Zhiqiang Zang

Research Interests

Software engineering and programming languages, with a focus on compiler testing and test generation.

Education

2018–Present **Ph.D.**, *The University of Texas at Austin (UT Austin)*, Austin, TX, U.S..
Software Engineering and Systems — Advisor: Milos Gligoric

2014–2018 **B.E.**, *Beijing University of Posts and Telecommunications (BUPT)*, Beijing, China.
Telecommunication Engineering

Publications

[2] Pengyu Nie, Marinela Parovic, **Zhiqiang Zang**, Sarfraz Khurshid, Aleksandar Milicevic, and Milos Gligoric. Unifying execution of imperative generators and declarative specifications. In *Conference on Object-Oriented Programming, Systems, Languages, and Applications*, pages 217:1–217:26, 2020.

[1] Ben Buhse, Thomas Wei, **Zhiqiang Zang**, Aleksandar Milicevic, and Milos Gligoric. VeDebug: Regression debugging tool for Java. In *International Conference on Software Engineering: Companion Proceedings*, pages 15–18, 2019.

Industry Experience

Summer 2020 **Research Intern**, *Fujitsu Laboratories of America*, Sunnyvale, CA, U.S. (Remote).
Designed, implemented and evaluated a prototype, to improve the quality of the training dataset

Summer 2019 **Software Engineer Intern**, *NIO*, Beijing, China.
Developed and improved a physical and visual simulator for autonomous vehicles
- Devised a method to customize existed APIs and to easily add new ones
- Implemented APIs to maneuver vehicles and to retrieve geographic data
- C/C++, Python, Unreal Engine

Selected Projects

JGen A random test generator for Java JIT Compilers.

AndroidUnit Evaluated the quality of randomly generated tests by Randoop via performing mutation testing with MDroid+ on real-life Android applications. Team project.

CoCoLight Measured runtime overhead of code coverage tools over 20 open-source projects. Tweaked JaCoCo to save runtime overhead. Bytecode instrumentation(OW2 ASM, javaagent), Java.

Deuterium A framework to unify execution of declarative and imperative code in Java. Implemented 12 basic and advanced data structures in both declarative and imperative version. Evaluated the framework by running both random and bounded exhaustive generated tests for the data structures. Randoop, Java. Team project.

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cptgit

AMB Defined Java bytecode semantics in Alloy programming language. Implemented JVM specifications in Alloy.

VeDebug A Java debugging tool that 1) automatically sets breakpoints where the current execution diverges from the previously captured one, and 2) provides video player features e.g., speed up/slow down the replay. Bytecode instrumentation(OW2 ASM, javaagent), Java. Team project.

Honors & Awards

2017 Outstanding Undergraduate Award Finalist, *BUPT* *0.6%*

2015–2016 Qualcomm Innovation Scholarship, *BUPT* *0.8%*

2014–2015 Qualcomm Innovation Scholarship, *BUPT* *0.8%*

Teaching Experience

Fall 2021 Teaching Assistant, *UT Austin*
EE 379K: Programming Paradigms (56 students)

Spring 2021 Teaching Assistant, *UT Austin*
EE 360T: Software Testing (108 students)

Spring 2020 Teaching Assistant, *UT Austin*
EE 312H: Software Design and Implementation I (35 students)

Fall 2019 Teaching Assistant, *UT Austin*
EE 312: Software Design and Implementation I (60 students)

Spring 2019 Teaching Assistant, *UT Austin*
EE 422C: Software Design and Implementation II (172 students)

Professional Service

ASE 2021 External reviewer, *International Conference on Automated Software Engineering*

ISSTA-AE 2020 Artifact evaluation committee member, *International Symposium on Software Testing and Analysis*

ISSTA 2020 External reviewer, *International Symposium on Software Testing and Analysis*

Technical Skills

- Programming Languages: Java (everyday), Bash (everyday), Python, C
- Tools: Emacs (everyday), Git (everyday), OW2 ASM, JavaParser, Randoop