FAN-XUE GABRIELLA REIDYS

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RESEARCH INTERESTS

Satellite Networks, Traffic Engineering, Scalability and Efficiency of Networked Systems, Datacenter Networks, Internet of Things

EDUCATION

PhD in Computer Science, University of Illinois at Urbana-Champaign _Aug. 2023 - Present_
Advised by Professor Matthew Caesar

MS in Computer Science, University of Illinois at Urbana-Champaign _Aug. 2023 - Aug. 2024_
Masters Thesis: _A Metaverse for the Internet of Things_
Advised by Professor Matthew Caesar

BS in Computer Science, University of Illinois at Urbana-Champaign _Aug. 2018 - May 2023_
High Honor

PUBLICATIONS

Vivisecting Starlink Throughput: Measurement and Prediction. Zikun Liu, <u>**Fan Gabriella Xue**</u>, Sarah Tanveer, Deepak Vasisht. To appear in _Proceedings of the 21st International Conference on Emerging Networking Experiments and Technologies (To appear in CoNEXT'25)._

Towards Immersive Cloud-Based IoT Education. <u>**Fan Gabriella Xue**</u>, Matthew Caesar. _ACM SIGCOMM Computer Communication Review (CCR 2024)._

RESEARCH IMPACT

Optimization of Satellite Networking

- We identified that satellite networks suffer from large bandwidth fluctuations over short time scales due to several factors, including satellite mobility and weather. These fluctuations can lead to worse application performance, with users around the world reporting frequent network disconnection and unstable network. To address this, we propose a learning-based throughput prediction system that leverages satellite networks' unique characteristics. Our system improves throughput-prediction accuracy by 30% and can be used to improve video streaming QoE by 2X.
- As satellite networks grow rapidly, we also aim to redesign traffic engineering and congestion control systems for satellite networking.

IoT Virtuaization Platform

- An increasing number of students are becoming interested in learning about the IoT space. However, today we lack scalable and efficient ways to bring hands-on IoT learning to many due to hardware accessibility, system complexity, and deployment environment constraints. Therefore, we propose the architecture of a virtual shared space where people can design IoT systems, create virtual worlds, and deploy systems within these worlds to observe and engage with these systems. We evaluated our system's usability through statistical analyses of 355 students, resulting in positive learning outcomes.
- The current system is deployed to more than 600 students from multiple universities worldwide, as well as tens of high schools.

WORK EXPERIENCE

Bytedance   May 2025 - August 2025
Network R&D Intern   *Bellevue, WA*

- · Worked on handling hyperscale traffic for the internet gateway in the data center network.
- · Set up ByteDance's virtual networking infrastructure in a customized test cluster to collect performance metrics.

Accelerated Learning and Engineering Research Training Program   May 2023 - Dec. 2023
Research Mentor   *Urbana, IL*

- · Advised two undergraduate students on research in IoT systems, guiding them in methodology and experiment design, results analysis, and fostering team collaboration.

C3.ai   May 2023 - Aug. 2023
Software Engineering Intern   *Redwood City, CA*

- · Designed, implemented, and tested anomaly detection components in the sourcing optimization application from end to end.

C3.ai   May 2022 - Aug. 2022
Software Engineering Intern   *Redwood City, CA*

- · Built the ESG app CSO persona from scratch that unifies fragmented ESG data, identifies priority issues, tracks progress against goals, and automates reporting aligned to key standards.

Marqeta   June 2021 - July 2021
Software Engineering Intern   *Oakland, CA*

- · Built a NACHA file viewer endpoint to decrypt/encrypt and parse information for both technical and non-technical users to verify/download transaction content in a human-readable format securely, and simplified SFTP uploading via endpoints.

TEACHING EXPERIENCE

CS425 Teaching Assistant   Fall 2025

- · Held office hours and answered questions on distributed systems.

CS437 Teaching Assistant   Spring 2023 & 2025

- · Held office hours and answered questions on topics related to the Internet of Things.
- · Managed the deployment and maintenance of the virtual lab infrastructure for 200 students.

CS341 Teaching Assistant   Fall 2024

- · Lectured weekly lab sections and answered questions on system programming.

CS225 Teaching Assistant   Fall 2022

- · Held office hours and lab sections to teach and answer questions on data structures.
- · Named to the *List of Teachers Ranked as Excellent by Their Students*.

AWARDS AND ACTIVITIES

- · NSDI Travel Grant (2025)
- · Sysnet Woman Student Organizer (2024)
- · List of Teachers Ranked as Excellent by Their Students (2022)
- · Usenix Student Grant Program (OSDI 2022)

- Fall SoS Quarterly Lablet Meeting Student Contributor (2021)
- Yunni and Maxine Pao Memorial Scholarship (2021-2022)
- TBP Outstanding Junior Awards (2021)
- Student volunteer in SIGCOMM (2021)
- Illinois Engineering Achievement Scholarship (2021)
- James Scholar (2018-2022)

PROGRAMMING LANGUAGES

- **Advanced: Python**
- **Intermediate: Java, C++, C, JavaScript, HTML, CSS, SQL**