Seoyul Oh

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

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Interests

My research interest lies in making networks more efficient, reliable, and secure.

Education

University of Illinois Urbana-Champaign, *IL, USA* — Sep 2023 - Current
Doctor of Philosophy, Computer Science
Advisor: 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
Under Review at Mobicom 2025 — Under Review

[3] **(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

[4] **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

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]

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 [3]

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 [4]

Honors and Awards

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

EGRN322: Technology Trends for Establishing and Managing Business Korea University Fall 2021
Teaching Assistant

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

References

- 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* [🌐]