

# Jie Hu

University of California Riverside

☎ +1-951-421-9752 ✉ jhu066@ucr.edu 🏠 <https://jhu066.github.io/>

## Research Interest

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Computer System Security, Dynamic Program Analysis, Vulnerability Detection, Deep Learning, Software Engineering.

## Education

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### Ph.D. in Computer Science

09/2017-09/2024(Expected)

University of California Riverside (UCR), CA, USA

Advisor: Prof. [Heng Yin](#)

### B.E. in Computer Science

09/2013-06/2017

Huazhong University of Science and Technology, Wuhan, China

## Professional Experience

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### Graduate Student Researcher

UCR 09/2017 - Present

*LLM-Based Solutions for Path Divergence in Concolic Execution*

- Tackling path divergence, an open challenge in concolic execution, via a novel LLM-based approach.

*Augmenting Greybox Fuzzing with Generative AI*

- Designed three research questions to drive a systematic study on LLMs' fuzzing capabilities, and present our findings.
- Provide guidance on how to build an effective LLM-based greybox fuzzer that is not limited to existing LLMs but also considers future LLMs.

*Marco: A Stochastic Asynchronous Concolic Explorer*

- Evaluated the state-of-the-art branch-flipping policy and reveal several important yet unreported limitations.
- Proposed a stochastic and asynchronous branch scheduling algorithm that is able to effectively pick the most promising branch for new input generation.

### Security Research Intern

Baidu USA 07/2020 - 12/2020

- Conducted research for developing techniques to improve the effectiveness and efficiency of concolic executor which is a commonly used method for program analysis.

### Software Engineer Intern

MoboTap(Wuhan) Inc. 08/2016 - 05/2017

- Focused on the applications of convolutional neural network (CNN) model on image analysis.

## Publication

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- (In Progress) **Jie Hu**, Heng Yin, LLM-Based Solutions for Path Divergence in Concolic Execution.
- (Under Submission) **Jie Hu**, Heng Yin, How Well can LLMs Generate Fuzzing Inputs?
- (USENIX'24) Zhenxiao Qi, **Jie Hu**, Zhaoqi Xiao, and Heng Yin, SymFit: Making the Common (Concrete) Case Fast for Binary-Code Concolic Execution, to appear in the 33rd USENIX Security Symposium, August 2024.
- (ICSE'24) **Jie Hu**, Yue Duan, and Heng Yin, [Marco: A Stochastic and Asynchronous Concolic Explorer](#), to appear in the 46th International Conference on Software Engineering, April 2024.
- (RAID'19) Yue Duan, Lian Gao, **Jie Hu**, and Heng Yin, [Automatic Generation of Non-intrusive Updates for Third-Party Libraries in Android Applications](#), in the 22nd International Symposium on Research in Attacks, Intrusions and Defenses, September 2019.

## Skills & Other

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Languages: C/C++, Python

Program Analysis Tools: AFL/AFL++, QSYM, SymSan, Marco

# Honors & Awards

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- 2024 UCR GSA Conference Travel Grant
- 2024 Outstanding Teaching Assistant in CSE Department
- 2022 CCS Student Travel Grant
- 2017 Dean's Distinguished Fellowship, UC Riverside

# Professional Service

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## Journal Reviewer

- TDSC 2022, 2024
- PeerJ Computer Science

## External Conference Reviewer

- S&P 2021, 2022, 2024, 2025
- RAID 2023
- DIMVA 2019
- USENIX 2021, 2022
- AsiaCCS 2019, 2020