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Seung-seob Lee

I am passionate about building scalable and developer-friendly computing systems for disaggregated data centers. Committed to this vision, my research focuses on co-designing systems and networking layers to optimize memory management and data movement across resource blades. More broadly, I explore embedded systems, operating systems, and AI-serving systems to enhance the performance and efficiency of modern computing environments.

Work Experience

2022 Feb – present: Associate Research Scientist, Yale University, New Haven, Connecticut, U.S.

2020 Feb – 2022 Jan: Postdoctoral Associate, Yale University, New Haven, Connecticut, U.S.

2015 Sept – 2016 May: Research Intern, Microsoft Research Asia, Beijing, China (9 months)

Education

2011–2019: M.S./Ph.D., Computer Science, Yonsei University, Korea.

2007–2010: B.S., Computer Science, Yonsei University, Korea.

Publications

○ Conference

Y. Tang, **Seung-seob Lee**, A. Bhattacharjee, and A. Khandelwal, "PULSE: Accelerating Distributed Pointer-Traversals on Disaggregated Memory," *ACM ASPLOS 2025 (to appear).*

C. Li, **Seung-seob Lee**, M. H. Yun, and L. Zhong, "Blindfold: Confidential Memory Management by Untrusted Operating System," *NDSS 2025 (to appear).*

I. Gim, G. Chen, **Seung-seob Lee**, N. Sarda, A. Khandelwal, and L. Zhong, "Prompt Cache: Modular Attention Reuse for Low-Latency Inference," in *The Seventh Annual Conference on Machine Learning and Systems (MLSys)*, 2024.

Seung-seob Lee, Y. Yu, Y. Tang, A. Khandelwal, L. Zhong, and A. Bhattacharjee, "MIND: In-Network Memory Management for Disaggregated Data Centers," in *Proceedings of the ACM SIGOPS 28th Symposium on Operating Systems Principles (SOSP)*, 2021.

T. Kim, **Seung-seob Lee**, C. K. Kim, and S. Lee, "Poster Abstract: Caching Scheme for Internet of Vehicles Using Parked Vehicles," in *Proceedings of the 17th ACM Conference on Embedded Networked Sensor Systems (SenSys)*, 2019.

Seung-seob Lee and S. Lee, "Poster Abstract: Deep Reinforcement Learning-based Resource Allocation in Vehicular Fog Computing," in *IEEE Conference on Computer Communications Workshops (INFOCOM WKSHPS)*, 2019.

H. Kim, **Seung-seob Lee**, and S. Lee, "Dynamic Extended Access Barring for Improved M2M

Communication in LTE-A Networks," in *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, 2017.

S. Lee, K. Kim, Y. H. Kim, and **Seung-seob Lee**, "Motion Analysis in Lower Extremity Joints during Ski Carving Turns using Wearable Inertial Sensors and Plantar Pressure Sensors," in *IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, 2017.

Seung-seob Lee, H. Shi, K. Tan, Y. Liu, S. Lee, and Y. Cui, "Smart and Secure: Preserving Privacy in Untrusted Home Routers," in *Proc. of the 7th ACM SIGOPS Asia-Pacific Workshop on Systems (APSys)*, 2016.

Seung-seob Lee, H. Kim, and S. Lee, "K-Tier Relay Node Placement in Heterogeneous LTE Networks," *IEEE Mobile Services (MS)*, 2015.

M. Kim, Y. Kim, **Seung-seob Lee**, and S. Lee, "Poster: Multi-path Transport Protocol for Vehicle-to-Grid Communications," *IEEE Vehicular Networking Conference (VNC)*, 2014.

◦ Journal

T. Kim, H. Park, Y. Jin, **Seung-seob Lee**, and S. Lee, "Partition Placement and Resource Allocation for Multiple DNN-based Applications in Heterogeneous IoT Environments," *IEEE Internet of Things Journal*, 2023.

S. Lee, S. Lee, and **Seung-seob Lee**, "Deadline-Aware Task Scheduling for IoT Applications in Collaborative Edge Computing," *IEEE Wireless Communications Letters*, vol. 10, no. 10, pp. 2175–2179, 2021.

Seung-seob Lee, H. Shi, K. Tan, Y. Liu, S. Lee, and Y. Cui, "S2Net: Preserving Privacy in Smart Home Routers," *IEEE Transactions on Dependable and Secure Computing*, vol. 18, no. 3, pp. 1409–1424, 2021.

Seung-seob Lee and S. Lee, "Resource Allocation for Vehicular Fog Computing Using Reinforcement Learning Combined With Heuristic Information," *IEEE Internet of Things Journal*, vol. 7, no. 10, pp. 10450–10464, 2020.

Seung-seob Lee, T. Kim, S. Lee, K. Kim, Y. Kim, and N. Golmie, "Dynamic Channel Bonding Algorithm for Densely Deployed 802.11ac Networks," *IEEE Transactions on Communications*, vol. 67, pp. 8517–8531, Dec. 2019.

M.-S. Kim, Y. Kim, **Seung-seob Lee**, S. Lee, and N. Golmie, "A User Application-based Access Point Selection Algorithm for Dense WLANs," *PLOS ONE*, vol. 14, pp. 1–23, Jan. 2019.

Y. Kim, **Seung-seob Lee**, and S. Lee, "Coexistence of ZigBee-based WBAN and WiFi for Health Telemonitoring Systems," *IEEE Journal of Biomedical and Health Informatics*, vol. 20, pp. 222–230, Jan. 2016.

Seung-seob Lee, S. Lee, K. Kim, and Y. Kim, "Base Station Placement Algorithm for Large-Scale LTE Heterogeneous Networks," *PLOS ONE*, vol. 10, pp. 1–19, Oct. 2015.

Seung-seob Lee, S. Lee, K. Kim, D. Griffith, and N. Golmie, "Optimal Deployment of Pico Base Stations in LTE-Advanced Heterogeneous Networks," *Computer Networks*, vol. 72, pp. 127 – 139, Oct. 2014.

Seung-seob Lee and S. Lee, "User-Centric Offloading to WLAN in WLAN/3G Vehicular Networks," *Wireless Personal Communications*, vol. 70, pp. 1925–1940, June 2013.

Patents

2016 "Method for Optimizing Cell Scanning Interval for Cell Reselection in Wireless Communication System and Apparatus Therefor," Korea, Registration No. 10-1667587-0000

2015 "Method and Apparatus for Base Station Location and Cell Type Determination in LTE-Advanced Heterogeneous Network," Korea, Registration No. 10-1482909-0000

Teaching

2023 Guest-lecturer, *Big Data Systems:Trends & Challenges*, Yale University

2022 Co-instructor, *Computer Networks*, Yale University

2014 Teaching Assistant, *Understanding on State of the Art Technologies and Thesis in Computer Science*, Yonsei University

2013, 2014 Teaching Assistant, *Discrete Mathematics*, Yonsei University

2013 Teaching Assistant, *Data Structures*, Yonsei University

Fellowships and Awards

2022 Athena Post-doctoral Fellowship (NSF National AI Institute)

2014–2016 Brain Korea (BK) 21 Research Scholarship

2007–2010 National Science & Technology Scholarship, funded by Korea Student Aid Foundation

Professional Activities/Services

IEEE Transactions on Mobile Computing, Reviewer

IEEE Internet of Things Journal, Reviewer

IEEE Journal of Biomedical and Health Informatics, Reviewer

IEEE Wireless Communications Magazine, Reviewer

ACM SOSP '21, Artifact evaluation committee

ACM CoNEXT '17, Student Workshop, Student-staff