

# PU YI

Peking University, China

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## Education

### Peking University

Sep. 2018 – June 2022 (expected)

*Bachelor of Science in Computer Science (Turing Class)*

*Beijing, China*

- GPA: 3.71/4 (87.6/100), ranking top 20% in the department
- 2021 Huirong Li Scholarship
- 2020 John Hopcroft Scholarship

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## Research Experience

**Combating Flaky Tests.** Advisors: Profs. Darko Marinov (UIUC) and Tao Xie (PKU) July 2020 – Present

- Analyzed theoretically and improved flaky-test detection (resulted in publication 6)
- Extended Java PathFinder to detect polluter tests (resulted in publication 5)
- Counted test orders for order-dependent flaky tests using Alloy (resulted in publication 4)
- Proposed, detected, and fixed non-idempotent-outcome tests that contain latent flakiness (resulted in publication 1)

**Regression Test Prioritization.** Advisors: Profs. Darko Marinov (UIUC) and Tao Xie (PKU) April 2021 – Present

- Analyzed theoretically random regression test prioritization (resulted in publication 3)
- Addressed important aspects overlooked by prior work and proposed a new metric (resulted in paper 7)

**Bit-Flip Fault Injection.** Advisors: Profs. Cyrille Artho (KTH) and Pavel Parízek (Cuni.cz) July 2021 – Present

- Extended Java PathFinder to systematically inject and explore bit-flip faults using Java PathFinder
- Work done in Google Summer of Code (GSoC) 2021, in preparation for submission ([Project Website](#))

**Data Stream Processing.** Advisor: Prof. Tong Yang (PKU) Oct 2019 – July 2020

- Designed efficient data structures that memorize recent events with higher accuracy (resulted in publication 2)

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## Papers

1. Anjiang Wei, **Pu Yi**, Zhengxi Li, Tao Xie, Darko Marinov, and Wing Lam  
Preempting Flaky Tests via Non-Idempotent-Outcome Tests  
*44th International Conference on Software Engineering*  
(ICSE 2022), pages to-appear, Pittsburgh, PA, USA, May 2022
2. Yikai Zhao, Yubo Zhang, **Pu Yi**, Tong Yang, Bin Cui, and Uhlig Steve  
The Stair Sketch: Bringing more Clarity to Memorize Recent Events  
*38th IEEE International Conference on Data Engineering*  
(ICDE 2022), pages to-appear, Virtual Conference, May 2022
3. **Pu Yi**, Hao Wang, Tao Xie, Darko Marinov, and Wing Lam  
A Theoretical Analysis of Random Regression Test Prioritization  
*28th International Conference on Tools and Algorithms for the Construction and Analysis of Systems*  
(TACAS 2022), pages to-appear, Munich, Germany, April 2022
4. Wenxi Wang, **Pu Yi**, Sarfraz Khurshid, and Darko Marinov  
Initial Results on Counting Test Orders for Order-Dependent Flaky Tests using Alloy  
*33rd IFIP International Conference on Testing Software and Systems*  
(ICTSS 2021), pages to-appear (short paper), Virtual Conference, November 2021
5. **Pu Yi**, Anjiang Wei, Wing Lam, Tao Xie, and Darko Marinov  
Finding Polluter Tests Using Java PathFinder  
*ACM SIGSOFT Software Engineering Notes* 46, 2021  
(SEN 2021), 46(3), pages 37-41, July 2021  
(Extended paper of abstract presented at Java PathFinder Online Day (JPF 2020), Virtual Workshop, November 2020)
6. Anjiang Wei, **Pu Yi**, Tao Xie, Darko Marinov, and Wing Lam  
Probabilistic and Systematic Coverage of Consecutive Test-Method Pairs for Detecting Order-Dependent Flaky Tests  
*27th International Conference on Tools and Algorithms for the Construction and Analysis of Systems*  
(TACAS 2021), pages 270-287, Virtual Conference, March 2021
7. Toward Proper Evaluation of Regression Test Prioritization In preparation for resubmission to ISSTA 2022  
**Pu Yi**, Jeremias Parladorio, Hao Wang, Tao Xie, Darko Marinov, and Wing Lam

## Presentations

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- *Systematic Bit-Flip Fault Injection and Exploration using Java PathFinder*, Java PathFinder Online Day (JPF 2021)
- *Finding Polluter Tests Using Java PathFinder*, Java PathFinder Online Day (JPF 2020)

## Service

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- Student Volunteer, ASE 2021, ASE 2020
- Co-reviewer, ICSE SEIP 2022, ASE 2021, ISSTA 2021

## Skills

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- **Extensive programming experience**

C, C++, Java, Python, Bash, JavaScript

Contributor of the [Java PathFinder](#) project - wrote two extensions [PolDet](#) and [Bit-Flip](#) injection engine that were merged to the master branch (the Bit-Flip injection engine was an accepted Google Summer of Code ([GSoC](#)) project)

2019 Second Prize in Programming Contest at Peking University

2017 Second Prize in National Olympiad in Informatics, China

- **Proficiency in English**

Ability to write papers and communicate with English-speaking collaborators fluently

TOEFL score: 108 (29 reading, 29 listening, 23 speaking, 27 writing); GRE score: 336 (162V, 170Q, 4A)