

# ZANG, ZHIQIANG

🔗 Objective: SDE Intern

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## 🎓 EDUCATION

### The University of Texas at Austin

Austin, TX, U.S.

*Ph.D.* in Software Engineering and Systems

Aug 2018 – Present

GPA: 3.83/4.00

### Beijing University of Posts and Telecommunications

Beijing, P.R. China

*B.S.* in Telecommunication Engineering

Sep 2014 – Jun 2018

GPA: 91/100 Rank: 11/556 (2%)

## 📖 PUBLICATIONS

### **VeDebug: Regression Debugging Tool for Java**

B. Buhse, T. Wei, Z. Zang, A. Milicevic, and M. Gligoric, “VeDebug: Regression debugging tool for Java,” in *2019 IEEE/ACM 41st International Conference on Software Engineering: Companion Proceedings*. IEEE Press, 2019, pp. 15–18

## 🧰 INTERNSHIP

### NIO

Beijing, P.R. China

#### **Simulator for Autonomous Vehicles**

Jul 2019 – Aug 2019

*AirSim, Unreal* Mentor: Zhuo Cheng

Brief: This project aims to develop a standalone physical and visual simulator for autonomous vehicles. The simulator is based on Microsoft’s open-source simulator *AirSim*, but it is more lightweight and is independent from backend engines (Unreal/Unity) of which *AirSim* is built as a plugin.

- Performed destruction and extraction on *AirSim* to support our own simulator, separated and refactored core modules (sensor models, physics engine)
- Customized *AirSim* based on our needs including creating a development workflow of adding new APIs for vehicles in simulator

## ⚙ RESEARCH

### The University of Texas at Austin

Austin, TX, U.S.

*Research Assistant* Advisor: Milos Gligoric

#### **VeDebug: Regression Debugging Tool for Java**

Aug 2018 – Nov 2018

*Debugging, Dynamic Program Analysis, ASM*

Brief: VEDEBUG is a video-based time-travel regression debugging tool to advance users’ debugging experience. A unique feature is automatically setting a “divergence breakpoint” wherever the control flow of the current execution diverges from the flow of a previously captured execution.

- Migrated VEDEBUG to a mainstream Java version, fixed bugs on core tracking features and implemented a bonus feature to record the history of objects
- Collected and analyzed time overhead over different phases (instrumentation, IO, execution, etc.) using dynamic program analysis and automation scripts
- Developed automation scripts to deploy and run VEDEBUG over open-source projects to evaluate its time overhead

## Beijing University of Posts and Telecommunications

Beijing, P.R. China

### Cooperative spectrum sensing based on machine learning

Apr 2016 – Mar 2017

*Machine Learning, Signal Processing* Advisor: Wenjun Xu

- Applied clustering/classification algorithms (K-Means, GMM, SVM and KNN) to cooperative spectrum sensing improving the detection accuracy by 50%

## PROJECTS

### Building Real-Time Strategy Game AI

Dec 2017 – May 2018

*Object Detection, Deep Learning, Game AI* Advisor: Xiaosheng Tang

Brief: RABOT AID is an AI agent (bot) for real-time strategy game *Command & Conquer: Yuri's Revenge*. It plays the game like the human: watches by acquiring real-time screenshots of the game, decides by analyzing the screenshots and acts by controlling keyboard and mouse. Experiments showed that RABOT AID can defeat the AI embedded in the game under fixed conditions with a win rate of over 80%. [Demo link](#)

- Collected image data from game videos and then preprocessed, labeled and augmented the data using Python with OpenCV
- Analyzed dynamic battlefield by building a SSD model using TensorFlow Object Detection API while recognizing static sidebar via template matching
- Implemented in-game commands (build, move, attack) by combining image recognition and keyboard/mouse simulation, thus supporting advanced game strategy execution

## TEACHING

### EE 312 Software Design and Implementation I

Fall 2019

*Teaching Assistant* The University of Texas at Austin, U.S.

### EE 422C Software Design and Implementation II

Spring 2019

*Teaching Assistant* The University of Texas at Austin, U.S.

## AWARDS

Undergraduate Top Prize Scholarship of BUPT Nomination (0.6%)	Nov 2017
First Prize Scholarship of BUPT	Nov 2017
Qualcomm Innovation Scholarship (0.8%)	Dec 2015 & 2016
Second Prize Award for National College Students Mathematical Competition	Nov 2015

## SKILLS

- Programming Languages: Java, Bash, Python, C/C++, MATLAB
- Tools: Emacs, Maven, Gradle
- Platform: Linux