Yicheng Ouyang

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EDUCATION

University of Illinois Urbana-Champaign Aug. 2021 – Present, Champaign, IL, USA
Ph.D. in Computer Science (GPA 3.54/4) *Advisors: Prof. Lingming Zhang and Prof. Darko Marinov*
Southern University of Science and Technology Sept. 2016 – July 2020, Shenzhen, China
B.S. in Computer Science and Technology (GPA: 3.46/4) *Advisor: Prof. Yuqun Zhang*

SKILLS

Programming Language: Java, Python, Bash.
Software and Framework: ASM, Java Agent, JavaParser, Maven, Git, Unity3D.
Spoken Language: Mandarin, English.

INDUSTRY EXPERIENCE

Google LLC May 2024 – Aug. 2024
Software Engineering Intern *California, United States*
- Migrated and integrated the open-source bytecode-level dynamic taint analysis tool for Java, Phosphor, into Google's infrastructure, resolving compatibility issues with the Google JDK and the internal build system.

Kuaishou Technology May 2021 – Aug. 2021
Research/Engineering Intern in the Quality Assurance Team *Beijing, China*
- Designed an algorithm to evaluate developers' contribution in code commits, distinguishing trivial refactoring alterations. Implemented the prototype independently in Java using Eclipse JDT.

Ant Group June 2020 – May 2021
Research/Engineering Intern in the Quality Assurance and Infrastructure Team *Hangzhou, China*
- Developed the first non-intrusive dynamic taint analysis technique for JVM-based microservice systems (MirrorTaint) in Java using ASM and Java agent, deployed in pre-launch environments to aid data correctness validation.
- Developed Alipay's first regression test selection (RTS) system in Java using ASM and Java agents, integrated into the Continuous Integration pipeline to automate the bypass of test cases unaffected during regression testing.
- Conducted the first comprehensive empirical study on industrial record&replay testing noises within microservice applications, and provided various practical guidelines and potential solutions.

Suzhou Dayu Network Technology Co. Ltd. June 2018 – Sep. 2018
Engineering Intern in the Game Development Department *Suzhou, China*
- Led a small multidisciplinary team to develop a 2D vertical scrolling game, The Hook Man. Conceptualized game design and independently completed programming tasks in JavaScript using Cocos Creator.

RESEARCH EXPERIENCE

University of Illinois Urbana-Champaign 2021 - Present
Research Assistant *IL, USA*
- Conducted a multi-dimensional evaluation of state-of-the-art Automated Program Repair techniques on artificial and real bugs, uncovering limitations and strengths of traditional and learning-based methods (BenchmarkingAPR).
- Developed an on-the-fly patch validation algorithm (UniAPR) for Automated Program Repair (APR) techniques, significantly accelerating patch validation processes by an order of magnitude.

Southern University of Science and Technology 2019 - 2020
Research Assistant/Intern *Shenzhen, China*
- Developed an automated fuzzing algorithm (SJFuzz) to identify bugs in open-source and commercial JVMs, resulting in the discovery of 35 JVM bugs, with 15 confirmed.
- Contributed to the development and assessment of a lightweight CUDA synchronization bug detector (Simulee), which identified 24 CUDA synchronization bugs in real-world projects, with 10 confirmed by developers.

TEACHING EXPERIENCE

- Head TA for the class *CS427: Software Engineering I* (Fall 2023 & Fall 2024) at UIUC.
- TA for the class *CS309: Object-oriented Analysis and Design* (Fall 2019) at SUSTech.

PUBLICATIONS

For a full list of my publications, please visit: yicheng-ouyang.github.io/publications/.