Gyuyeong Kim, Ph.D.

Assistant Professor
Department of Computer Engineering
Sungshin Women's University
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https://gyuyeongkim.github.io/

RESEARCH INTERESTS	Networked systems, Distributed systems, Data center networking, LLMs for networking and systems

EDUCATION

Ph.D. in Computer Science, **Korea University**, South Korea — Mar. 2012 - Feb. 2020
- Dissertation: Buffer Sharing Mechanisms for Data Center Networks
- Advisor: Prof. Wonjun Lee

B.S. in Computer Science, **Korea University**, South Korea — Mar. 2008 - Feb. 2012
- Interdisciplinary major: Brain and Cognitive Sciences

Exchange Student, **Lund University**, Sweden — Jan. 2011 - Jun. 2011

EMPLOYMENT HISTORY

Assistant Professor, Dept. of Computer Eng., Sungshin Women's University — Mar. 2022 - Present
Research Professor, Future Network Center, Korea University — Mar. 2020 - Mar. 2022
Lecturer, Department of Information Security, Seoul Women's University — Mar. 2021 - Aug. 2022
Lecturer, School of Cybersecurity, Korea University — Sept. 2019 - Feb. 2020

CONFERENCE PUBLICATIONS

1. Jiyoon Bang and **Gyuyeong Kim**, "Network-Accelerated Multiget Coordination for Distributed Key-Value Stores," in *Proc. of The 25th IEEE International Symposium on Cluster, Cloud, and Internet Computing* (**CCGrid 2025**), Tromsø, Norway, May 2025. (Acceptance rate: 25.1%=55/219)

2. **Gyuyeong Kim**, "Pushing the Limits of In-Network Caching for Key-Value Stores," in *Proc. of 22nd USENIX Symposium on Networked Systems Design and Implementation* (**NSDI 2025**), Philadelphia, PA, USA, April 2025. (Acceptance rate: 12.4%=83/666)

3. **Gyuyeong Kim**, "NetClone: Fast, Dynamic Request Cloning for Microsecond-Scale RPCs," in *Proc. of 37th Annual Conference of the ACM Special Interest Group on Data Communication* (**SIGCOMM 2023**), New York, NY, USA, September 2023. (Acceptance rate: 21.9%=71/323)

4. **Gyuyeong Kim** and Wonjun Lee, "In-Network Leaderless Replication for Distributed Data Stores," in *Proc. of 48th International Conference on Very Large Data Bases* (**VLDB 2022**), Sydney, Australia, September 2022. (Acceptance rate: 25.1%=189/751)

5. **Gyuyeong Kim** and Wonjun Lee, "Protocol-Independent Service Queue Isolation for Multi-Queue Data Centers," in *Proc. of the 40th IEEE International Conference on Distributed Computing Systems* (**ICDCS 2020**), Singapore, December 2020. (Acceptance rate: 17.9%=105/584)

6. **Gyuyeong Kim** and Wonjun Lee, "Service Function Chaining on Programmable Data Plane," in *Proc. of the 5th International Conference On Consumer Electronics Asia* (ICCE-Asia 2020), Busan, South Korea, November 2020.

7. **Gyuyeong Kim** and Wonjun Lee, "Stable Matching with Ties for Cloud-assisted Smart TV Services," in *Proc. of the 14th IEEE International Conference on Consumer Electronics* (ICCE 2014), Las Vegas, NV, January 2014.

8. **Gyuyeong Kim** and Wonjun Lee, "Cannot Take My Allocation: Enforcing Fairness by Considering Demand and Payment in Clouds," in *Proc. of the 4th International Conference on Network of the Future* (NoF 2013), Pohang, South Korea, October 2013.

9. **Gyuyeong Kim**, Hoorin Park, Jieun Yu, and Wonjun Lee, "Virtual Machines Placement for Network Isolation in Clouds," in *Proc. of 2012 Research in Applied Computation Symposium* (RACS 2012), San Antonio, TX, October 2012.

JOURNAL PUBLICATIONS

1. **Gyuyeong Kim**, "Dalio: In-Kernel Centralized Replication for Key-Value Stores," *IEICE Transactions on Information and Systems*, Vol. E108-D, No. 2, pp. 157-160, February 2025.

2. **Gyuyeong Kim**, "Switch-based Quorum Coordination for Low Tail Latency in Replicated Storage," *IEICE Transactions on Information and Systems*, Vol. E106-D, No. 11, pp. 1922-1925, November 2023.

3. **Gyuyeong Kim**, "Holistic In-Network Acceleration for Heavy-tailed Storage Workloads," *IEEE Access*, Vol. 11, pp. 77416-77428, July 2023.

4. **Gyuyeong Kim** and Wonjun Lee, "DynaQ: Enabling Protocol-Independent Service Queue Isolation in Cloud Data Centers," *IEEE Transactions on Cloud Computing* (**TCC**), Vol. 11, No. 1, pp. 704-715, January/March 2023.

5. **Gyuyeong Kim** and Wonjun Lee, "LossPass: Absorbing Microbursts by Packet Eviction for Data Center Networks," *IEEE Transactions on Cloud Computing* (**TCC**), Vol. 10, No. 4, pp. 2717-2728, October/December 2022.

6. **Gyuyeong Kim** and Wonjun Lee, "Network Policy Enforcement with Commodity Multiqueue NICs for Multi-Tenant Data Centers," *IEEE Internet of Things Journal* (**IoTJ**), Vol. 9, No. 8, pp. 6252-6263, April 2022.

7. **Gyuyeong Kim** and Wonjun Lee, "Enabling Service Queue Isolation in Multi-Tenant Data Centers," *IEEE Communications Letters*, Vol. 23, No. 11, pp. 1949-1952, November 2019.

8. **Gyuyeong Kim** and Wonjun Lee, "Absorbing Microbursts without Headroom for Data Center Networks," *IEEE Communications Letters*, Vol. 23, No. 5, pp. 806-809, May 2019.

9. **Gyuyeong Kim** and Wonjun Lee, "Tardy Flow Scheduling in Data Center Networks," *IEICE Transactions on Information and Systems*, Vol. E99-D, No. 9, pp. 2400-2403, September 2016.

PROFESSIONAL ACTIVITIES

Organizing Committee
Local Organization Co-Chair, IEEE ICNP 2025
Reproducibility Co-Chair, ACM CoNEXT 2024

Technical Program Committee (TPC)
USENIX NSDI 2025
ACM CoNEXT 2025
USENIX ATC 2025 (ERC)
IEEE GLOBECOM 2025
KICS ICUFN 2025
IEEE MASS 2024
IEEE GLOBECOM 2024

Reviewer
IEEE/ACM Transactions on Networking
IEEE Transactions on Cloud Computing
IEEE Communications Letters
IEEE Networking Letters
IEEE Internet of Things Journal

GRANTS	1. Programmable In-Network Computing for Distributed Data Stores, Basic Research Program, NRF, Grant: 68,054,000 KRW Jun. 2023 - May 2024
	2. In-Network Resource Augmentation utilizing Reconfigurable Network Devices, Young Researcher Program, NRF, Grant: 294,000,000 KRW Mar. 2020 - Feb. 2023

INVITED TALKS

Towards Network-Accelerated Computing Systems in the Era of Network Programmability
CSE/GSAI Seminar Series, POSTECH, Pohang, South Korea   Mar. 19, 2025

Towards Network-Accelerated Computing Systems in the Era of Network Programmability
SoC Colloquium, KAIST, Daejeon, South Korea   Mar. 10, 2025

Towards Network-Accelerated Distributed Systems
KIISE Computer System Society Conference 2025, Pyeongchang, South Korea   Feb. 12, 2025

Leveraging Network Switches as Domain-Specific Accelerators for Distributed Storage
KIISE SWCC 2024, Seoul, South Korea   Aug. 21, 2024

Advances and Impacts of SmartNICs in Modern Datacenters
Panel Session, IEEE/IFIP NOMS 2024, Seoul, South Korea   May 8, 2024

NetClone: Fast, Scalable, and Dynamic Request Cloning for Microsecond-Scale RPCs
KIISE Korea Software Congress 2023, Busan, South Korea   Dec. 21, 2023

Network Switches as Domain-Specific Hardware for Distributed Storage
The 14th International Conference on ICT Convergence, Jeju, South Korea   Oct. 13, 2023

In-Network Acceleration for Modern Data Center Systems
CSE Seminar Series, UNIST, Ulsan, South Korea   Sept. 6, 2023

P4 Switch Architecture
SDN/NFV Forum P4 WG 2020 1st Meetup, Seoul, South Korea   Dec. 14, 2020

Tutorial: P4 SFC
SDN/NFV Forum P4 WG 2019 1st Meetup, Seoul, South Korea   Apr. 19, 2019

Service Function Chaining in P4-enabled Programmable Switches
SDN/NFV Forum P4 WG 2018 2nd Meetup, Seoul, South Korea   Oct. 12, 2018

Controller-independent Loss-aware Low Latency State Migration in Network Functions Virtualization
ONOS-P4 Brigade Work Days 2017, Seoul, South Korea   Sept. 19, 2017

HONORS AND AWARDS

Outstanding Paper Award, Korea Software Congress (KSC) 2024, KIISE	2024
IEEE Seoul Section International Student Paper Contest Bronze Paper Award	2014
Global Ph.D. Fellowship (GPF), NRF, South Korea	2012 - 2014
ACM-ICPC Seoul Regional Contest 10th Place	2009
National Collegiate Programming Contest Silver Prize, South Korea	2009
Sun Microsystems JavaFX Software Contest 3rd Prize	2009
ACM-ICPC Seoul Regional Contest Honorable Mentions	2008

TEACHING

Assistant Professor, Dept. of Computer Engineering, Sungshin Women's University
LZ000800 Computer Networks   Fall'22, Fall'23, Fall'24

LC005000 Distributed Systems	Spring'23, Spring'24, Spring'25
LZ001200 Computer Architecture	Spring'23, Spring'24, Spring'25
LC001500 Operating Systems	Fall'22
LC001900 System Programming	Spring'22
LC001200 Databases	Fall'22
LZ001400 Advanced C++ Programming	Spring'22
LZ001300 Java Programming	Spring'23, Spring'24, Spring'25
LZ004100 Advanced Java Programming	Fall'23, Fall'24
LC002200 Project Design	Fall'22
LZ004600 Convergence Capstone Design	Fall'23, Fall'24
255501 Advanced Computer Network (Graduate-level)	Fall'23
1000541 Data Center Networking (Graduate-level)	Spring'23
1000542 Networked Systems (Graduate-level)	Spring'24
258811 Distributed Processing (Graduate-level)	Fall'22

Lecturer, Dept. of Information Security, Seoul Women's University

IP01020 Computer Architecture	Spring'22
IP01019 Operating Systems	Fall'21
IP01024 Data Communication and Network	Spring'21

Research Professor, Graduate School of Cybersecurity, Korea University

IMS301 Network Theory (Graduate-level)	Spring'20, Fall'19

EDUCATIONAL SERVICES

Department Chair, Dept. of Computer Engineering, Sungshin W. University	Mar. 2023 - Feb. 2025
Appointed Admissions Officer, Sungshin W. University	Jun. 2022 - Feb. 2025
Lecturer for High School Support Program, Sungshin Women's University	Sept. 2022 - Present

1. Mokdong High School (October 2024)

2. Changmun Girls' High School (September 2024)

3. Seoul Moonyoung Girls' High School (July 2024)

4. Daewon Girls' High School (June 2024)

5. Seokgwan High School (July 2023)

6. Changmun Girl's High School (May 2023)

7. Hansung Girl's High School (December 2022)

8. Korea University High School (November 2022)

9. Hansung Girl's High School (September 2022)

ADVISING

Masters Students

1. Jiyoon Bang (5th-year M.S., Fall'22 - Fall'24)
   - IEEE CCGrid 2025 1st author
   - ACM SIGCOMM 2022 Travel Grant

2. Jihyun Lee (5th-year M.S., Fall'22 - Fall'24)
   - KIISE KSC 2024 1st author (Outstanding Paper Award)

3. Yuje Tak (M.S., Spring'24 - Present)
   - NRF M.S. Research Grant, 2024

4. Jeongeun Kim (5th-year M.S., Fall'23 - Present)
   - ETRI Internship, 2023

5. Eunjae Jo (M.S., Spring'25 - Present)

6. Nakyung Lee (5th-year M.S., Fall'24 - Present)
   - ETRI Internship, 2024

Undergraduate Interns
1. Eunjae Jo (Winter'23)

2. Nakyung Lee (Winter'23)

3. Junhee Kim (Winter'23)

4. Suhyen Im (Summer'23)

5. Jeongeun Kim (Summer'23)

6. Dagyung Han (Winter'22)

7. Subin Park (Winter'22)

8. Gaeun Seo (Winter'22)

9. Yoojin Song (Spring'22 - Winter'22)
   - KIISE KSC 2022 1st author

10. Jisoo Hwang (Spring'22 - Winter'22)
    - KIISE KSC 2022 1st author

REMARKS   During my undergraduate, I developed KLUE (Korea University Lecture Evaluation, http://klue.kr), a lecture rating service for Korea University. In 2025, KLUE has 500K+ evaluation data and 60K+ members. Most students at Korea University use this service.
- Brief history: In Feb. 2010, upon the request of the 43rd Student Council, three KWEB student club members (including me) began a development project. Our team was in charge of the whole planning and development. The service was run by the student council as planned. However, in November 2010, the service was terminated provisionally due to an incident in which the student council violated the personal information handling policy. In January 2011, I revived the service and became the president. The 44-46th Student Councils supported server costs until we achieved financial self-sufficiency. I ran the service until February 2015. Since March 2015, KLUE has been run by KWEB members.(https://kwebofficial.com/). My experience developing and operating KLUE led me to explore networked systems during my Ph.D. journey.