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Biography

Taewon Song received the B.S. and Ph.D. degrees in electrical engineering from Korea University, Seoul, South Korea, in 2010 and 2017, respectively. In 2026, he joined Dongguk University, where he is currently an assistant professor at the Division of Electronics and Electrical Engineering. From 2021 to 2026, he was an assistant professor at the Department of IoT, Soonchunhyang University. From 2017 to 2020, he was a senior researcher at the Advanced Standard R&D Laboratory, LG Electronics, where he worked on standardization for wake-up radio and next-generation WLANs. He was a visiting researcher supported by the BK21+ project with the University of Florida from February 2015 to April 2015. From January 2012 to February 2012, he was a visiting researcher supported by the National Research Foundation of Korea at the National Institute of Information and Communications Technology. His current research interests include AI-empowered networking, low-power wake-up radio, and the wireless medium access control protocol of next-generation WLANs.

Employment and Experience History

2026. 3. – Current
Assistant Professor,
Division of Electronics and Electrical Engineering, Dongguk University

2021. 3. – 2026. 2.
Assistant Professor,
Department of IoT, College of SW Convergence, Soonchunhyang University

2020. 9. – 2021. 2.
Research Assistant Professor,
SCH Convergence Science Institute, Soonchunhyang University

2017. 2. – 2020. 9.
Senior Researcher,
C&M Standard Lab., Chief Technology Officer, LG Electronics

2014. 12. – 2015. 2.
Visiting Researcher,
University of Florida, Gainesville, Florida, USA

2012. 1. – 2012. 2.
Visiting Researcher,
Network Architecture Group, National Institute of Information and Communications Technology (NICT), Japan

Education

2010 – 2017
Ph.D., in Electronics, Electrical and Computer Engineering, Korea University
"Opportunistic and Decentralized Algorithms for Improving Performance in Wireless LANs"
Advisor: *Sangheon Pack*

2003 – 2006
B.S., in Electronics, Electrical and Computer Engineering, Korea University

Research Publications

International Journal Articles

1. Y. Kim, B. Kim, **T. Song***, and H. Ko*, "Neighbor-aware Shared Container Instance Warming Framework for Serverless Edge Computing," *Future Generation Computer Systems*, vol. 174, p. 107 986, 2026, ISSN: 0167-739X. DOI: https://doi.org/10.1016/j.future.2025.107986.

2. W.-H. Lee, M. Ozger, U. Challita, and **T. Song***, "Denoising-Autoencoder-Aided Euclidean Distance Matrix Reconstruction for Connectivity-Based Localization: A Low-Rank Perspective," *Applied Sciences*, vol. 15, no. 5, p. 2656, 2025. DOI: 10.3390/app15052656.

3. W.-H. Lee and **T. Song***, "CGSS: A New Framework of Compressed Sensing Based on Geometric Sequential Representation Against Insufficient Observations," *IEEE Internet of Things Journal*, vol. 11, no. 18, pp. 29 993–30 003, 2024. DOI: 10.1109/JIOT.2024.3410328.

4. V. Tilwari, **T. Song***, U. Nandini, V. Sivasankaran, and S. Pack, "A Multi-criteria Aware Integrated Decision Making Routing Protocol for IoT Communication Toward 6G Networks," *Springer Wireless Networks*, vol. 30, pp. 3321–3335, 2024. DOI: 10.1007/s11276-024-03739-9.

5. **T. Song*** and Y. Kyung, "Deep-Reinforcement-Learning-Based Age-of-Information-Aware Low-Power Active Queue Management for IoT Sensor Networks," *IEEE Internet of Things Journal*, vol. 11, no. 9, pp. 16 700–16 709, 2024. DOI: 10.1109/JIOT.2024.3355410.

6. Y. Kyung, E. Kim, and **T. Song***, "Opportunistic Offloading Scheme for Content Delivery Service using Electro-mobility Networks," *IET Intelligent Transport Systems*, vol. 18, no. 4, pp. 591–598, 2024. DOI: 10.1049/itr2.12255.

7. Y. Kyung, J. Sung, H. Ko, **T. Song***, and Y. Kim*, "Priority-Aware Actuation Update Scheme in Heterogeneous Industrial Networks," *Sensors*, vol. 24, no. 2, p. 357, 2024, ISSN: 1424-8220. DOI: 10.3390/s24020357.

8. **T. Song*** and W.-H. Lee, "HARE: Hybrid ARQ-Based Adaptive Retransmission Control Scheme for Synchronous Multi-Link in Wireless LANs," *IEEE Transactions on Vehicular Technology*, vol. 72, no. 8, pp. 10 302–10 313, 2023. DOI: 10.1109/TVT.2023.3257424.

9. J. Yun, D. Kim, D. M. Kim, **T. Song***, and J. Woo, "GAN-based sensor data augmentation: Application for counting moving people and detecting directions using PIR sensors," *Engineering Applications of Artificial Intelligence*, vol. 117, p. 105 508, 2023, ISSN: 0952-1976. DOI: 10.1016/j.engappai.2022.105508.

10. V. Tilwari, **T. Song***, and S. Pack, "An Improved Routing Approach for Enhancing QoS Performance for D2D Communication in B5G Networks," *Electronics*, vol. 11, no. 24, p. 4118, 2022, ISSN: 2079-9292. DOI: 10.3390/electronics11244118.

11. Y. Kyung and **T. Song***, "CSV: Content Service Offloading System with Vehicular Caching," *Sensors*, vol. 22, no. 20, p. 7967, 2022, ISSN: 1424-8220. DOI: 10.3390/s22207967.

12. **T. Song*** and T. Kim, "Performance Analysis of Synchronous Multi-Radio Multi-Link MAC Protocols in IEEE 802.11be Extremely High Throughput WLANs," *Applied Sciences*, vol. 11, no. 1, p. 317, 2021, ISSN: 2076-3417. DOI: 10.3390/app11010317.

13. T. Kim, **T. Song***, and S. Pack, "An Energy Efficient Message Dissemination Scheme in Platoon-Based Driving Systems," *Energies*, vol. 13, no. 15, p. 3940, 2020, ISSN: 1996-1073. DOI: 10.3390/en13153940.

14. S. Joo, T. Kim, **T. Song***, and S. Pack, "MU-MIMO enabled uplink OFDMA MAC protocol in dense IEEE 802.11ax WLANs," *ICT Express*, vol. 6, no. 4, pp. 287–290, 2020, ISSN: 2405-9595. DOI: https://doi.org/10.1016/j.icte.2020.04.007.

15. **T. Song*** and T. Kim, "Performance Analysis of Addressing Mechanisms in Inter-Operable IoT Device with Low-Power Wake-Up Radio," *Sensors*, vol. 19, no. 23, p. 5106, 2019, ISSN: 1424-8220. DOI: 10.3390/s19235106.

16. **T. Song***, T.-Y. Kim, W. Kim, and S. Pack, "Adaptive and Distributed Radio Resource Allocation in Densely Deployed Wireless LANs: A Game-Theoretic Approach," *IEEE Transactions on Vehicular Technology*, vol. 67, no. 5, pp. 4466–4475, 2018. DOI: 10.1109/TVT.2018.2789362.

17. T.-Y. Kim, **T. Song***, W. Kim, and S. Pack, "Phase-Divided MAC Protocol for Integrated Uplink and Downlink Multiuser MIMO WLANs," *IEEE Transactions on Vehicular Technology*, vol. 67, no. 4, pp. 3172–3185, 2018. DOI: 10.1109/TVT.2017.2777902.

18. W. Kim, **T. Song***, T. Kim, H. Park, and S. Pack, "VoIP Capacity Analysis in Full Duplex WLANs," *IEEE Transactions on Vehicular Technology*, vol. 66, no. 12, pp. 11 419–11 424, 2017. DOI: 10.1109/TVT.2017.2729590.

19. S. Pack, S. Min, **T. Song***, W. Kim, N. Choi, and H. Park, "RA-PSM: a rate-aware power saving mechanism in multi-rate wireless LANs," *Wireless Networks*, vol. 22, pp. 1767–1777, 2016. DOI: 10.1007/s11276-015-1064-3.

20. **T. Song***, W. Kim, and S. Pack, "ORS-FA: An Opportunistic Relay Selection Scheme for Frame-Aggregated Environments," *Wireless Personal Communications*, vol. 82, no. 4, pp. 2351–2361, 2015. DOI: 10.1007/s11277-015-2351-0.

21. W. Kim, **T. Song***, and S. Pack, "FRAS: Fair rate adaptation scheme for directional multicast in 60 GHz multi-gigabit WLANs," *Wireless personal communications*, vol. 77, pp. 1007–1017, 2014. DOI: 10.1007/s11277-013-1551-8.

22. H. Park, Y. Kim, **T. Song***, and S. Pack, "Multiband Directional Neighbor Discovery in Self-Organized mmWave Ad Hoc Networks," *IEEE Transactions on Vehicular Technology*, vol. 64, no. 3, pp. 1143–1155, 2015. DOI: 10.1109/TVT.2014.2329303.

23. S. Pack, K. Kim, W. Kim, **T. Song***, and S. Min, "A Cross-Layer Approach to Reduce Channel Access Delay Jitter in IEEE 802.11 WLANs," *Wireless personal communications*, vol. 69, pp. 1379–1390, 2013. DOI: 10.1007/s11277-012-0639-x.

24. H. Park, S. Park, **T. Song***, and S. Pack, "An Incremental Multicast Grouping Scheme for mmWave Networks with Directional Antennas," *IEEE Communications Letters*, vol. 17, no. 3, pp. 616–619, 2013. DOI: 10.1109/LCOMM.2013.011513.122519.

25. J.-I. Lee, W. Kim, **T. Song***, S. Pack, C.-H. Kang, and S. Hwang, "A Channel Adaptive ACK Mechanism in High Rate Wireless Personal Area Networks," *Wireless Personal Communications*, vol. 66, pp. 473–488, 2012. DOI: 10.1007/s11277-011-0353-0.

International Conference Proceedings

1. **T. Song***, "DRQN-based Task Offloading in UAV-assisted Mobile Edge Computing Environments with Hidden Channel Conditions," in *2024 15th International Conference on Information and Communication Technology Convergence (ICTC)*, IEEE, 2024, pp. 2153–2154. DOI: 10.1109/ICTC62082.2024.10826811.

2. Y. Kyung, J. Lee, S. Jang, H. Ko, and **T. Song***, "Cost-efficient Deployment Scheme for User and Control Plane Functions in Non-public Networks," in *2023 14th International Conference on Information and Communication Technology Convergence (ICTC)*, 2023, pp. 869–871. DOI: 10.1109/ICTC58733.2023.10393330.

3. **T. Song***, "Opportunistic Task Offloading in UAV-assisted Mobile Edge Computing: A Deep Reinforcement Learning Approach," in *2023 14th International Conference on Information and Communication Technology Convergence (ICTC)*, 2023, pp. 881–884. DOI: 10.1109/ICTC58733.2023.10392829.

4. Y. Jeong, **T. Song***, and T. Kim, "Adaptive Client Training Scale Orchestration for Federated Learning," in *2023 14th International Conference on Information and Communication Technology Convergence (ICTC)*, 2023, pp. 885–888. DOI: 10.1109/ICTC58733.2023.10393732.

5. **T. Song***, T.-Y. Kim, W. Kim, and S. Pack, "Channel bonding algorithm for densely deployed wireless lan," in *2016 International Conference on Information Networking (ICOIN)*, IEEE, 2016, pp. 395–397.

6. **T. Song*** and S. Pack, "A Two-phase Resource Allocation Algorithm for Densely Deployed OFDMA WLANs," in *2016 International Conference on Information and Communication Technology Convergence (ICTC)*, IEEE, 2016, pp. 631–633.

7. **T. Song***, H. Park, and S. Pack, "A probabilistic neighbor discovery algorithm in wireless ad hoc networks," in *2014 IEEE 79th Vehicular Technology Conference (VTC Spring)*, IEEE, 2014, pp. 1–5. DOI: 10.1109/VTCSpring.2014.7022791.

8. W. Kim, **T. Song***, and S. Pack, "Rate adaptation for directional multicast in ieee 802.11 ad networks," in *2012 IEEE international conference on consumer electronics (ICCE)*, IEEE, 2012, pp. 364–365. DOI: 10.1109/ICCE.2012.6161903.

9. S. Pack, K. Kim, W. Kim, and **T. Song***, "Consistent Random Backoff to Reduce Channel Access Delay Jitter in IEEE 802.11 WLANs," in *2011 Proceedings of 20th International Conference on Computer Communications and Networks (ICCCN)*, IEEE, 2011, pp. 1–5. DOI: 10.1109/ICCCN.2011.6006051.

10. **T. Song***, W. Kim, and S. Pack, "Opportunistic Relay Selection Scheme with Frame Aggregation," in *2011 IEEE consumer communications and networking conference (CCNC)*, IEEE, 2011, pp. 1124–1125. DOI: 10.1109/CCNC.2011.5766349.

Books and Chapters

1. **T. Song***, T. Kim, and S. Pack, "Utility-Based Dynamic Resource Allocation in IEEE 802.11 ax Networks: A Genetic Algorithm Approach," in *Broadband Communications, Computing, and Control for Ubiquitous Intelligence*, Springer International Publishing Cham, 2022, pp. 65–80. DOI: 10.1007/978-3-030-98064-1_4.

Skills

Language Proficiency	Korean (Native), English (Advanced), Japanese (Advanced)
Programming Languages	Matlab, Python, …

Projects (PI only)

2021 – 2024 **AIoT 기반 미래 모빌리티 인터랙션 시스템기술개발**,
소과제책임자, 지자체-대학 협력기반 지역혁신 사업 (Regional Innovation Strategy)

2022 – 2023 **Framework Development of Service-oriented Autonomous Artificial Intelligence of Things considering Communication/Network Characteristics**,
과제책임자, 한국연구재단 기본연구

Miscellaneous Experiences

Awards and Achievements

2015 **Long-term Overseas Visiting Scholarship**,
BK21+, National Research Foundation of Korea (NRF)

LGE Scholarship,
LG Electronics CTO Division

Miscellaneous Experiences (continued)

2012 **The 19th Winter Institute Program**,
Japan International Science and Technology Exchange Center (JISTEC) and National Research Foundation of Korea (NRF)

Activities

2025 **IEEE Globecom 2025 SAC - CECN (2025 IEEE Global Communications Conference Selected Areas in Communications: Cloud/Edge Computing and Networking) TPC member**

ICTC 2025 TPC member

2024 **IEEE Globecom 2024 SAC - CLOUD-NET TPC member**

ICTC 2024 TPC member

ICCC 2024 TPC member

ICUFN 2024 TPC member

2023 **한국콘텐츠진흥원 과제기획위원**

ICCC 2023 TPC member

ICTC 2023 TPC member

2022 **ICCE 2022 TPC member, Track Chair**

2021 **IEEE GLOBECOM 2021 main reviewer**

2020 **ICCE-Asia 2020 session chair**

References

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