

Gyuyeong Kim, Ph.D.

Assistant Professor
Department of Computer Engineering
Sungshin Women's University
gykim@sungshin.ac.kr
<https://gyuyeongkim.github.io/>

RESEARCH INTERESTS

Networked systems, Distributed systems, Networking stack, In-network computing

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, 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

GRANTS

- 분산 데이터저장소를 위한 프로그래머블 인-네트워크 컴퓨팅 기술, Programmable In-Network Computing for Distributed Data Stores, Basic Research Program (**기본연구**), NRF, Grant: 68,054,000 KRW Jun. 2023 - May 2024
- 가변형 네트워크 디바이스를 활용한 인네트워크 자원 증강 기술, In-Network Resource Augmentation utilizing Reconfigurable Network Devices, Young Researcher Program (**우수신진연구**), NRF, Grant: 294,000,000 KRW Mar. 2020 - Feb. 2023

CONFERENCE PUBLICATIONS

- 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: 21.98%=71/323).
- 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.
- 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: 17.98%=105/508)
- 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.
- 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.
- 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.

- 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

- 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.
- Gyuyeong Kim, "Holistic In-Network Acceleration for Heavy-tailed Storage Workloads," *IEEE Access*, Vol. 11, pp. 77416-77428, July 2023.
- 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.
- 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.
- 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.
- Gyuyeong Kim and Wonjun Lee, "Enabling Service Queue Isolation in Multi-Tenant Data Centers," *IEEE Communications Letters (CL)*, Vol. 23, No. 11, pp. 1949-1952, November 2019.
- Gyuyeong Kim and Wonjun Lee, "Absorbing Microbursts without Headroom for Data Center Networks," *IEEE Communications Letters (CL)*, Vol. 23, No. 5, pp. 806-809, May 2019.
- 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 Technical Program Committee (TPC) ACTIVITIES

IEEE MASS 2024

Reviewer

IEEE/ACM Transactions on Networking (ToN)

IEEE Transactions on Cloud Computing (TCC)

IEEE Communications Letters (CL)

IEEE Networking Letters

IEEE Open Journal of the Communications Society

IEEE Internet of Things Journal

ETRI Journal

INVITED TALKS

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

Ulsan National Institute of Science and Technology (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	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

REMARKS	Co-founder and President, KLUE (Korea University Lecture Evaluation) Apr. 2010 - Feb. 2015
	- KLUE (http://klue.kr) is a lecture rating service for Korea University whose sources are based on student feedback. KLUE has 500K+ evaluation data with 50K+ members now. Most students at Korea University use this service.
	- Brief history: In Feb. 2010, upon the request of the 43rd Student Council, 3 (Dojung Kim, Ilchan Seo, and me) of the KWEB student club 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 44th, 45th, and 46th Student Councils generously provided support for server costs until we achieved financial self-sufficiency. KLUE is currently run by KWEB members (https://kwebofficial.com/). The experience in developing and operating KLUE led me to explore networked systems during my Ph.D.