



# Department of Computer Science

Weaving an Intelligent Net with More Connected, Accessible, and Reliable Machine Intelligence

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University of Chicago

**Hosted by: Jing Li**

**Date:** Monday, February 17, 2025  
**Coffee:** 2:15 PM – 2:30 PM  
**Time:** 2:30 AM – 3:30 PM  
**Location:** GITC 4402 (4<sup>th</sup> floor Seminar Lecture Hall)

**Zoom Link:** <https://njit-edu.zoom.us/j/95752868703?pwd=I1BIOJcXUqcZ9jh0UqPaSOO53isKoW.1>

## **Abstract:**

Modern computer networks generate extensive amounts of data that can benefit network research, management, and security. This data is fast-evolving, increasingly encrypted, and highly siloed, which makes it difficult to analyze using traditional methods based on predefined rules and signatures. Machine learning (ML) methods have shown promise in identifying complex patterns and insights in network data. Yet, these methods often face reliability issues in real-world network operations. In this talk, I will focus on multiple practical challenges unique to integrating data-driven approaches in networking: (1) the need to acquire diverse traffic patterns siloed in different network entities, (2) the need for scalable platforms that support real-time decision-making for high-throughput data flows. By addressing these challenges, new opportunities arise for collaboration across multiple network entities and for performing data inference at tens of Gbps on general-purpose hardware. I will also discuss how overcoming these challenges can pave the way for a future that empowers all stakeholders—model developers, network operators, and network service users—to interpret and manage network interactions with greater reliability and transparency.

## **Bio:**

Shinan Liu is a final year Ph.D. candidate in the Computer Science Department at the University of Chicago, where he is advised by Prof. Nick Feamster. He is the head of the NSF ACTION AI Institute student advisory council and is a recipient of the Daniels Fellowship. His research lies in the area of computer networking and security, with a focus on developing accessible, reliable, and performant machine learning systems for network data analysis, and employing network data analysis for critical issues in security and privacy. His work has been recognized and published in top conferences and journals such as USENIX Security, NSDI, SIGMETRICS, CoNext, and UbiComp. Shinan serves ACM IMC and USENIX NSDI as a PC member and a member of the pre-review task force, and he is also a reviewer of NeurIPS, USENIX ATC, IEEE INFOCOM, IEEE TDSC, IEEE TIFS, IEEE IoTJ, and etc. Additionally, his research has been featured in multiple media outlets, including Forbes, The Wall Street Journal, and ACM TechNews.