Wonsup Yoon

Postdoctoral Researcher, UT Austin

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https://yoon.ws

EDUCATION

- **KAIST** — Republic of Korea
  Ph.D. in Computer Science — *Sep. 2019 – Aug. 2025*
  - **Co-advisors**: Sue Moon and Youngjin Kwon
  - **Thesis title**: Operating System Designs for Efficient Memory Disaggregation.
- **KAIST** — Republic of Korea
  M.S. in Computer Science — *Sep. 2017 – Aug. 2019*
  - **Advisor**: Sue Moon
  - **Thesis title**: A Memory Management Layer for Disaggregated Data Center.
- **Yonsei University** — Republic of Korea
  B.S. in Electrical and Electronic Engineering; GPA: 4.01/4.30 — *Mar. 2013 – Feb. 2017*
  - **Minor**: Computer Science

EXPERIENCE

- **UT Networked Systems Research Group, The University of Texas at Austin** — USA
  Postdoctoral Researcher — *Sep. 2025 –*
  - **Principal Investigator of Postdoctoral Fellowship Program**. Lead research on *Efficient Scaling of Microsecond-scale Scheduler with Hardware Acceleration and Learning-based Policy.*
- **Advanced Networking Lab, KAIST** — Republic of Korea
  Research Assistant — *2017 – 2025*
  - **Head Research Assistant (2025)**. Led research on *Development of Heterogeneous AI Chip Virtualization Technology*, IITP K-Cloud.
  - **Head Research Assistant (2022 – 2025)**. Led research on *Design and Implementation of Networking System Technology for Software-Defined Infrastructure*, NRF.
  - **Head Research Assistant (2019 – 2020)**. Led research on *KAIST Open Energy Cloud Platform (OECP)*, NRF.

- **KAIST** — Republic of Korea
  Teaching Assistant — *2017 – 2022, 2024*
  - **Introduction to Computer Networks (CS341)**. Taught and developed KENS (KAIST Educational Network System) project assignments. Worked on extending KENS for memory safety, build system, development environment, and teaching ecosystem.
  - **Distributed Algorithms and Systems (CS443)**. Taught Raft consensus algorithm project assignments.
  - **Graduate Operating Systems (CS530)**. Taught operating system project assignments based on OSv unikernel.

- **Institute of Language and Information Studies, Yonsei University** — Republic of Korea
  Technical Assistant and Software Developer — *2013 – 2017*
  - **Yonsei Corpus Searcher**. Developed efficient a search-filter-sort application for the Yonsei Korean corpus.
  - **Yonsei Dictionary Searcher**. Developed efficient web-based and .net-based search applications for the Yonsei Korean dictionary.
  - **Dictionary searcher for the National Institute of Korean Language**. Developed a dictionary search web application for Korean language.
  - **TOPIK Word Searcher for National Institute for International Education**. Developed an education-level-based dictionary search application used for TOPIK (Test Of Proficiency In Korean).

RESEARCH INTEREST

My broad research interests are:

- **Virtualization**: NPU Virtualization, Unikernels, MicroVM, and Containers

- **Networking**: Networking/System support for NPUs, RDMA, Programmable NICs, and AI for Networking

- **Datacenter**: Resource Disaggregation, Microsecond-Scale Systems, and AI for Systems

Awards and Honors

- **Postdoctoral Fellowship Program (KRW 60,000,000)** NRF
  Selected as a PI of Postdoctoral Fellowship Program granted by National Research Foundation of Korea. *Sep. 2025*

- **SIGCOMM '23 Travel Grants (USD 1,500)** ACM SIGCOMM
  Awarded for travel to present at the ACM SIGCOMM 2023 conference. *Sep. 2023*

- **Best Paper Award** APNet'23
  Awarded for the paper "Host Efficient Networking Stack Utilizing NIC DRAM". *Jun. 2023*

- **Best TA Award** KAIST
  Awarded for teaching the class Introduction to Computer Networks (CS341). *Jul. 2021*

- **Awarded High Honors (Top 3%)** Yonsei University
  Awarded for outstanding performance in coursework. *Aug. 2016 and Feb. 2017*

- **The National Scholarship for Science and Engineering** Korea Student Aid Foundation
  Awarded for outstanding performance in coursework. *Dec. 2015 and Sep. 2016*

- **Yonsei Internal Scholarship** Yonsei University
  Awarded for outstanding performance in coursework. *Sep. 2015 and Mar. 2016*

- **Awarded Honors (Top 10%)** Yonsei University
  Awarded for outstanding performance in coursework. *Feb. 2015, Aug. 2015, and Feb. 2016*

- **Korea Telecom Scholarship** Korea Telecom
  Awarded for outstanding performance in coursework. *Aug. 2015*

Publications

- **Wonsup Yoon** and Sue Moon. Secure and Efficient RDMA NIC Cryptography Offloading for Memory Disaggregation. In *Proceedings of the ACM on Networking 3, CoNEXT4.* 2025.

- **Wonsup Yoon**, Jisu Ok, Sue Moon, and Youngjin Kwon. Adios to Busy-Waiting for Microsecond-scale Memory Disaggregation. In *Proceedings of the Twentieth European Conference on Computer Systems.* 2025.

- Gangmin Lee, **Wonsup Yoon**, and Sue Moon. Dynamic Dispatcher Assignment With Flat-Combining. In *Proceedings of the Twentieth European Conference on Computer Systems (Poster Session) (EuroSys '25 Posters).* 2025.

- Jisu Ok, **Wonsup Yoon**, and Sue Moon. Poster: Pushing RDMA into Milliseconds RTT Communication. In *Proceedings of the 20th International Conference on emerging Networking EXperiments and Technologies (Poster Session) (CoNEXT '24 Posters).* 2024.

- **Wonsup Yoon**, Jisu Ok, Sue Moon, and Youngjin Kwon. Poster: Designing a Memory Disaggregation System for Cloud. In *Proceedings of the ACM SIGCOMM 2023 Conference Posters and Demos (SIGCOMM '23 Posters and Demos).* 2023.

- Byeongkeon Lee, Donghyeon Lee, Jisu Ok, **Wonsup Yoon**, and Sue Moon. Host Efficient Networking Stack Utilizing NIC DRAM. In *Proceedings of the 7th Asia-Pacific Workshop on Networking (APNet).* 2023.

- **Wonsup Yoon**, Jisu Ok, Jinyoung Oh, Sue Moon, and Youngjin Kwon. DiLOS: Do Not Trade Compatibility for Performance in Memory Disaggregation. In *Proceedings of the Eighteenth European Conference on Computer Systems (EuroSys).* 2023.

- **Wonsup Yoon**, Jinyoung Oh, Jisu Ok, Sue Moon, and Youngjin Kwon. DiLOS: adding performance to paging-based memory disaggregation. In *Proceedings of the 12th ACM SIGOPS Asia-Pacific Workshop on Systems (APSys).* 2021.

- **Wonsup Yoon**, Jinyoung Oh, Sue Moon, and Youngjin Kwon. Accelerating disaggregated data centers using unikernel. In *Proceedings of the ACM SIGCOMM 2020 Conference Posters and Demos (SIGCOMM '20 Posters and Demos).* 2020.

- Keunhong Lee, Jeehoon Kang, **Wonsup Yoon**, Joongi Kim, and Sue Moon. Enveloping Implicit Assumptions of Intrusive Data Structures within Ownership Type System. In *Proceedings of the 10th Workshop on Programming Languages and Operating Systems (PLOS@SOSP).* 2019.

Invited Talks

- **Adios to Busy-Waiting for Microsecond-scale Memory Disaggregation** KIISE KCC
  Invited for the top conference session. *2025*

- **Efficient Memory Disaggregation Systems Using Unikernel** KIISE KCC
  Invited for the doctorial forum. *2024*

- **DiLOS: Do Not Trade Compatibility for Performance in Memory Disaggregation** KIISE KCC
  Invited for the top conference session. *2024*

- **DiLOS: Do Not Trade Compatibility for Performance in Memory Disaggregation** Samsung GTS
  Invited for the Samsung Global Technology Symposium. *2023*

- **Designing a Latency-Optimized Scheduler for Memory Disaggregation** EuroDW
  Invited for the 17th EuroSys doctoral workshop. *2023*

Professional Activities

- **EuroSys'22 Shadow PC** EuroSys
  Served as a member of a shadow PC. *2022*