

# Chenyuan Yang

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## RESEARCH INTEREST

My research aims to improve the *reliability* of software systems. I am interested in leveraging testing, analysis, and verification techniques to make software systems more *reliable* and *robust*, especially for machine learning systems. Besides, I enjoy contributing to the open-source community.

Currently, I focus on testing deep learning libraries, which are the central infrastructure for building, training, optimizing and deploying deep learning models. Until now, my work has totally detected **275** previously unknown bugs for widely-used deep learning libraries, including **PyTorch**, **TensorFlow**, **JAX**, and **OneFlow**.

Besides deep learning libraries, I also reported more than **30** bugs for other open-source projects, such as **NumPy**, **Moby**, and **VSCoDeVim**.

## EDUCATION

### University of Illinois at Urbana-Champaign

Aug. 2022 - Present

*Ph.D. Student in Computer Science, advised by Prof. **Lingming Zhang***

*IL, US*

### Nanjing University

Sept. 2018 - Jul. 2022

*B.Sc. in Computer Science and Technology, graduated with honors*

*Nanjing, China*

- Enrolled in *Elite Class*, GPA 91.2/100, rank 1/24

## PUBLICATION

### Fuzzing Automatic Differentiation in Deep-Learning Libraries

*ICSE 2023*

Chenyuan Yang, Yinlin Deng, Jiayi Yao, Yuxing Tu, Hanchi Li, Lingming Zhang

### Fuzzing Deep-Learning Libraries via Automated Relational API Inference

*ESEC/FSE 2022*

Yinlin Deng\*, Chenyuan Yang\*, Anjiang Wei, Lingming Zhang. [\[paper\]](#) [\[code\]](#)

### Free Lunch for Testing: Fuzzing Deep-Learning Libraries from Open Source

*ICSE 2022*

Anjiang Wei, Yinlin Deng, Chenyuan Yang, Lingming Zhang. [\[paper\]](#) [\[code\]](#)

\* denotes joint first authors

## PROFESSIONAL EXPERIENCE

### Research Assistant at PL/FM/SE Group, UIUC

May. 2021 - Present

*Advised by Prof. **Lingming Zhang***

*Topic: Fuzzing DL libraries*

### Research Assistant at SPAR Group, Nanjing University

Aug. 2020 - Apr. 2021

*Advised by Prof. **Yanyan Jiang***

*Topic: Testing*

### Co-Reviewer for ASE 2022

## AWARDS

### SIGSOFT CAPS Travel Grant for ESEC/FSE 2022

Sept. 2022

### China National Scholarship | Top 0.2%

Oct. 2020

### Special Scholarship for Undergraduates in Basic Science, Nanjing University | 1/24

Nov. 2021

### Elite Program First-class Scholarship, Nanjing University

Oct. 2019

### Merit Student, Nanjing University

Oct. 2019

## TALKS

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|---|------------|
| <b>Fuzzing Deep-Learning Libraries via Automated Relational API Inference</b>   | Sept. 2022 |
| • Software Engineering Retreat, University of Illinois at Urbana-Champaign      |            |
| <b>Free Lunch for Testing: Fuzzing Deep-Learning Libraries from Open Source</b> | May 2022   |
| • iSE symposium, Nanjing University   |            |

## TEACHING EXPERIENCE

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|---|------------------------|
| <b>Teaching Assistant at Nanjing University</b>                             | Sept. 2021 - Jul. 2022 |
| <i>Problem Solving, a core course for the students in the elite program</i> |                        |

## SKILL STACK

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- **Common:** Python, C, Shell, TypeScript, docker, git, Vim, SQL, L<sup>A</sup>T<sub>E</sub>X
- **Machine Learning:** PyTorch, TensorFlow, JAX
- **Testing:** libFuzzer, LLVM Sanitizers