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Research Interests	My main research interest is in the field of software engineering, specifically on automated bug-fixing and software testing. I have proposed new methods and developed tools to facilitate dynamic code-comment analysis using test generation tool and automated repair of software regressions and Android apps. I am currently looking at methods in building the next generation automated bug-fixing approach.	
Education	<p>National University of Singapore, Singapore Ph.D., School of Computing, August 2012-March 2018 CAP: 4.38/5.00 <i>Thesis Topic:</i> Design of Repair Operators for Self-Healing Software Systems <i>Adviser:</i> Abhik Roychoudhury</p> <p>University of Illinois at Urbana-Champaign, Champaign, IL M.S., Computer Science, May 2012 GPA: 3.91/4.00 <i>Thesis Topic:</i> @tComment: Testing Javadoc Comments to Detect Comment-Code Inconsistencies <i>Advisers:</i> Darko Marinov, Lin Tan</p> <p>B.S. (Hons), Computer Science, May 2010 GPA: 3.68/4.00 <i>Thesis Topic:</i> Theories/Parameterized tests for JUnit <i>Adviser:</i> Darko Marinov</p>	
Grants	<ul style="list-style-type: none"> “Research on patch generation algorithm and automated repair system for Android apps”, Young Researcher Fund 2019, <i>National Natural Science Foundation of China</i>, Grant No. 61902170, \$270k “Automated Testing and Repair for Android Apps”, PI for General Program 2020, <i>Natural Science Foundation of Guangdong Province</i>, \$100k 	
Awards and Honors	<ul style="list-style-type: none"> Dean's Graduate Research Excellence Award (2016) Google Anita Borg Memorial Scholarship (2015) for encouraging female presence in computing and technology. 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) 	
Services	<ul style="list-style-type: none"> Founder and Advisor for Women in Engineering in SUSTech 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 ACM Student Research Competition @ICSE 2019 <ul style="list-style-type: none"> My student won bronze metal in the competition Coach for National Student Contest for Software Testing Competition in China <ul style="list-style-type: none"> My student won first prize in the contest 	

**Conference
/Workshop
Publications**

1. 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%)
2. 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%)
3. 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). (acceptance: 19.9%)
4. 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%)
5. 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%)
6. 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%)
7. S. H. Tan, A. Roychoudhury. *Relifix: Automated Repair of Software Regressions*. In: International Conference on Software Engineering (ICSE 2015), May 2015 (acceptance: 18.5%)
8. 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%)
9. 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%)

**Workshop/
Poster
Publications**

1. 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.
2. 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.
3. 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%)

**Journal
Publications**

1. S. Mechtaev, X. Gao, S. H. Tan, A. Roychoudhury. *Test-equivalence Analysis for Automatic Patch Generation*. In ACM Transactions on Software Engineering and Methodology (TOSEM), To appear, July 2018
2. 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).
3. J. Yi, D. Qi, S. H. Tan, A. Roychoudhury. *Software Change Contracts*. In ACM Transactions on Software Engineering and Methodology (TOSEM), pages 18:1-18:43, May 2015.

Professional Activities	<ul style="list-style-type: none"> • The first International Workshop for Automated Program Repair Work, Organizer • ASE 2019, Configuration and Variability, Session Chair • ICSE 2020, Program Committee • ASE 2019, Program Committee • ESEC/FSE 2019, Tool Demo Program Committee • ICSE 2019, PC for Student Research Competition • Genetic Improvement Workshop (GI 2019) @ ICSE2019, Co-organizer • GECCO 2018, PC for Genetic Improvement Workshop • ISSTA 2014, Artifact Evaluation Committee • ICSE 2015 (NIER), Co-reviewer • Transactions on Software Engineering and Methodology (TOSEM), Reviewer • Empirical Software Engineering Journal (EMSE), Reviewer • Transactions on Software Engineering (TSE), Reviewer
Teaching Experience	<p>Southern University of Science and Technology, China <i>Sole Instructor for CS 304 Software Engineering</i> Feb. 2019 to . June 2019</p> <ul style="list-style-type: none"> • Conduct lectures and labs for 156 students • Prepared teaching materials for 2 hours weekly lectures and 2 hours weekly labs <p>Design course project for finding bugs in open-source Android apps <i>Sole Instructor for CS 409 Software Testing</i> Aug. 2018 to Dec. 2018</p> <ul style="list-style-type: none"> • Proposed the first course in Software Testing in SUSTech • Design course syllabus and prepared teaching materials for 29 students • Design course project for finding bugs in open-source Android apps <p>National University of Singapore, Singapore <i>Teaching Assistant for CS 4218 Software Testing</i> Aug. 2012 to May 2013</p> <ul style="list-style-type: none"> • Designed courses structure and prepared material for first software testing class • Graded weekly programming homework <p>University of Illinois at Urbana-Champaign, Champaign, IL <i>Teaching Assistant for CS242: Programming Studio Laboratory</i> Aug. 2011 to May 2012</p> <ul style="list-style-type: none"> • Supervised programming assignments presentation for 5-6 students per section <p><i>Teaching Assistant for CS427: Software Engineering I</i> Aug. 2010 to May 2011 Fall 2010 and Fall 2011</p> <ul style="list-style-type: none"> • Advised students for course project for Eclipse refactoring engines • Graded bi-weekly programming assignments for 20 groups of students <p><i>Teaching Assistant for CS428: Software Engineering II</i> Jan. 2010 to Dec. 2011 Spring 2011</p> <ul style="list-style-type: none"> • Provided support for online students through the Illinois Internet Computer Science Program (I2CS) • Conduct bi-weekly meeting with students for course projects to develop games, mobile applications, websites. <p><i>Laboratory Helper for CS 102: Little Bits to Big Ideas</i> Aug. 2009 to May 2009</p> <ul style="list-style-type: none"> • Assisted non-majors in two consecutive laboratory sessions • Graded student programming assignments
Invited Talks	<p>Repairing crashes in Android apps 24 Nov. 2018 Program Repair Workshop@NASAC</p> <p>Repairing crashes in Android apps 17 Nov. 2018 Chinese Search-based Software Engineering Workshop</p> <p>Repairing crashes in Android apps 16 Nov. 2018 Peking University</p>

Conference Talks	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	
	Anti-patterns in Search-based Program Repair	17 Nov. 2016
	Foundations of Software Engineering (FSE) 2016	
Working Experience	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 (<i>ICST</i>) 2012	
	NUS-Singtel Cyber Security Research and Development Lab, Singapore	
	<i>Research Assistant</i>	Nov. 2017 to May 2018
	<ul style="list-style-type: none"> Core developer and inventor for automated repair of crashes for Android apps 	
	Fujitsu Laboratories of America, Sunnyvale, CA, USA	
	<i>Research Intern</i>	Feb. 2015 to May 2015
	<ul style="list-style-type: none"> Conduct study of the common characteristics of automatically generated patches Developed techniques for improving search-based automated program repair 	
	Intel Corporation, Penang, Malaysia	
	<i>Summer Intern for Testing Hole Resolution (THR)</i>	June 2011 to Aug. 2011
	<ul style="list-style-type: none"> Developed automation for improving efficiency in running automated tests Implemented features and developed error handling for program in Perl and Tcl 	
	Railroad Department,	Champaign, IL, USA
	<i>Undergraduate Assistant</i>	Aug. 2007 to May 2009
	Carried out an independent project on automated web retrieval	
	Maintained MS Access database for daily tank car accident reports	
	Debugged and programmed using Visual Basic, Ruby and HTML	
Current Students	<ul style="list-style-type: none"> Hsu Myat Win - Co-advised with Prof. Yulei Sui (SUSTECH-UTS Joint PhD program) Zhiyu Fan - Co-advised with Prof. Abhik Roychoudhury at National University of Singapore Ziqiang Li - SUSTech Master program 2019 Xiaowen Zhang - SUSTech Master program 2019 	
Software Skills	<ul style="list-style-type: none"> Computer Programming: Java, Python, C, C++, OCAML Version Control: DVCS (Mercurial, Git), and VCS (CVS, SVN) Software Testing: Randoop, JUnit, KLEE 	
Language Skills	Fluent in Mandarin, Cantonese, English and Malay	

References

Abhik Roychoudhury (thesis advisor)

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