

# 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 tool to find bugs in Java JIT (Just-In-Time) Compilers. Found a CVE (Common Vulnerabilities and Exposures) in Oracle JDK JIT Compiler.
- 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.
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.
RABot AI	A human-like RTS game bot, which plays against the original computer player in the game with a win rate of over 80% under fixed conditions. TensorFlow Object Detection API, OpenCV, Python.
Sandpainting	An Android application for putting a sand painting filter to photos. Team project.

## Honors & Awards

2017	Outstanding Undergraduate Award Finalist, <i>BUPT</i>	0.6%
2015–2016	Qualcomm Innovation Scholarship, <i>BUPT</i>	0.8%
2014–2015	Qualcomm Innovation Scholarship, <i>BUPT</i>	0.8%

## Teaching Experience

Spring 2021	Teaching Assistant, <i>UT Austin</i> EE 360T: Software Testing (108 students)
Spring 2020	Teaching Assistant, <i>UT Austin</i> EE 312H: Software Design and Implementation I (35 students)
Fall 2019	Teaching Assistant, <i>UT Austin</i> EE 312: Software Design and Implementation I (60 students)
Spring 2019	Teaching Assistant, <i>UT Austin</i> EE 422C: Software Design and Implementation II (172 students)

## Professional Service

ASE 2021	External reviewer, <i>International Conference on Automated Software Engineering</i>
ISSTA-AE 2020	Artifact evaluation committee member, <i>International Symposium on Software Testing and Analysis</i>
ISSTA 2020	External reviewer, <i>International Symposium on Software Testing and Analysis</i>

## Technical Skills

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