Gyuyeong Kim, Ph.D.
Assistant Professor
Department of Computer Engineering
Sungshin Women's University
gykim@sungshin.ac.kr
https://gyuyeongkim.github.io/

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

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
- Faculty of Engineering (Lund Tekniska Högskola, LTH)

EMPLOYMENT HISTORY

Assistant Professor, Sungshin Women's University — Mar. 2022 - Present
Research Professor, Korea University — Mar. 2020 - Mar. 2022

CONFERENCE PUBLICATIONS

1. [**eBPF'25**] **Gyuyeong Kim** and Dongsu Han, "A Memory Pool Allocator for eBPF Applications," in *Proc. of the ACM SIGCOMM 2025 Workshop on eBPF and Kernel Extensions*, Coimbra, Portugal, September 2025.
2. [**CCGrid'25**] 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*, Tromsø, Norway, May 2025. (Acceptance rate: 25.1%=55/219)
3. [**NSDI'25**] **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*, Philadelphia, PA, USA, April 2025. (Acceptance rate: 12.4%=83/666)
4. [**SIGCOMM'23**] **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*, New York, NY, USA, September 2023. (Acceptance rate: 21.9%=71/323)
5. [**VLDB'22**] **Gyuyeong Kim** and Wonjun Lee, "In-Network Leaderless Replication for Distributed Data Stores," in *Proc. of 48th International Conference on Very Large Data Bases*, Sydney, Australia, September 2022. (Acceptance rate: 25.1%=189/751)
6. [**ICDCS'20**] **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*, Singapore, December 2020. (Acceptance rate: 17.9%=105/584)
7. [**ICCE-Asia'20**] **Gyuyeong Kim** and Wonjun Lee, "Service Function Chaining on Programmable Data Plane," in *Proc. of the 5th International Conference On Consumer Electronics Asia*, Busan, South Korea, November 2020.
8. [**ICCE'14**] **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*, Las Vegas, NV, January 2014.
9. [**NoF'13**] **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*, Pohang, South Korea, October 2013.

10. [**RACS'12**] **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*, San Antonio, TX, October 2012.

JOURNAL PUBLICATIONS

1. [**IECE**] **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. [**IECE**] **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. [**ACCESS**] **Gyuyeong Kim**, "Holistic In-Network Acceleration for Heavy-tailed Storage Workloads," *IEEE Access*, Vol. 11, pp. 77416-77428, July 2023.
4. [**TCC**] **Gyuyeong Kim** and Wonjun Lee, "DynaQ: Enabling Protocol-Independent Service Queue Isolation in Cloud Data Centers," *IEEE Transactions on Cloud Computing*, Vol. 11, No. 1, pp. 704-715, January/March 2023.
5. [**TCC**] **Gyuyeong Kim** and Wonjun Lee, "LossPass: Absorbing Microbursts by Packet Eviction for Data Center Networks," *IEEE Transactions on Cloud Computing*, Vol. 10, No. 4, pp. 2717-2728, October/December 2022.
6. [**IoTJ**] **Gyuyeong Kim** and Wonjun Lee, "Network Policy Enforcement with Commodity Multiqueue NICs for Multi-Tenant Data Centers," *IEEE Internet of Things Journal*, Vol. 9, No. 8, pp. 6252-6263, April 2022.
7. [**CL**] **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. [**CL**] **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. [**IECE**] **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
USENIX NSDI 2025
ACM CoNEXT 2025
USENIX ATC 2025 (ERC)
IEEE MASS 2025
IEEE GLOBECOM 2025
KICS ICUFN 2025
IEEE MASS 2024
IEEE GLOBECOM 2024

External Reviewer
IEEE/ACM IWQoS 2025
IEEE CLOUD 2025

Reviewer
IEEE/ACM Transactions on Networking
IEEE Transactions on Cloud Computing

GRANTS

벡터 RAG 기반 생성형 AI를 위한 NIC 중심 호스트 네트워킹 기술 Mar. 2025 - Feb. 2030
NIC-Centric Host Networking Technologies for Vector RAG-Powered Generative AI
Young Researcher Program(우수신진연구-글로벌협력), NRF, Grant: KRW 1,308,770,000
International Collaborator: Dr. Zhuolong Yu at Microsoft, USA

분산 데이터저장소를 위한 프로그래머블 인-네트워크 컴퓨팅 기술 Jun. 2023 - May 2024
Programmable In-Network Computing for Distributed Data Stores
Basic Research Program(기본연구), NRF, Grant: KRW 68,054,000

가변형 네트워크 디바이스를 활용한 인네트워크 자원 증강 기술 Mar. 2020 - Feb. 2023
In-Network Resource Augmentation utilizing Reconfigurable Network Devices
Young Researcher Program(우수신진연구), NRF, Grant: KRW 294,000,000

INVITED TALKS

In-Kernel Offloading with eBPF/XDP for High-Performance Networked Systems
KRNET 2025, Seoul, South Korea Jun. 23, 2025

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

HONORS AND AWARDS

Outstanding Paper Award, Korea Software Congress (KSC) 2024, KIISE 2024
Global Ph.D. Fellowship (글로벌박사펠로우십), NRF, South Korea 2012 - 2014
IEEE Seoul Section International Student Paper Contest Bronze Paper Award 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, Fall'25

LC005000 Distributed Systems	Spring'23, Spring'24, Spring'25 (**English**)
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, Fall'25
LC002200 Project Design	Fall'22
LZ004600 Convergence Capstone Design	Fall'23, Fall'24, Fall'25
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 (학과장), Sungshin Women's University	Mar. 2023 - Feb. 2025
Appointed Admissions Officer (입학사정관), Sungshin Women's University	Jun. 2022 - Feb. 2025

STUDENT ADVISING

Masters Students

1. Jiyoon Bang (5th-year M.S., Fall'22 - Fall'24)
   - The 1st author of the CCGrid 2025 paper
   - SIGCOMM 2022 Travel Grant
2. Jihyun Lee (5th-year M.S., Fall'22 - Fall'24)
   - The 1st author of the KIISE KSC 2024 paper (Outstanding Paper Award)
3. Yuje Tak (M.S., Spring'24 - Present)
   - NRF M.S. Research Encouragement 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. Subin Cho (Winter'24 - Present)
2. Minseon Jeon (Winter'24 - Present)
3. Eunjae Jo (Winter'23)
4. Nakyung Lee (Winter'23)
5. Junhee Kim (Winter'23)
6. Yuje Tak (Summer'23 - Fall'23)
7. Suhyen Im (Summer'23)

8. Jeongeun Kim (Summer'23)
9. Dagyung Han (Winter'22)
10. Subin Park (Winter'22)
11. Gaeun Seo (Winter'22)
12. Yoojin Song (Spring'22 - Winter'22)
13. Jisoo Hwang (Spring'22 - Winter'22)

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.