

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

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

Geon Lee, Jaemin Yoo, and Kijung Shin

KDD 2023 & WWW 2023 & ICDM 2022 & CIKM 2022

PUBLICATIONS

- [1] MARIOH: Multiplicity-Aware Hypergraph Reconstruction

Kyuhan Lee, Geon Lee, and Kijung Shin

ICDE 2025

- [2] 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)

- [3] Multi-Behavior Recommender Systems: A Survey
Kyungho Kim, Sunwoo Kim, Geon Lee, Jinhong Jung, and Kijung Shin
PAKDD 2025 (Survey Paper)
- [4] Beyond Neighbors: Distance-Generalized Graphlets for Enhanced Graph Characterization
Yeongho Kim, Yuyeong Kim, Geon Lee, and Kijung Shin
WWW 2025
- [5] 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
- [6] Resource2Box: Learning to Rank Resources in Distributed Search Using Box Embedding
Ulugbek Ergashev, Geon Lee, Kijung Shin, Eduard Dragut, and Weiyi Meng
ICDM 2024
- [7] 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
- [8] Post-Training Embedding Enhancement for Long-Tail Recommendation
Geon Lee, Kyungho Kim, and Kijung Shin
CIKM 2024 (Short Paper)
- [9] Towards Better Utilization of Multiple Views for Bundle Recommendation
Kyungho Kim, Sunwoo Kim, Geon Lee, and Kijung Shin
CIKM 2024 (Short Paper)
- [10] 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)
- [11] Villain: Self-Supervised Learning on Homogeneous Hypergraphs without Features via Virtual Label Propagation
Geon Lee, Soo Yong Lee, and Kijung Shin
WWW 2024
- [12] 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)
- [13] 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)
- [14] 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)
- [15] Temporal Hypergraph Motifs
Geon Lee and Kijung Shin
Knowledge and Information Systems (SCIE Journal, 2023)

- [16] Set2Box: Similarity Preserving Representation Learning for Sets
Geon Lee, Chanyoung Park, and Kijung Shin
ICDM 2022
- [17] HashNWalk: Hash and Random Walk Based Anomaly Detection in Hyperedge Streams
Geon Lee, Minyoung Choe, and Kijung Shin
IJCAI 2022
- [18] MiDaS: Representative Sampling from Real-World Hypergraphs
 Minyoung Choe, Jaemin Yoo, Geon Lee, Woonsung Baek, U Kang, and Kijung Shin
WWW 2022
- [19] 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
- [20] 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
- [21] How Do Hyperedges Overlap in Real-World Hypergraphs? - Patterns, Measures, and Generators
Geon Lee*, Minyoung Choe*, and Kijung Shin (* equal contribution)
WWW 2021
- [22] Hypergraph Motifs: Concepts, Algorithms, and Discoveries
Geon Lee, Jihoon Ko, and Kijung Shin
VLDB 2020
- [23] 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
- [24] 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
- 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