

# Kaiyuan WANG

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## OBJECTIVE

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Software Engineer

## EDUCATION

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- CURRENTLY** PhD in SOFTWARE ENGINEERING, **The University of Texas at Austin**  
Supervisor: Prof. Sarfraz KHURSHID  
GPA: 4.0/4.0
- MAY 2015** Master of Science in SOFTWARE ENGINEERING, **The University of Texas at Austin**  
GPA: 3.75/4.0
- MAY 2013** Bachelor of Science in COMPUTER SCIENCE, **Beijing University of Technology**  
GPA: 3.88/4.0

## INDUSTRIAL WORK EXPERIENCE

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- SEPT 2018-PRESENT** | **Software Engineer at Google, Sunnyvale**  
Design and implement a novel build system that handles Google-scale building tasks on a daily basis.
- MAY-AUG 2017** | **Summer Intern at Google, New York City**  
Helped build an infrastructure platform that improves engineering productivity and testing user experience by consolidating, integrating, and improving the testing user experience by unifying, integrating and improving the Google internal build/test platforms. Specifically, the platform integrates testing data from Google internal build, continuous build and test infrastructures and provides a better view compared to existing platforms. Our platform is designed to replace the outdated existing build/test platforms and provide scalability to all Google3 engineers (30k+). It was launched as beta version to hundreds of internal Googlers before I finished my internship and we got positive feedbacks about the usefulness of the platform. I implemented 5 features in the backend using Java and Google internal technologies (e.g. Guice, Guava, etc.), including (1) displaying build logs; (2) better presubmit visualization; (3) better postsubmit visualization; (4) displaying root cause; and (5) stack trace linkification. The project was deployed into production code base and will eventually facilitate Google3 users to triage failures.
- MAY-AUG 2016** | **Summer Intern at Google, Mountain View**  
Developed a multi-device testing framework (MDTest) that automates integration tests for mobile apps that involve multiple Android/iOS devices. For example, to test a chatting app, MDTest is able to automate the scenario where a message is sent from an iPhone and received by an Android phone. The framework can test a mobile app against all representative device combinations and check if the app breaks on any of them. MDTest also provides an API for users to write succinct test scripts. Finally, the tool generates code coverage and test execution report to help users better understand the result.
- MDTest is hold at <https://github.com/vanadium/baku/tree/master/mdtest> as a Google open source project.

## PUBLICATIONS

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- ISSRE 2019 [21] D. Gopinath, M. Zhang, **K. Wang**, B. Kadron, C. Pasareanu and S. Khurshid: “Symbolic Execution for Importance analysis and Adversarial generation in Neural Networks”. 30th International Symposium on Software Reliability Engineering.
- SPIN 2019 [20] M. Usman, W. Wang, **K. Wang**, C. Yelen, N. Dini, S. Khurshid: “A Study of Learning Data Structure Invariants Using Off-the-shelf Tools”. 26th International SPIN Symposium on Model Checking of Software.
- TACAS 2019 [19] W. Wang, **K. Wang**, M. Gligoric, S. Khurshid: “Incremental Analysis of Evolving Alloy Models”. 25th International Conference on Tools and Algorithms for the Construction and Analysis of Systems.
- ICST 2019 [18] W. Wang, **K. Wang**, M. Zhang, S. Khurshid: “Learning to Optimize the Alloy Analyzer”. 12th IEEE International Conference on Software Testing, Verification and Validation.
- ICSE Demo 2019 [17] **K. Wang**, A. Sullivan, S. Khurshid: “AREpair: A Repair Framework for Alloy”. 41th International Conference on Software Engineering.
- ICSE Poster 2019 [16] C. Pasareanu, D. Gopinath, S. Khurshid, **K. Wang**, M. Zhang: “Symbolic Execution for Attribution and Attack Synthesis in Neural Networks”. 41th International Conference on Software Engineering.
- JPF 2018 [15] **K. Wang**, H. Converse, M. Gligoric, S. Misailovic, S. Khurshid: “A Progress Bar for the JPF Search Using Program Executions”. Java Pathfinder Workshop.
- ASE 2018 [14] **K. Wang**, A. Sullivan, S. Khurshid: “Automated Model Repair for Alloy”. 33rd International Conference on Automated Software Engineering.
- FSE Demo 2018 [13] **K. Wang**, A. Sullivan, D. Marinov, S. Khurshid: “ASketch: A Sketching Framework for Alloy”. 26th European Software Engineering Conference and Symposium on the Foundations of Software Engineering.
- FSE Demo 2018 [12] J. Hua, M. Zhang, **K. Wang**, S. Khurshid: “SketchFix: A Tool for Automated Program Repair Approach Using Lazy Candidate Generation”. 26th European Software Engineering Conference and Symposium on the Foundations of Software Engineering.
- ABZ 2018 [11] **K. Wang**, A. Sullivan, D. Marinov, S. Khurshid: “Solver-based Sketching of Alloy Models using Test Valuations”. 6th International ABZ Conference on ASM, Alloy, B, TLA, VDM, Z.
- ABZ 2018 [10] **K. Wang**, A. Sullivan, M. Koukoutos, D. Marinov, S. Khurshid: “Systematic Generation of Non-Equivalent Expressions for Relational Algebra”. 6th International ABZ Conference on ASM, Alloy, B, TLA, VDM, Z.
- ICSE 2018 [9] **K. Wang**, C. Zhu, A. Celik, J. Kim, D. Batory, M. Gligoric: “Towards Refactoring-Aware Regression Test Selection”. 40th International Conference on Software Engineering.
- ICSE 2018 [8] J. Hua, M. Zhang, **K. Wang**, S. Khurshid: “Towards Practical Program Repair with On-Demand Candidate Generation”. 40th International Conference on Software Engineering.
- ICSE Demo 2018 [7] **K. Wang**, A. Sullivan, S. Khurshid: “MuAlloy: A Mutation Testing Framework for Alloy”. 40th International Conference on Software Engineering.
- ICST 2018 [6] Z. Yang, J. Hua, **K. Wang**, S. Khurshid: “Test Execution Driven Synthesis of API Sequences with Conditionals and Loops”. 11th IEEE International Conference on Software Testing, Verification and Validation.
- ICST Demo 2018 [5] A. Sullivan, **K. Wang**, S. Khurshid: “AUnit: A Test Automation Tool for Alloy”. 11th IEEE International Conference on Software Testing, Verification and Validation.
- ICST 2017 [4] A. Sullivan, **K. Wang**, S. Khurshid: “Automated Test Generation and Mutation Testing for Alloy”. 10th IEEE International Conference on Software Testing, Verification and Validation.
- JPF 2017 [3] **K. Wang**, S. Khurshid, M. Gligoric: “JPR: Replaying JPF Traces Using Standard JVM”. Java Pathfinder Workshop.
- SQAMIA 2017 [2] A. Sullivan, **K. Wang**, S. Khurshid, D. Marinov: “Evaluating State Modeling Techniques in Alloy”. 6th Workshop on Software Quality, Analysis, Monitoring, Improvement, and Applications.
- ICSME 2016 [1] D. Gopinath, **K. Wang**, J. Hua, S. Khurshid: “Repairing Intricate Faults in Code Using Machine Learning and Path Exploration”. 32nd IEEE International Conference on Software Maintenance and Evolution.

## PROGRAMMING SKILLS

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Imperative Language: JAVA, PYTHON, DART, JAVASCRIPT, C/C++, R  
Declarative Language: ALLOY, PROLOG  
Other Language: SQL, HTML,  $\text{\LaTeX}$

## TOOLS

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Web Development: GOOGLE APP ENGINE, JINJA2, JQUERY, SPRINGMVC, JSON  
Mobile Development: ANDROID, FLUTTER  
Testing: SELENIUM, TESTNG, JUNIT, EMMA, MOCKOBJECTS, FINDBUGS  
CI: TRAVIS CI, JENKINS  
Database: MYSQL, SQL SERVER, MANGODB  
Version Control: GIT, SVN  
Build System: MAKE, MAVEN, ANT, GRADLE  
Others: HADOOP, LOG4J, GUICE, GUAVA

## HONORS AND AWARDS

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2012 FIRST PRIZE, Mathematical Contest in Modeling  
2012 SECOND PRIZE, Programming Skills in C/C++  
2011 FIRST PRIZE, C programming competition in the Sixth National IT Application Contest  
2009-2012 OUTSTANDING ACADEMIC AWARD at Beijing University of Technology

## REFERENCE

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Milos Gligoric UT AUSTIN gligoric@utexas.edu  
Sarfraz Khurshid UT AUSTIN khurshid@ece.utexas.edu  
Darko Marinov UIUC marinov@illinois.edu