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Minwoo Joo
Research Professor

Academic Backgrounds

2013–2021 **Doctor of Philosophy (Ph.D.) in Computer Science and Engineering**, Department of Computer Science and Engineering, College of Informatics, Graduate School, **Korea University**, Seoul, Republic of Korea.
– Dissertation Title: Autonomous Networking for Web Quality of Experience
– Academic Advisor: Professor Wonjun Lee
– Overall GPA: 4.33/4.50

2009–2013 **Bachelor of Science (B.S.) (*Top Honors*) in Computer and Communication Engineering**, Division of Computer and Communication Engineering, College of Information and Communications, **Korea University**, Seoul, Republic of Korea.
– Overall GPA: 4.30/4.50

Positions Held

2021–2022 **Research Professor**, Future Network Center (FNC), School of Cybersecurity, **Korea University**, Seoul, Republic of Korea.

Research Interests

○ Autonomous Networking
○ Web Quality of Experience
○ Next-generation Transport Protocols
○ Deep Learning
○ Wireless Networks

Research Experiences

2021–2022 **Postdoctoral Researcher**, *Ambient Wi-Fi Backscatter Networking*, Individual Research: Mid-Career Researcher Program, National Research Foundation of Korea (NRF), Ministry of Science and ICT, Republic of Korea.

2017–2020 **Project Leader**, *aSTEAM: App-Specialized Transport for Evolavability, Autonomicity, and Measurability*, Next-Generation Information Computing Development Program, National Research Foundation of Korea (NRF), Ministry of Science and ICT, Republic of Korea.

2015–2016 **Researcher**, *Development of Smart Wearable Software Technology based on IoT for Safe Wellbeing*, Information Technology Research Center (ITRC), Institute for Information & communications Technology Promotion (IITP), Ministry of Science, ICT and Future Planning, Republic of Korea.

2014–2015 **Researcher**, *SmartTV 2.0 Software Platform*, Development of Source Technologies for Software and Computer Industries, Institute for Information & communications Technology Promotion (IITP), Ministry of Science, ICT and Future Planning, Republic of Korea.

2013–2014 **Principal Investigator**, *A Cross-Layer Design for Stream Shaping in Mobile Heterogeneous Networks*, Global Ph.D. Fellowship (GPF) Program, National Research Foundation of Korea (NRF), Ministry of Science, ICT and Future Planning, Republic of Korea.

Awards & Honors

- **Outstanding Paper Award**, *Korea Computer Congress 2021*, KIISE, June 2021.
  - Paper Title: Feature Analysis of Encrypted Traffic for Network-level Tracker Detection
- **KU Achievement Award**, *2020 KU Graduate School Achievement Award*, Graduate School, Korea University, February 2021.
- **Outstanding Paper Award**, *Korea Software Congress 2020*, KIISE, December 2020.
  - Paper Title: UHF RFID Tag Fingerprint Extraction and Identification Using Time-domain Features
- **Outstanding Paper Award**, *Journal of KIISE*: *Information Networking*, KIISE, July 2020.
  - Paper Title: Deep Reinforcement Learning Based Multipath Packet Scheduling
- **Outstanding Paper Award**, *Korea Software Congress 2018*, KIISE, December 2018.
  - Paper Title: Deep Reinforcement Learning Based Packet Scheduler in Multipath Transport
- **Rising Star Award**, *The 9th Student of the Year* (*SOTY*) *Award Ceremony*, Network and Security Research Lab., Korea University, March 2018.
- **Distinguished Service Award**, *The 8th Student of the Year* (*SOTY*) *Award Ceremony*, Network and Security Research Lab., Korea University, January 2017.
- **Project Award**, *The 5th Student of the Year* (*SOTY*) *Award Ceremony*, Network and Security Research Lab., Korea University, January 2014.
- **Global Ph.D. Fellowship (GPF)**, National Research Foundation of Korea (NRF), 2013-2014.
- **National Science and Engineering Scholarship**, KOrea Student Aid of Foundation (KOSAF), 2009-2013.

Publications

International Journal & Conference Publications

- Dongkeun Lee, **Minwoo Joo**, and Wonjun Lee, "Qrator: An Interest-aware Approach to ABR Streaming Based on User Engagement," accepted for publication in *IEEE Systems Journal*, March 2022.
  (2020 JCR I/F: 3.931; Top 23.08% Impact Factor in Engineering, Electrical & Electronic)
- **Minwoo Joo**, Yeonoh An, Heejun Roh, and Wonjun Lee, "Predictive Prefetching Based on User Interaction for Web Applications," *IEEE Communications Letters*, vol. 25, no. 3, pp. 821-824, March 2021.
  (2020 JCR I/F: 3.436; Top 37.36% Impact Factor in Telecommunications)

- **Minwoo Joo** and Wonjun Lee, "WebProfiler: User Interaction Prediction Framework for Web Applications," *IEEE Access*, vol. 7, no. 1, pp. 154946-154958, December 2019.
  (2020 JCR I/F: 3.367; Top 34.43% Impact Factor in Engineering, Electrical & Electronic)

Domestic Journal & Conference Publications

- Dongkeun Lee, **Minwoo Joo**, and Wonjun Lee, "Network-level Tracker Detection Using Features of Encrypted Traffic," *Journal of KIISE*: *Information Networking*, vol. 49, no. 4, pp. 314-320, April 2022.

- Yoonseo Kim, Hoorin Park, **Minwoo Joo**, and Wonjun Lee, "UHF RFID Tag Identification Method Based on Physical-layer Features of Backscatter Networks," *Journal of KIISE*: *Information Networking*, vol. 48, no. 9, pp. 1061-1067, September 2021.

- Dongkeun Lee, **Minwoo Joo**, and Wonjun Lee, "Feature Analysis of Encrypted Traffic for Network-level Tracker Detection," in *Proceedings of the KIISE Korea Computer Congress 2021* (*KIISE KCC2021*), Jeju, Republic of Korea, June 2021, pp. 1-3.
  (Selected as an Outstanding Paper Award)

- Yoonseo Kim, Hoorin Park, **Minwoo Joo**, and Wonjun Lee, "UHF RFID Tag Fingerprint Extraction and Identification Using Time-domain Features," in *Proceedings of the KIISE Korea Software Congress 2020* (*KIISE KSC2020*), Pyeongchang, Republic of Korea, December 2020, pp. 1-3.
  (Selected as an Outstanding Paper Award)

- Dongkeun Lee, **Minwoo Joo**, and Wonjun Lee, "User Engagement Based Adaptive Streaming Using Timestamps in Video Comments," in *Proceedings of the KIISE Korea Software Congress 2020* (*KIISE KSC2020*), Pyeongchang, Republic of Korea, December 2020, pp. 1-3.

- Seoungbin Bae, **Minwoo Joo**, and Wonjun Lee, "Secure Key Exchange Method via Ill-conditioned Inverse Matrix in Wireless Local Area Networks," in *Proceedings of the KIISE Korea Software Congress 2020* (*KIISE KSC2020*), Pyeongchang, Republic of Korea, December 2020, pp. 1-3.

- **Minwoo Joo**, Wonwoo Jang, and Wonjun Lee, "Deep Reinforcement Learning Based Multipath Packet Scheduling," *Journal of KIISE*: *Information Networking*, vol. 46, no. 7, pp. 714-719, July 2019.
  (Selected as an Outstanding Paper Award)

- **Minwoo Joo**, Wonwoo Jang, and Wonjun Lee, "Deep Reinforcement Learning Based Packet Scheduler in Multipath Transport," in *Proceedings of the KIISE Korea Software Congress 2018* (*KIISE KSC2018*), Pyeongchang, Republic of Korea, December 2018, pp. 1079-1081.
  (Selected as an Outstanding Paper Award)

Patents

- Wonjun Lee and **Minwoo Joo**, "Method and Server for Predicting User Interaction for Web Applications," *Korea Patent Application Number. 10-2019-0150517*, November 21, 2019; *Korea Patent Number. 10-2278814*, July 13, 2021.

- Wonjun Lee, **Minwoo Joo**, and Wonwoo Jang, "System for Multipath Packet Scheduling Method Therefor," *Korea Patent Application Number. 10-2019-0145873*, November 14, 2019; *Korea Patent Number. 10-2208877*, January 22, 2021.

Software Registrations

○ Wonjun Lee, **Minwoo Joo,** and Yeonoh An, "Predictive Prefetching Program Based on User Interaction," *Software Registration No. C-2020-018637,* June 4, 2020.

○ Wonjun Lee and **Minwoo Joo**, "Web Interaction Data Preprocessing Program for Navigation Prediction," *Software Registration No. C-2019-023548,* August 26, 2019.

○ Wonjun Lee and **Minwoo Joo**, "User Interaction Data Collection Program for Web Applications," *Software Registration No. C-2019-023547,* August 26, 2019.

○ Wonjun Lee, **Minwoo Joo**, and Wonwoo Jang, "Deep Reinforcement Learning Program for Packet Scheduling," *Software Registration No. C-2019-001477,* January 14, 2019.

○ Wonjun Lee, **Minwoo Joo,** and Wonwoo Jang, "Multipath Packet Scheduling Program Based on Deep Reinforcement Learning," *Software Registration No. C-2019-001476,* January 14, 2019.

Teaching Experiences

2018 Spring	**Chief TA**, Computer Networks, Korea University, Seoul, Republic of Korea.
2017 Fall	**Chief TA**, Wireless Mobile Communications Networks, Korea University, Seoul, Republic of Korea.
2017 Spring	**Chief TA**, Computer Networks, Korea University, Seoul, Republic of Korea.
2016 Fall	**Chief TA**, Object-Oriented Programming, Korea University, Seoul, Republic of Korea.
2015 Fall	**TA**, Wireless Mobile Communications, Korea University, Seoul, Republic of Korea.
2015 Spring	**TA**, Computer Networks, Korea University, Seoul, Republic of Korea.
2014 Fall	**TA**, Computer Networks, Korea University, Seoul, Republic of Korea.
2014 Spring	**TA**, Wireless Mobile Communications, Korea University, Seoul, Republic of Korea.
2013 Fall	**Chief TA**, Computer Networks, Korea University, Seoul, Republic of Korea.
2013 Spring	**TA**, Wireless Mobile Communications, Korea University, Seoul, Republic of Korea.

Version: May 26, 2022.