

Chenyuan Yang

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RESEARCH INTEREST

My research focuses on enhancing the *reliability* of software systems, such as machine learning models, compilers, and operating system kernels. To achieve this, I employ a combination of *testing*, *analysis*, and *verification* techniques, with a particular emphasis on leveraging the power of *large language models* (LLMs).

To date, my work has uncovered over **400 previously unknown bugs** in widely-used machine learning systems, including **PyTorch**, **TensorFlow**, **JAX**, as well as **16 CVEs** for the Linux kernel and over **130 bugs** for Clang/GCC.

EDUCATION

University of Illinois at Urbana-Champaign

Ph.D. Student in Computer Science, advised by Prof. [Lingming Zhang](#)

Aug. 2022 - Present

IL, US

Nanjing University

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

Sept. 2018 - Jul. 2022

Nanjing, China

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

PUBLICATION

[1] AutoVerus: Automated Proof Generation for Rust Code

Preprint 2024.

[Chenyuan Yang](#), Xuheng Li, Md Rakib Hossain Misu, Jianan Yao, Weidong Cui, Yeyun Gong, Chris Hawblitzel, Shuvendu Lahiri, Jacob R. Lorch, Shuai Lu, Fan Yang, Ziqiao Zhou, Shan Lu. [\[paper\]](#) [\[website\]](#)

[2] KernelGPT: Enhanced Kernel Fuzzing via Large Language Models

30th ACM International Conference on Architectural Support for Programming Languages and Operating Systems (ASPLOS) 2025.

[Chenyuan Yang](#), Zijie Zhao, Lingming Zhang. [\[paper\]](#) [\[code\]](#)

[3] Automated Proof Generation for Rust Code via Self-Evolution

The Thirteenth International Conference on Learning Representations (ICLR) 2025.

Tianyu Chen, Shuai Lu, Shan Lu, Yeyun Gong, [Chenyuan Yang](#), Xuheng Li, Md Rakib Hossain Misu, Hao Yu, Nan Duan, Peng Cheng, Fan Yang, Shuvendu K Lahiri, Tao Xie, Lidong Zhou. [\[paper\]](#)

[4] TestEval: Benchmarking Large Language Models for Test Case Generation

The 2025 Annual Conference of the Nations of the Americas Chapter of the ACL (NAACL Findings) 2025.

Wenhan Wang*, [Chenyuan Yang](#)*, Zhijie Wang*, Yuheng Huang, Zhaoyang Chu, Da Song, Lingming Zhang, An Ran Chen, Lei Ma. [\[paper\]](#) [\[code\]](#)

[5] WhiteFox: White-box Compiler Fuzzing Empowered by Large Language Models

Object-Oriented Programming, Systems, Languages, and Applications 2024 (in PACM PL) (OOPSLA) 2024.

[Chenyuan Yang](#), Yinlin Deng, Runyu Lu, Jiayi Yao, Jiawei Liu, Reyhaneh Jabbarvand, Lingming Zhang. [\[paper\]](#) [\[code\]](#)

[6] Large Language Models are Edge-Case Generators: Crafting Unusual Programs for Fuzzing Deep Learning Libraries

46th IEEE/ACM International Conference on Software Engineering (ICSE) 2024.

Yinlin Deng, Chunqiu Steven Xia, [Chenyuan Yang](#), Shizhuo Dylan Zhang, Shujing Yang, Lingming Zhang. [\[paper\]](#)

[7] Large Language Models are Zero-Shot Fuzzers: Fuzzing Deep-Learning Libraries via Large Language Models

32nd ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA) 2023.

Yinlin Deng, Chunqiu Steven Xia, Haoran Peng, [Chenyuan Yang](#), Lingming Zhang. [\[paper\]](#) [\[code\]](#)

[8] Fuzzing Automatic Differentiation in Deep-Learning Libraries

45th IEEE/ACM International Conference on Software Engineering (ICSE) 2023.

[Chenyuan Yang](#), Yinlin Deng, Jiayi Yao, Yuxing Tu, Hanchi Li, Lingming Zhang. [\[paper\]](#) [\[code\]](#)

[9] Fuzzing Deep-Learning Libraries via Automated Relational API Inference

30th ACM Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering (ESEC/FSE) 2022.

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

[10] Free Lunch for Testing: Fuzzing Deep-Learning Libraries from Open Source

44th IEEE/ACM International Conference on Software Engineering (ICSE) 2022.

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

* denotes joint first authors

PROFESSIONAL EXPERIENCE

Research Intern at Systems Research Group, Microsoft Research <i>Hosted by Shan Lu</i> <i>Topic: AutoVerus – Automated Proof Generation for Rust Code</i>	May. 2024 - August 2024
SWE Intern at Project Starline, Google <i>Hosted by Srinivas Kaza and Lukas Murmann</i> <i>Topic: JAXGL – Integrate High Performance Graphics Primitives into ML</i>	May. 2023 - August 2023
Research Assistant at PL/FM/SE Group, UIUC <i>Advised by Prof. Lingming Zhang</i> <i>Topic: Fuzzing DL libraries</i>	May. 2021 - Present
Research Assistant at SPAR Group, Nanjing University <i>Advised by Prof. Yanyan Jiang</i> <i>Topic: Testing</i>	Aug. 2020 - Apr. 2021

AWARDS

SIGSOFT CAPS Travel Grant for ESEC/FSE 2022	Sept. 2022
China National Scholarship <i>Top 0.2%</i>	Oct. 2020
Special Scholarship for Undergraduates in Basic Science , Nanjing University <i>1/24</i>	Nov. 2021
Elite Program First-class Scholarship , Nanjing University	Oct. 2019

TALKS

Fuzzing Automatic Differentiation in Deep-Learning Libraries <ul style="list-style-type: none">Advanced Software Technologies Lab, ETH Zurich	May 2023
Fuzzing Deep-Learning Libraries via Automated Relational API Inference <ul style="list-style-type: none">Software Engineering Retreat, University of Illinois at Urbana-Champaign	Sept. 2022
Free Lunch for Testing: Fuzzing Deep-Learning Libraries from Open Source <ul style="list-style-type: none">iSE symposium, Nanjing University	May 2022

TEACHING EXPERIENCE

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

- **Common:** Python, C, TypeScript, docker, Vim, Git, SQL, \LaTeX , libFuzzer
- **Machine Learning:** PyTorch, TensorFlow, JAX