

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

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 1)
- Extended Java PathFinder to detect polluter tests (resulted in publication 2)
- Counted test orders for order-dependent flaky tests using Alloy (resulted in publication 3)
- Proposed, detected, and fixed non-idempotent-outcome tests that contain latent flakiness (resulted in publication 4)

Regression Test Prioritization. Advisors: Profs. Darko Marinov (UIUC) and Tao Xie (PKU)

April 2021 – Present

- Analyzed theoretically random regression test prioritization (resulted in submission 6)
- 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 5)

Papers

1. 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
2. **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)
3. 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
4. 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
5. 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
6. A Theoretical Analysis of Random Regression Test Prioritization
Pu Yi, Hao Wang, Tao Xie, Darko Marinov, and Wing Lam
Under review at TACAS 2022
7. Toward Proper Evaluation of Regression Test Prioritization
Pu Yi, Jeremias Parladorio, Hao Wang, Tao Xie, Darko Marinov, and Wing Lam
In preparation for resubmission to ISSTA 2022

Presentations

- *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

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

Skills

- **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 is 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)