

Junwen Yang

Ph.D. in Computer Science
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Research Interests

Improving the performance and correctness of **big-data software**.

Education

- 2016–now **Ph.D in Computer Science**, *University of Chicago*, (Advised by Prof. Shan Lu).
2011–2015 **BEng in Software Engineering**, *Fudan University*, 3.6/4.0, Rank 5/79.

Award

- 2021 **Siebel Scholar**.
2020 **Harper Dissertation Fellowship**.
2019 **ACM SIGSOFT Distinguished Paper Award**.
2019 **ACM SIGPLAN John Vlissides Award**.
2019 **University Unrestricted (UU) Fellowship**.
2017 **CERES Outstanding Research Award 1st Year Graduate**.

Research Projects

- 2016–now **Hyperloop** (<http://hyperloop.cs.uchicago.edu>), *understanding, detecting, and solving performance problems in web applications built with Object-Relational Mapping (ORM) frameworks*.
- A comprehensive study of performance problems on existing open-source applications built with Ruby-on-Rails
 - PowerStation (<http://hyperloop.cs.uchicago.edu/powerstation>), a RubyMine plugin to automatically identify and suggest fixes for performance issues
 - Panorama, (<http://hyperloop.cs.uchicago.edu/panorama>), a view-centric and database-aware development environment for web developers to understand the data-processing costs and explore better application design opportunities.
 - Vibranium, (<https://hyperloop-rails.github.io/vibranium/>), the first in-depth study of data-constraint problems in web applications

Publication

- 2020 **Junwen Yang**, Utsav Sethi, Cong Yan, Shan Lu, Alvin Cheung, Managing data constraints in database-backed web applications, *42nd International Conference on Software Engineering (ICSE'20)*.

- 2020 Cong Yan, **Junwen Yang**, Alvin Cheung, and Shan Lu, View-Driven Optimization of Database-Backed Web Applications, *The Conference on Innovative Data Systems Research (CIDR'20)*.
- 2019 **Junwen Yang**, Improving Performance and Quality of Database-Backed Software, (**SPLASH'19 Doctoral Symposium**).
 - ★ John Vlissides Award
- 2019 **Junwen Yang**, Cong Yan, Chengcheng Wan, Shan Lu, Alvin Cheung, View-Centric Performance Optimization for Database-Backed Web Applications, *41st International Conference on Software Engineering (ICSE'19)*.
 - ★ SIGSOFT Distinguished Paper Award
 - Featured on Morning paper
- 2018 **Junwen Yang**, Cong Yan, Pranav Subramaniam, Shan Lu, Alvin Cheung, PowerStation: Automatically Detecting and Fixing Inefficiencies of Database-backed Web Applications in IDE, *26th Foundations of Software Engineering (FSE'18 Demonstration Track)*.
- 2018 **Junwen Yang**, Cong Yan, Pranav Subramaniam, Shan Lu, Alvin Cheung, How not to structure your database-backed web applications: a study of performance bugs in the wild, *40th International Conference on Software Engineering (ICSE'18)*.
 - Featured on Morning paper, HackerNews, and RubyWeekly.
- 2017 Cong Yan, **Junwen Yang**, Alvin Cheung, and Shan Lu, Understanding Performance Inefficiencies in Real-world Database-backed Applications, *26th Conference on Information and Knowledge Management (CIKM'17)*.

Talk

- 2020 **Managing data constraints in database-backed web applications**, *Berkeley Programming Systems Seminar*, Virtual.
- 2020 **Managing data constraints in database-backed web applications**, *42nd International Conference on Software Engineering*, Virtual.
- 2019 **Improving Performance of Database-Backed Software**, *2019 MIDAS*, University of Michigan, US.
- 2019 **Improving Performance and Quality of Database-Backed Software**, *2019 SPLASH Doctoral Symposium*, Athens, Greece.
- 2019 **View-Centric Performance Optimization for Database-Backed Web Applications**, *41st International Conference on Software Engineering*, Montreal, Canada.
- 2018 **PowerStation: Automatically Detecting and Fixing Inefficiencies of Database-backed Web Applications in IDE**, *26th Foundations of Software Engineering*, Florida, United States.
- 2018 **How not to structure your database-backed web applications: a study of performance bugs in the wild**, *40th International Conference on Software Engineering*, Gothenburg, Sweden.
- 2017 **Understanding Performance Inefficiencies in Real-world Database-backed Applications**, *26th Conference on Information and Knowledge Management*, Singapore.

Outreach

- 2021 **Invited to the ICPE'21 Artifact Evaluation/Demo Program Committee .**
- 2020 **Served on the ECOOP'20 Artifact Evaluation Program Committee (AEC).**
- 2020 **Served on the ICPE'20 Poster and Demo Program Committee.**
- 2018 **Mentor in ACM-W mentor program, mentoring undergraduate students.**
- 2018&2019 **Instructor in compileHer (FEMMES) Tech Capstone Teaching, a workshop to lead middle school girls through CS and STEM concepts.**
- 2017 **Student volunteer, for SOSP 2017, SIGMOD/PODS 2017, ICSE 2019.**
- 2017 **Attended Diversity Workshop at SOSP'17: The Ada Workshop, a forum for female and minority students at the graduate and advanced undergraduate levels who have interests in computer systems research.**

Internship

- 2020 **Research Intern, Microsoft Research, Seattle, Supervised by Yeye He.**
 - Working on synthesizing complex pipeline automatically
- 2019 **Research Scientist, Facebook, Seattle, Supervised by Nathan Slingerland.**
- 2014–2015 **Student Consultant, Microsoft Research Asia (MSRA), Beijing.**
 - Better scheduling transient resources to run data-intensive jobs for distributed systemsSupervised by lead researcher Dr. Zhengping Qian.
- 2014.3– **Software Development in Test (SDET) intern, EMC, Shanghai.**
- 2014.9
 - Automate testing frameworks of Mozy, a cloud platform.
 - Create incremental code coverage rate finder.

Teaching Experience

- 2016 **TA for Introduction to Computer Security (CMSC 23200/33250), University of Chicago, Ariel Feldman.**
- 2014 **TA for Discrete Mathematics, Fudan University, Yiming Zhao.**