GEON LEE

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RESEARCH INTERESTS

Data Mining, Graph Neural Networks, Recommender Systems, Time Series Analysis, and More

EDUCATION

Korea Advanced Institute of Science and Technology (KAIST)　　Seoul, South Korea
M.S. & Ph.D. in Artificial Intelligence　　Sep. 2020 –
Advisor: Kijung Shin

Sungkyunkwan University (SKKU)　　Suwon, South Korea
B.S. in Computer Science and Engineering　　Mar. 2016 – Aug. 2019
GPA: 4.41/4.50; C.S.: 4.45/4.50 (Ranked 1st in the College of CSE)

WORK EXPERIENCE

Snap Research　　Bellevue, WA, USA
Research Intern　　April 2025 – June 2025
Mentor: Liam Collins / Manager: Neil Shah

NEC Labs America　　Princeton, NJ, USA
Research Intern　　May 2023 – Aug. 2023
Mentor: Wenchao Yu / Manager: Haifeng Chen

Amazon　　San Francisco, CA, USA
Applied Scientist Intern　　Sep. 2022 – Dec. 2022
Mentor: Zhonghao Luo / Manager: Tao Ye

AWARDS AND HONORS

Outstanding Reviewer (Top 10%) of KDD 2025　　Dec. 2024
KAIST Outstanding Paper Award　　Nov. 2024
Best Short Paper Candidates of RecSys 2024　　Oct. 2024
One of the Best-Ranked Papers of ICDM 2021　　Dec. 2021
Sungkyunkwan Presidential Award　　Aug. 2019
Dean's List　　2016 – 2019
Sungkyunkwan Software Scholarship (Full tuition scholarship)　　2016 – 2019

TUTORIALS

[1] Mining of Real-World Hypergraphs: Patterns, Tools, and Generators
<u>Geon Lee</u>, Jaemin Yoo, and Kijung Shin
KDD 2023 & **WWW 2023** & **ICDM 2022** & **CIKM 2022**

PUBLICATIONS

[1] KGMEL: Knowledge Graph-Enhanced Multimodal Entity Linking
Juyeon Kim, <u>Geon Lee</u>, Taeuk Kim, and Kijung Shin
SIGIR 2025 (Short Paper)

[2] MARIOH: Multiplicity-Aware Hypergraph Reconstruction
Kyuhan Lee, Geon Lee, and Kijung Shin
ICDE 2025

[3] A Survey on Hypergraph Mining: Patterns, Tools, and Generators
Geon Lee*, Fanchen Bu*, Tina Eliassi-Rad, and Kijung Shin (* equal contribution)
ACM Computing Surveys (SCI Journal, 2025)

[4] Multi-Behavior Recommender Systems: A Survey
Kyungho Kim, Sunwoo Kim, Geon Lee, Jinhong Jung, and Kijung Shin
PAKDD 2025 (Survey Paper)

[5] Beyond Neighbors: Distance-Generalized Graphlets for Enhanced Graph Characterization
Yeongho Kim, Yuyeong Kim, Geon Lee, and Kijung Shin
WWW 2025

[6] TimeCAP: Learning to Contextualize, Augment, and Predict Time Series Events
with Large Language Model Agents
Geon Lee, Wenchao Yu, Kijung Shin, Wei Cheng, and Haifeng Chen
AAAI 2025

[7] Resource2Box: Learning to Rank Resources in Distributed Search Using Box Embedding
Ulugbek Ergashev, Geon Lee, Kijung Shin, Eduard Dragut, and Weiyi Meng
ICDM 2024

[8] Revisiting LightGCN: Unexpected Inflexibility, Inconsistency, and
A Remedy Towards Improved Recommendation
Geon Lee, Kyungho Kim, and Kijung Shin
RecSys 2024 (Short Paper)
Selected as One of the Best Short Paper Candidates of RecSys 2024

[9] Post-Training Embedding Enhancement for Long-Tail Recommendation
Geon Lee, Kyungho Kim, and Kijung Shin
CIKM 2024 (Short Paper)

[10] Towards Better Utilization of Multiple Views for Bundle Recommendation
Kyungho Kim, Sunwoo Kim, Geon Lee, and Kijung Shin
CIKM 2024 (Short Paper)

[11] Representative and Back-in-Time Sampling from Real-world Hypergraphs
Minyoung Choe, Jaemin Yoo, Geon Lee, Woonsung Baek, U Kang, and Kijung Shin
Transaction on Knowledge Discovery from Data (SCIE Journal, 2024)

[12] VilLain: Self-Supervised Learning on Homogeneous Hypergraphs without Features
via Virtual Label Propagation
Geon Lee, Soo Yong Lee, and Kijung Shin
WWW 2024

[13] Hypergraph Motifs and Their Extensions Beyond Binary
Geon Lee*, Seokbum Yoon*, Jihoon Ko, Hyunju Kim, and Kijung Shin (* equal contribution)
The VLDB Journal (SCI Journal, 2023)

[14] Random Walk with Restart on Hypergraphs:
Fast Computation and an Application to Anomaly Detection
Jaewan Chun, Geon Lee, Kijung Shin, and Jinhong Jung
Data Mining and Knowledge Discovery (SCI Journal, 2023)

[15] Hypercore Decomposition for Non-Fragile Hyperedges:

Concepts, Algorithms, Observations, and Applications
Fanchen Bu, Geon Lee, and Kijung Shin
Data Mining and Knowledge Discovery (SCI Journal, 2023)

[16] Temporal Hypergraph Motifs
Geon Lee and Kijung Shin
Knowledge and Information Systems (SCIE Journal, 2023)

[17] Set2Box: Similarity Preserving Representation Learning for Sets
Geon Lee, Chanyoung Park, and Kijung Shin
ICDM 2022

[18] HashNWalk: Hash and Random Walk Based Anomaly Detection in Hyperedge Streams
Geon Lee, Minyoung Choe, and Kijung Shin
IJCAI 2022

[19] MiDaS: Representative Sampling from Real-World Hypergraphs
Minyoung Choe, Jaemin Yoo, Geon Lee, Woonsung Baek, U Kang, and Kijung Shin
WWW 2022

[20] Simple Epidemic Models with Segmentation Can Be Better than Complex Ones
Geon Lee, Se-eun Yoon, and Kijung Shin
PLOS ONE (SCIE Journal, 2022)
Oral presentation at epiDAMIK workshop in KDD 2021

[21] THyMe+: Temporal Hypergraph Motifs and Fast Algorithms for Exact Counting
Geon Lee and Kijung Shin
ICDM 2021
Selected as One of the Best-Ranked Papers of ICDM 2021

[22] How Do Hyperedges Overlap in Real-World Hypergraphs? - Patterns, Measures, and Generators
Geon Lee*, Minyoung Choe*, and Kijung Shin (* equal contribution)
WWW 2021

[23] Hypergraph Motifs: Concepts, Algorithms, and Discoveries
Geon Lee, Jihoon Ko, and Kijung Shin
VLDB 2020

[24] MEGA: Multi-View Semi-Supervised Clustering of Hypergraphs
Joyce Jiyoung Whang, Rundong Du, Sangwon Jung, Geon Lee, Barry Drake, Qingqing Liu, Seonggoo Kang, and Haesun Park
VLDB 2020

[25] Hyperlink Classification via Structured Graph Embedding
Geon Lee, Seonggoo Kang, and Joyce Jiyoung Whang
SIGIR 2019 (Short Paper)

ACADEMIC SERVICES

Program Committee/Conference Reviewer

- AAAI Conference on Artificial Intelligence (AAAI)   2024 - 2025
- The Web Conference (WWW)   2024 - 2025
- Conference on Neural Information Processing Systems (NeurIPS)   2024 - 2025
- ACM Conference on Knowledge Discovery and Data Mining (KDD)   2023 - 2025
- ACM International Conference on Information and Knowledge Management (CIKM)   2023 - 2025
- Learning on Graphs Conference (LoG)   2022 - 2024

- The ACM Conference on Recommender Systems (RecSys)   2025
- International Conference on Learning Representations (ICLR)   2025
- International Conference on Artificial Intelligence and Statistics (AISTATS)   2025
- International Conference on Machine Learning (ICML)   2025
- Asian Conference on Machine Learning (ACML)   2025
- SIAM International Conference on Data Mining (SDM)   2024

Journal Reviewer

- Information Sciences   2024 - 2025
- PLOS ONE   2024 - 2025
- Data Mining and Knowledge Discovery   2024 - 2025
- IEEE Transactions on Neural Networks and Learning Systems (TNNLS)   2023 - 2024
- IEEE Transactions on Knowledge and Data Engineering (TKDE)   2023 - 2024
- The VLDB Journal   2023 - 2024
- ACM Transactions on Information Systems (TOIS)   2025
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)   2025
- Information Processing and Management   2025
- The Journal of Supercomputing   2025
- IEEE Transactions on Network Science and Engineering (TNSE)   2024
- Big Data Research   2024

Session Chair

- ACM International Conference on Information and Knowledge Management (CIKM)   2024

PROJECTS

SW Star Lab	Feb. 2025 –
AI-based Weather Forecast Support Development	July 2021 – Dec. 2024
COVID-19 Task Force	Mar. 2020 – Sep. 2020

TEACHING

Teaching Assistant

- KAIST AI506 Data Mining and Search   Spring 2021, 2023
- KAIST AI607 Graph Mining and Social Network Analysis   Fall 2020, 2021, 2022, 2023
- KAIST AI617 Machine Learning for Robotics   Spring 2022
- SKKU CSE3036 Seminar in Computer Engineering   Fall 2019