**Yuxuan Zhu** yuxuanzh@umich.edu **Last update: November 25, 2022**

RESEARCH INTEREST

My research interest is in the intersection of software system and artificial intelligence. I am especially interested in building systems to make machine learning scalable, reliable, and efficient. I am also passionate about designing AI-based method to solve system challenges.

EDUCATION

**University of Michigan (UM)**, Ann Arbor, U.S. 2021-2023 (expected)

- Bachelor of Science in Computer Science.
- GPA: **4.0/4.0**

**Shanghai Jiao Tong University (SJTU)**, Shanghai, China 2019–2023 (expected)

- Bachelor of Science in Electrical and Computer Engineering
- GPA: **3.76/4** (top 8%)

RESEARCH PROJECTS

**Symbiotic Laboratory, UM** 2022
Supervised by Fan Lai and professor Mosharaf Chowdhury

**p.1 EvoFed: Tailoring Federated Learning for Heterogeneous Edge Devices via Model Transformation**

*Building a FL system that enables model architecture transformation and model co-training to achieve better accuracy on clients with heterogeneous hardware and data.*

**Michigan Intelligent Programming Laboratory, UM** 2021-2022
Supervised by professor Xinyu Wang.

**p.2 Testing SQL Queries using Lightweight Formal Methods**

*Testing the equivalence of SQL queries using a lightweight mutation-based constraint solving approach.*

**p.1 Optimizing SQL Queries using Synthesis Approach**

*Optimizing the runtime performance of the whole SQL query using counterexample-guided inductive synthesis (CEGIS) approach.*

**Paper under submission.** SlabCity: Whole-Query Optimization using Program Synthesis. Rui Dong*, Jie Liu*, **Yuxuan Zhu**, Cong Yan, Barzan Mozafari, Xinyu Wang. (VLDB 2023)

**Intelligent Big Data System Laboratory, SJTU** 2020-2021
Supervised by professor Jie Li.

**p.2 An Energy-efficient Computing Offloading Framework for Blockchain-enabled Video Streaming Systems** (Accepted at *Globecom22*)

Shijing Yuan, Jie Li, **Yuxuan Zhu**, Chentao Wu, Yue Ding. Accepted at

*A Lyapunov design and evaluation for a video processing platfrom using the general Benders decomposition approach with an emphasis on adaptive compression and resource allocation.*

*Role:* Formulating the problem, solving the problem, and experimenting.

**p.1 Sharding for Blockchain based Mobile Edge Computing System: A Deep Reinforcement Learning Approach** (Accepted at *Globecom21*)

Shijing Yuan, Jie Li, Jinghao Liang, **Yuxuan Zhu**, Xiang Yu, Jianping Chen, Chentao Wu.

*A sharding design and optimization for a blockchain based mobile edge computing system using deep reinforcement learning approach with an emphasis on security and efficiency.*

*Role:* Running experiment and presenting the result.

## Other experience

- Research assistant at University of Michigan 2022
- Grader of MATH 417 Matrix Algebra 2022
- Microsoft Student Hackathon - Hack for Education (AI&ML) [*Winner*] 2021
- The Interdisciplinary Contest in Modeling [*Final List Award*] 2021
- School-enterprise Joint Creative Contest Organized by Media [*Grand Prize*] 2020
- Winter program in St. Petersburg Polytechnic University 2019-2020

## Honors

- **Dean's List**. Dec. 2021, Apr. 2022
- **University Honors**. Dec. 2021
- **Nominee for Tang Junyuan Scholarship**. Aug. 2021
- **Honorable Membership** in Technology Department of Student Union of SJTU. May 2021
- **Bronze Medal** in University Physics Competition Dec. 2020
- **Scholarship for Excellent Academic Performance**. Dec. 2020
- **Excellent Young Volunteer** in admission activities of SJTU. Sep. 2020
- **Honorable Mention by Judgers** in COVID-19 Challenges Competition. Jul. 2020

## Technical Skills

- *Programming*: C/C++, Python, SQL, Java, Lisp, Haskell, Verilog, Prolog, Golang.
- *Softwares*: MATLAB, Mathematica, PyCharm, IntelliJ, CLion, Git, Docker.
- *Knowledge Background*: Machine learning, Deep learning, Operating system, Network resource optimization, Operations, Blockchain, Lambda Calculus, Programming Languages, Discrete Mathematics, Linear Algebra, Probabilities, Distributed System.

## References

Prof. **Mosharaf Chowdhury**
Morris Wellman Associate Professor
Electrical Engineering and Computer Science
University of Michigan
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Prof. **Xinyu Wang**
Assistant Professor
Electrical Engineering and Computer Science
University of Michigan
E-mail: xwangsd@umich.edu

Prof. **Lingming Zhang**
Associate Professor
Computer Science
University of Illinois Urbana-Champaign
E-mail: lingming@illinois.edu