9%)
26. J. Yi, U.Z. Ahmed, A. Karkare, S.H. Tan, A.Roychoudhury. *A Feasibility Study of Using Automated Program Repair for Introductory Programming Assignments.* In: Foundations of Software Engineering (FSE 2017), Sept 2017. (acceptance: 24.4%)
27. S. H. Tan, H. Yoshida, M. Prasad and A. Roychoudhury. *Anti-patterns in Search-based Program Repair*, In: Foundations of Software Engineering (FSE 2016), Nov 2016. (acceptance: 27.1%)
28. S. H. Tan, A. Roychoudhury. *Relifix: Automated Repair of Software Regressions*. In: International Conference on Software Engineering (ICSE 2015), May 2015. (acceptance: 18.5%)
29. J. Yi, D. Qi, S. H. Tan, A. Roychoudhury. Expressing and Checking Intended Changes via Software Change Contracts. In: International Symposium on Software Testing and Analysis (ISSTA 2013), Lugano, Switzerland, July 2013. (acceptance: 26%)
30. S. H. Tan, D. Marinov, L. Tan, and G. T. Leavens. *@tComment: Testing Javadoc Comments to Detect Comment-Code Inconsistencies*. In: International Conference on Software Testing, Verification, and Validation (ICST 2012), pages 260-269, Montreal, Canada, April 2012. (acceptance: 27%), **Won David J. Kuck Outstanding MS Thesis Award**.

Journal Publications (*HQP)

1. H. Wang, Z. Xu, H. Zhang, N. Tsantalis, S. H. Tan. *Towards Understanding Refactoring Engine Bugs.* In: ACM Transactions on Software Engineering and Methodology (TOSEM), Accepted, Sept. 2024.
2. S. H. Tan, H. Wang*, H. Li. *Ethics Testing: Proactive Identification of Generative AI System*

Harms. In: ACM Transactions on Software Engineering and Methodology (TOSEM), Under Review, Aug. 2024.

3. H. Cui, M. Xie, T. Su, C. Zhang, S. H. Tan. *An Empirical Study of False Negatives and Positives of Static Code Analyzers From the Perspective of Historical Issues*. In: ACM Transactions on Software Engineering and Methodology (TOSEM), Under Review (Major Revision), Jul. 2024.
4. M. Lyu, B. Ray, A. Roychoudhury, S. H. Tan, P. Thongtanunam. *Automatic Programming: Large Language Models and Beyond*. In: ACM Transactions on Software Engineering and Methodology (TOSEM), In Press, Jul. 2024.
5. S. H. Tan, Z. Li, L. Yan. *CrossFix: Resolution of GitHub issues via Similar Bugs Recommendation.* In: Journal of Software: Evolution and Process, Vol. 36, Issue 4, pages 1-22, Feb 2023.
6. H. M. Win*, S. H. Tan (corresponding author), Y. Sui. *Event-aware precise dynamic slicing for automatic debugging of Android applications.* In: Journal of Systems and Software, Vo. 198, Issue C, pages 1-20, Dec 2022.
7. H. Wang, G. Ye, Z. Tang, S. H. Tan, S. Huang, D. Fang, Y. Feng, L. Bian, and Z. Wang. *Combining Graph-based Learning with Automated Data Collection for Code Vulnerability Detection.* In: IEEE Transactions on Information Forensics and Security (TIFS), Vol. 16, pages 1943-1958, Dec 2021.
8. R. Shariffdeen, S. H. Tan (corresponding author), M. Gao, A. Roychoudhury. *Automated Patch Transplantation.* In: ACM Transactions on Software Engineering and Methodology (TOSEM),Vol. 30, Issue 1, pages 6:1 - 6:36, July 2020.
9. S. Mechtaev, X. Gao, S. H. Tan (corresponding author), A. Roychoudhury. *Test-equivalence Analysis for Automatic Patch Generation*. In: ACM Transactions on Software Engineering and Methodology (TOSEM), Vol. 27, Issue 4, pages 15:1 - 15:37, July 2018
10. J. Yi, S.H. Tan, S. Mechtaev, M. Boehme, A.Roychoudhury. A correlation study between automated program repair and test-suite metrics. In: Empirical Software Journal (EMSE 2018), Vol. 23, pages 2948-2979, Oct 2018.
11. J. Yi, D. Qi, S. H. Tan, A. Roychoudhury. *Software Change Contracts*. In: ACM Transactions on Software Engineering and Methodology (TOSEM),Vol. 24, Issue 3, pages 18:1 - 18:43
12. pages 18:1-18:43, May 2015.

Education Publications

1. S. H. Tan, Z. Li, C. Hu, Z. Li, X. Zhang, Y. Zhou. *GitHub-OSS Fixit: Fixing bugs at scale in a Software Engineering Course.* In: International Conference on Software Engineering, Joint Track on Software Engineering Education and Training (ICSE-JSEET 2021), May 2021. (acceptance: 33.3%)
2. S. Yu, Bo Tang, S. H. Tan, 将开源和企业引入计算机课程教学——"把教学场景用起来"模式探讨 *(Introducing Open Source and Enterprise into Computer Science Courses - Exploring the Model of "Putting Teaching Scenarios to Work). CCF Article. 2020, Vol 9.*
3. S. H. Tan, .基于开源软件的软件工程实践教学*(Practical teaching of software engineering based on open source software)* .软件导刊*(Software Guide). 2022, Vol 21 (3)*, **Selected as the cover article.**

Workshop/ Poster Publications

1. Ying Li, Haibo Wang, Huaien Zhang, Shin Hwei Tan.*Classifying Code Comments via Pre-trained Programming Language Mode*l. In: 2023 IEEE/ACM 2nd International Workshop on Natural Language-Based Software Engineering (NLBSE), April 2023.
2. Z. Li, S. H. Tan (corresponding author). *Bugine: a bug report recommendation system for Android apps*. In: International Conference on Software Engineering (ICSE 2020 Poster), July 2020.
3. B. Baudry, N. Harrand, E. Schulte, C. Timperley, S. H. Tan, M. Selakovic, E. Ugherughe. *A spoonful of DevOps helps the GI go down.* In: 4th International Genetic Improvement Workshop, May 2018.
4. S. H. Tan, J. Yi, Yulis, S. Mechtaev, A. Roychoudhury. *Codeflaws: A Programming Competition Benchmark for Evaluating Automated Program Repair Tools*. In: International

Conference on Software Engineering (ICSE 2017 Poster), May 2017.

5. B. Daniel, D. Dig, T. Gvero, V. Jagannath, J. Jiaa, D. Mitchell, J. Nogiec, S. H. Tan, and D. Marinov. *ReAssert: A Tool for Repairing Broken Unit Tests*. In: International Conference on Software Engineering, Demonstrations Track (ICSE Demo 2011), pages 1010-1012, Honolulu, HI, May 2011. (acceptance: 37%)

Patents

- Software program repair, H. Yoshida, S. H. Tan, M. R. Prasad, US20170060735A1

Program Committees

- FSE 2026, General Chair
- ICSE 2025, *Program Committee*
- Co-organizer for Dagsthul Seminar on Dagstuhl Seminar 24431 Automated Programming and Program Repair (Oct 20 – Oct 25, 2024)
- ICSE 2024, *Program Committee*
- ISSTA 2024, *Program Committee*
- FSE 2024, *Program Committee*
- 4rd International Workshop for Automated Program Repair @ ICSE 2023, *Co-Organizer*
- FSE 2023, *Program Committee*
- ISSTA 2023, *Program Committee*
- Ada workshop @FSE 2022, Co-organizer
- MobileSoft 2022, *Student Research Competition Co-chair*
- 3rd International Workshop for Automated Program Repair @ ICSE 2022, *Co-Organizer*
- ICSE New Faculty Symposium*, Invited Panelist*
- FSE 2022, *Program Committee*
- ASE 2022, *Program Committee*
- ISSTA 2022, *Program Committee*
- ICSE-NIER 2022*, Program Committee*
- ASE 2021, *Program Committee*
- 2nd International Workshop for Automated Program Repair @ ICSE 2021, *Co-Organizer*
- 1st International Workshop for Automated Program Repair @ ICSE 2020, Founder and *Co-Organizer*
- ISSTA 2020, *Student Volunteer Co-Chair*
- ASE 2020, *Program Committee*
- FSE 2020, *Program Committee*
- ICSE 2020, *Program Committee*
- Genetic Improvement Workshop (GI 2019) @ ICSE 2019, *Co-organizer*
- International Workshop on Software Engineering Intelligence 2019 @ ASE 2019, *Program Committee*
- Workshop on Intelligent Bug Fixing @ SANER 2019, *Program Committee*
- ASE 2019, *Program Committee*
- ESEC/FSE 2019, Tool Demo, *Program Committee*
- ICSE 2019, Student Research Competition, *Program Committee*
- Genetic Improvement Workshop @ GECCO 2018 *Program Committee*
- ISSTA 2014, *Artifact Evaluation Committee*

Other Activities

- General Chair for FSE2026
- FSE 2025 Workshop Co-chair
- Communications of the ACM (CACM) Reviewer Board
- Editor in Chief for the New Frontier in Software Engineering track of TOSEM
- Associate Editor for ACM Transactions on Software Engineering and Methodology (TOSEM)
- CCF Open Source Development Committee
- Linux Foundation Open Source Software Talent Plan 2022
- Transactions on Dependable and Secure Computing (TDSC), *Reviewer*
- Empirical Software Engineering Journal (EMSE), *Member of Review Board 2019*

- ASE 2019, Configuration and Variability, *Session Chair*
- Transactions on Software Engineering and Methodology (TOSEM), *Reviewer*
- Empirical Software Engineering Journal (EMSE), *Reviewer*
- Transactions on Software Engineering (TSE), *Reviewer*
- IEEE Transactions on Evolutionary Computation 2018, *Reviewer*
- ICSE 2015 (NIER), *Co-reviewer*

Invited Talks

Testing Code Analyzer using Code Generator (Invited Keynote) **22 June 2025**
Keynote Talks at Future of Internetware Workshop in Internetware 2025 (Trondheim, Norway)

Automated Program Generation for Testing and Repair (New Faculty talk) **10 June 2024**
Consortium for Software Engineering Research Spring 2024 in Queen's University

Automated Program Generation for Testing and Repair **28 March 2024**
Software Engineering groups in UMass

Panelist in International Open source Talent Education Forum **6 Nov 2022**
2022 International Open Source Festival

GitHub-OSS Fixit: Fixing bugs at scale in a Software Engineering Course **19 June 2021**
6th workshop on Software Engineering Education

Collaborative bug finding and bug-fixing for Android Apps **20 January 2020**
62nd CREST Open Workshop- Automated Program Repair and Genetic Improvement

Selecting a research topic: Reflection and Lessons from My Research Journey **16 July 2019**
Ada workshop @ISSTA 2019

Repairing crashes in Android apps **24 Nov. 2018**
Program Repair Workshop@NASAC

Repairing crashes in Android apps **17 Nov. 2018**
Chinese Search-based Software Engineering Workshop

Repairing crashes in Android apps **16 Nov. 2018**
Peking University

Repairing crashes in Android apps **22 June 2018**
Wuhan University

Repairing crashes in Android apps **30 Jan. 2018**
GI-Dagstuhl Seminars, Germany

Design of Repair Operators for Automated Program Repair **30 Jan. 2017**
50th CREST Open Workshop, University of College London

Anti-patterns in Search-based Program Repair **20 Sept. 2016**
Microsoft PhD Forum 2016, Microsoft Research Asia, Beijing, China

Conference Talks

Collaborative bug finding for Android Apps **10 July 2020**
International Conference on Software Engineering (ICSE) 2020

Test-equivalence Analysis for Automatic Patch Generation **29 May 2019**
International Conference on Software Engineering (ICSE) 2019

Anti-patterns in Search-based Program Repair **17 Nov. 2016**
Foundations of Software Engineering (FSE) 2016

Relifix: Automated Repair of Software Regressions **21 May 2015**
International Conference on Software Engineering (ICSE) 2015

@tComment: Testing Javadoc Comments to Detect Comment-Code Inconsistencies **19 April 2012**
International Conference on Software Testing, Verification & Validation (*ICST) 2012*

Current Graduate Students

- Xiaowen Zhang - PhD
- Haibo Wang - PhD
- Zhuolin Xu - PhD
- Honghao Tan - PhD

- Chenglin Li- PhD (co-supervise with Prof. Tse-Hsun (Peter) Chen)
- Diany Pressato - Master's
- Thi Van Anh Dau- Master's (co-supervise with Prof. Jinqiu Yang)
- Shuyun Liang (SUSTech Master program)
- Zezhong Xing (SUSTech Master program)

Graduated Students

- Huaien Zhang - Co-advised with Prof. Yu Pei (SUSTech-The Hong Kong Polytechnic University Joint PhD program)
- Zhiyu Fan - Co-advised with Prof. Abhik Roychoudhury at National University of Singapore
- Hsu Myat Win - Co-advised with Prof. Yulei Sui (SUSTech-UTS Joint PhD program)
- Ziqiang Li - Master program 2019 (nominated for best Master thesis)
- Xiaowen Zhang -Master program 2019
- Yuanzhang Lin - Master Program 2020
- Ying Li - Master Program 2020

Language Skills

Fluent in Mandarin, Cantonese, English and Malay