Junwen Yang

Ph.D. in Computer Science
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Research Interests

Data science, object-oriented programming, and software engineering.

Education

2016–now	**Ph.D in Computer Science**, *University of Chicago*, (Advised by Prof. Shan Lu).
2011–2015	**BEng in Software Engineering**, *Fudan University*.

Award

2021	**Siebel Scholar**.
	Recognizing the most talented students at the world's leading graduate schools of business, computer science, energy science and bioengineering.
2020	**2020 EECS Rising Stars (UC Berkeley)**.
2020	**University of Chicago Harper Dissertation Fellowship**.
	The highest honor awarded to UChicago graduate students.
2019	**ACM SIGSOFT Distinguished Paper Award**.
2019	**ACM SIGPLAN John Vlissides Award**.
	Annually to a doctoral student participating in the OOPSLA Doctoral Symposium.
2019	**University Unrestricted (UU) Fellowship**.
2017	**CERES Research Center Outstanding Student Research Award**.

Research Projects

2016-now   **Hyperloop**, *understanding, detecting, and solving performance and correctness 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, a RubyMine plugin to automatically identify and suggest fixes for performance issues
- 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, the first in-depth study of data-constraint problems in web applications

2020   **Understand and tackle data-related upgrade failures in distributed systems**.

2020   **Automatically synthesize complex pipeline end to end by Target**.

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, Power-Station: 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**).

Invited Talks

2020   **Improving performance and correctness of database-backed web applications**, *Rutgers Computer Science Seminar*, Virtual.

2020   **Managing data constraints in database-backed web applications**, *Berkeley Programming Systems Seminar*, Virtual.

2019   **Improving Performance of Database-Backed Software**, *2019 Michigan Institute for Data Science (MIDAS)*, University of Michigan, US.

Service

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**.

Outreach

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.
	○ Synthesizing complex pipeline end to end by Target automatically
2019	**Research Scientist Intern**, *Facebook*, Seattle, Supervised by Nathan Slingerland.
	○ Enhancing existing performance profiling framework by integrating state-of-art Android profiling tool Perfetto.
2014–2015	**Student Consultant**, *Microsoft Research Asia (MSRA)*, Beijing, Supervised by Zhengping Qian.
	○ Better scheduling transient resources to run data-intensive jobs for distributed systems
2014.3–2014.9	**Software Development in Test (SDET) intern**, *EMC*, Shanghai.
	○ Automating testing frameworks of Mozy, a cloud platform.
	○ Building 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. |

References

Shan Lu	**Professor**, *Department of Computer Science*, University of Chicago.
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Alvin Cheung	**Assistant Professor**, *Department of EECS*, UC Berkeley.
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Yeye He	**Principal researcher**, *Data Management, Exploration and Mining (DMX) group*, Microsoft Research.
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