

# Zhiyu Fan

Ph.D Candidate @ National University of Singapore

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## Biography and Research Interests

My research interests lie in the intersection areas of software engineering and large language models to steer future-oriented AI-centered autonomous software development and maintenance. I'm also interested in exploring relevant techniques to develop AI-tutoring systems to ease the teaching workload for computer science education. My research on autonomous software development has attracted public interest (>1 million views on Twitter, >2.4k stars, and daily/weekly trending on GitHub), and the AI-tutoring system has been deployed in NUS and adopted by other universities for teaching purposes.

## Education

- National University of Singapore** Singapore  
**Ph.D Candidate., School of Computing** 2019.08 – 2024.10 (expected)  
Thesis: Program Repair for Program Education  
Advisor: Professor Abhik Roychoudhury
- Southern University of Science and Technology** ShenZhen, China  
**B.E., Computer Science and Engineering** 2015.09 – 2019.07  
Advisor: Professor Shin Hwei Tan

## Publications(\* Co-first author, # Corresponding author)

- AutoCodeRover: Autonomous Program Improvement**  
Yuntong Zhang, Haifeng Ruan, Zhiyu Fan, Abhik Roychoudhury  
International Symposium on Software Testing and Analysis (ISSTA), 2024
- Oracle-guided Program Selection from Large Language Models**  
Zhiyu Fan, Haifeng Ruan, Sergey Mechtaev, Abhik Roychoudhury  
International Symposium on Software Testing and Analysis (ISSTA), 2024
- ITS: Experience of Linking Software Engineering and Programming Teaching**  
Zhiyu Fan, Yannic Noller, Ashish Dandekar, Abhik Roychoudhury  
arXiv, 2024
- Concept-based Automated Grading of CS-1 Programming Assignments**  
Zhiyu Fan, Shin Hwei Tan, Abhik Roychoudhury  
International Symposium on Software Testing and Analysis (ISSTA), 2023
- Automated Repair of Programs from Large Language Models**  
Zhiyu Fan, Xiang Gao, Martin Mirchev, Abhik Roychoudhury, Shin Hwei Tan  
International Conference on Software Engineering (ICSE), 2023
- Verifix: Verified Repair of Programming Assignments**  
Umair Z. Ahmed\*, Zhiyu Fan\*, Jooyong Yi, Omar I. Al-Bataineh, Abhik Roychoudhury  
ACM Transactions on Software Engineering and Methodology (TOSEM), 2022
- A Systematic Evaluation of Problematic Tests Generated by EvoSuite**  
Zhiyu Fan  
Student Research Competition at ICSE, 2019

## Services

- Reviewer for TSE 2023, SIGCSE 2024, TOSEM 2024
- PC Member for APR Workshop @ ICSE 2024

## Awards and Honors

- NUS SoC Research Incentive Award 2023 - 2024

- **NUS SoC Research Achievement Award** 2023.01
- **NUS Research Scholarship** 2019.08 – Present
- **Bronze Medal in ACM SRC@ICSE 2019** 2019.06
- **Outstanding Graduate Thesis Award of SUSTech** 2019.06
- **Outstanding Graduate of SUSTech** 2019.05
- **ACM SIGSOFT CAPS Grants** 2019.04
- **ACM SIGSOFT SRC Travel Award** 2019.03
- **First Prize in National Student Contest of Software Testing** 2018.11

## Teaching experience

- **CS2040S: Data Structures and Algorithms** NUS  
Teaching Assistant 2024.01 – 2024.04
- **CS3213: Foundations of Software Engineering** NUS  
Head Teaching Assistant 2023.01 – 2023.04
- **CS3213: Foundations of Software Engineering** NUS  
Teaching Assistant 2022.01 – 2022.04
- **CS4211: Formal Method for Software Engineering** NUS  
Teaching Assistant 2020.08 – 2020.11
- **CS304: Software Engineering** SUSTech  
Teaching Assistant 2019.03 – 2019.06
- **CS303A: Introduction to Artificial Intelligence** SUSTech  
Teaching Assistant 2019.03 – 2019.06
- **CS102A: Java How to program** SUSTech  
Teaching Assistant 2016.09 – 2017.01