

EDUCATION

- **Southern University of Science and Technology (SUSTech)** Sep. 2016 - May 2020 (Expected)
• *BE of Computer Science and Engineering (GPA: 91.46/100, Rank: 6/146)*
 - CS courses with grade A/A+: Software Engineering, Operating System, Object-oriented Analysis and Design, Computer Organization Principle, Computer System Design and Application, Computer Network
- **University of California, Irvine (UCI)** Jun. 2019 - Sep. 2019
• *Visiting Student in Information and Computer Sciences (GPA: 4.0/4.0)*

SELECTED AWARD

- **China National Scholarship** (Top 0.2%) 2019
- **1st Class Annual Outstanding Student** (Top 5%) 2017,2018

PUBLICATION

- [SANER'20] **Zhaoxu Zhang**, Hengcheng Zhu, Ming Wen, Yida Tao, Yepang Liu, Yingfei Xiong. **How Do Python Framework APIs Evolve? An Exploratory Study**. In the 27th IEEE International Conference on Software Analysis, Evolution and Reengineering, London, Ontario, Canada, February 2020.

RESEARCH INTEREST

Software Engineering, System, Programming Language, Machine Learning

RESEARCH EXPERIENCE

- **Software Aurora Lab, UCI**
• *Research Assistant, Supervisor: Professor Joshua Garcia*
Multi-Criteria Test-Suite Minimization (MCTSM) with Reinforcement Learning (RL) Oct. 2019 - Present
 - Efficiently and effectively solved MCTSM problem through mapping it into a RL problem.
 - Implemented policy gradient based RL algorithms like REINFORCE and Actor-Critic.
 - Greatly exceeded the scalability and efficiency of traditional methods based on integer linear programming under large test suites and multiple criteria conditions.
- **Automated Android Malware Evasion and Detection** Jul. 2019 - Sep. 2019
 - Developed an automatic malware evading framework that leveraged reinforcement learning techniques.
 - Leveraged code obfuscation tools like Allatori, DroidChameleon, and Adam to modify Android malware to evade the detection of the state-of-the-art machine-learning based anti-malware RevealDroid.
 - Implemented Q-learning based RL algorithm (Deep Q-learning algorithm) as the agent.
 - Successfully automated the generation of malware samples that can evade detection and is on par with the performance of the state-of-the-art approach.
- **Software Quality Lab (SQL), SUSTech**
• *Research Assistant, Supervisor: Professor Yepang Liu*
Android Infinite Loop Detection Based on Static Analysis (collaboration with Huawei) Sep. 2019 - Present
 - Modeled Android programs into graphical representations such as control flow graph, module call graph, method call graph.

- Identified natural loops from graphical code representations.
- Conducted static analysis on natural loop snippets to identify loop termination conditions based on Loopster algorithm.

Characterizing APIs Evolution in Python Frameworks

Jan. 2019 - Oct. 2019

- Performed the first systematic study to characterize the evolution of Python framework APIs and discussed the similarities and differences between the API evolution in Python and Java frameworks.
- Quantitatively and qualitatively analyzed the types of compatibility issues caused by misusing evolved APIs in Python applications and the strategies commonly implemented to fix these issues.
- Designed and implemented PYCOMPAT as a detection tool to find compatibility issues in Python applications.

• Cloud and Smart Industries Group, Tencent

Short-term Research Internship

Clustering Duplicate Bug Reports




Dec. 2018 - Jan. 2019

- Reimplemented bug clustering algorithms like Rebucket and DURFEX.
- Identified eleven features from stack trace including similarity of call chain, distance-based features, etc.
- Developed a clustering algorithm that utilizes the Random Forest algorithm resulting in an accuracy over 90% with the Eclipse dataset.

NOTABLE COURSE PROJECT

• Pintos Threads & User Programs & File System

2019 Spring

- Implemented thread-safe **priority scheduling** algorithms supporting priority donation and priority preemption.  code
- Completed **OS system calls** that include argument passing, process control syscalls, and file operation syscalls.  code
- Implemented **advanced filesystem** that includes buffer cache, extensible files and subdirectories.  code

• Web Platform for Running Scripts, SUSTechLambda code

2018 Fall

- Created a web platform supporting uploading, running and sharing scripts for script languages such as Python, Bash and JavaScript.
- Utilized React.js, Spring boot and Docker for the development of the platform.

• Campus Android App, HelloSUSTech code

2019 Spring

- Developed an Android app that supports on-campus map localization and navigation, building recognition and class management.
- In the creation of the app, Spring boot, Volley web framework, Gaode (AMap) Maps framework, and TensorFlow Lite were utilized.