# Seoyul Oh


**Ph.D. Candidate at the University of Illinois Urbana-Champaign (UIUC)**

Thomas M. Siebel Center for Computer Science, 201 North Goodwin Avenue, Urbana, IL 61801

seoyuloh.github.io | seoyulo2@illinois.edu | in/seoyul-oh | @seoyuloh_012 | Google Scholar


## Interests

My research focuses on advancing the efficiency, reliability, and safety of networked systems through the application of game-theoretic models and practical machine learning techniques.

## Education

**University of Illinois Urbana-Champaign,** *IL, USA* — Sep 2023 - Current
Doctor of Philosophy, Computer Science
Advisors: Prof. Francis Y. Yan & Prof. Deepak Vasisht

**Korea University,** *Seoul, Korea* — Feb 2023
Master of Science, Electrical and Computer Engineering
Advisor: Prof. Sangheon Pack

**Korea University,** *Seoul, Korea* — Feb 2021
Bachelor of Science, Electrical Engineering

## Publications

[1] **A Call for Decentralized Satellite Networks**
Seoyul Oh, Deepak Vasisht
*ACM Workshop on Hot Topics in Networks* — HotNets 2024

[2] **EcoCell: Energy-aware Traffic Shaping for Cellular Radio Access Networks** Poster version
Zikun Liu, Seoyul Oh, Bill Tao, Anuj Kalia, Yaxiong Xie, Deepak Vasisht
*New Ideas in Networked Systems (To Appear)* — NINeS 2026

[3] **A First-Principles Diagnosis of RL Training in Networked Systems**
Seoyul Oh*, Yikai Zheng*, Deepak Vasisht, Francis Y. Yan
*Under Review, *Equal contribution* — Under Review

[4] **OrbitShare: A Multi-party Architecture for Decentralized LEO Satellite Networks**
Seoyul Oh, Bill Tao, Shreya Kannan, Deepak Vasisht
*Under Review* — Under Review

[5] **An Efficient Winner and Payment Determination Algorithm in Reverse Auction for Edge Federation**
Taeyun Kim, Joonwoo Kim, Hochan Lee, Seoyul Oh, Sangheon Pack
*IEEE Transactions on Network and Service Management* — IEEE TNSM

[6] **(Poster) BACKWARD: A Victim-Centric DDoS Detection and Mitigation Scheme in Programmable Data Plane**
Seoyul Oh, Sol Han, Hochan Lee, Sangheon Pack
*IEEE Consumer Communications & Networking Conference* — CCNC 2023

[7] **Holistic Orchestration for Edge-Native Applications: A Review**
Taeyun Kim, Seoyul Oh, Inho Cha, Seunghyun Lee, Haneul Ko, Sangheon Pack
*IEEE International Conference on Information and Communication Technology Convergence* — ICTC 2022

## Research Experience

**Illinois Networked Systems and AI (INSAI) Lab, University of Illinois Urbana-Champaign** *IL, USA* Jan 2025 - Current
*Research Assistant*

**Project: First-Principles RL for Networking**
- Designed a first-principles diagnostic framework to visualize and analyze RL training dynamics, identify key failure modes, and provide practical guidelines for reliably learning high-performance adaptive bitrate streaming policies [3]

**Wonderful Wireless Lab, University of Illinois Urbana-Champaign** *IL, USA* Sep 2023 - Current
*Research Assistant*

**Project: Decentralized Satellite Networking**
- Proposed MP-LEO, a decentralized satellite network where participants share spare satellite capacity ensuring robust coverage without needing independent large constellations [1] [4]

**Project: Energy-Aware Cellular Networking**
- Developed EcoCell, a software-only middlebox solution that reduces base station energy consumption through traffic shaping techniques like subframe packing, UE segregation, and temporal traffic shifting [2]
- Validated EcoCell across applications, achieving energy savings with minimal impact on user experience

**Mobile System, Security and Networking Lab, Purdue University** *West Lafayette, IN, USA* Aug 2022 - Feb 2023
*Visiting Graduate Researcher* (Advisor: Prof. Chunyi Peng)

**Project: Better Mobility Support in 5G Cellular Networks**
- Proposed a low-latency video delivery scheme for 5G cellular-connected drones
- Measured 5G performance in the sky through real-world experiments

**Mobile Network and Communications Lab, Korea University** *Seoul, South Korea* Mar 2021 - Jul 2022
*Research Assistant*

**Project: Network Security Utilizing Programmable Data Planes**
- Led research on a P4-based victim centric DDoS detection and mitigation scheme [6]

**Project: Development of an Open-source-based Edge Cloud Service Platform Prototype**
- Analyzed future edge cloud service platform requirements
- Proposed a framework that performs holistic orchestration in edge cloud environments [5] [7]

## Honors and Awards

**Outstanding Teaching Assistant Award** *University of Illinois Urbana-Champaign (200 USD)* Spring 2025

**Korean Honor Scholarship (KHS)** *Ministry of Foreign Affairs, Korea (1,500 USD)* Fall 2025

**KASF-KIA Scholarship** *Korean American Scholarship Foundation (2,500 USD)* Fall 2025

**International R&D Program Grant for Graduate Students in Science & Technology** *Ministry of Science and ICT, Korea (12,580 USD)* Jun 2022 - Feb 2023

**Merit-based Scholarship** *School of Electrical Engineering, Korea University* Spring 2020

**Semester High Honors** *School of Electrical Engineering, Korea University* 2020, 2019, 2017

## Teaching Experience

**CS538: Advanced Computer Networks** University of Illinois, Urbana-Champaign Spring, Fall 2025
*Teaching Assistant (Instructor: Francis Y. Yan)*

**EGRN322: Technology Trends for Establishing and Managing Business** Korea University Fall 2021
*Teaching Assistant (Instructor: Sangheon Pack)*

**KECE370: Digital Signal Processing** Korea University Fall 2021
*Korea University Center for Teaching and Learning (KUCTL) Tutor*
*Best Tutor Award & Best Team Award*

## References

- Prof. Francis Y. Yan ..... *Assistant Professor in Computer Science at UIUC* [🌐]
- Prof. Deepak Vasisht ..... *Assistant Professor in Computer Science at UIUC* [🌐]
- Prof. Chunyi Peng ..... *Associate Professor in Computer Science at Purdue University* [🌐]
- Prof. Sangheon Pack ..... *Professor in Electrical Engineering at Korea University* [🌐]