Junwen Yang

Ph.D. in Computer Science
University of Chicago

5730 S. Ellis Avenue
60637
USA
✉ *junwen@uchicago.edu*
people.cs.uchicago.edu/ junwen

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 **Invited to Rising Star Workshop at UC Berkeley**.
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*, Singarpore.

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 systems Supervised by lead researcher Dr. Zhengping Qian.

2014.3–2014.9 **Software Development in Test (SDET) intern**, *EMC*, Shanghai.
- 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.