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

[2] 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

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

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

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

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

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

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

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

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

[11] Hypercore Decomposition for Non-Fragile Hyperedges:
Concepts, Algorithms, Observations, and Applications
Fanchen Bu, <u>Geon Lee</u>, and Kijung Shin
Data Mining and Knowledge Discovery (SCI Journal, 2023)

[12] Temporal Hypergraph Motifs
<u>Geon Lee</u> and Kijung Shin
Knowledge and Information Systems (SCIE Journal, 2023)

[13] Set2Box: Similarity Preserving Representation Learning for Sets
<u>Geon Lee</u>, Chanyoung Park, and Kijung Shin
ICDM 2022

[14] HashNWalk: Hash and Random Walk Based Anomaly Detection in Hyperedge Streams
<u>Geon Lee</u>, Minyoung Choe, and Kijung Shin
IJCAI 2022

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

[16] 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

[17] 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

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

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

[20] 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

[21] 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
- ACM Conference on Knowledge Discovery and Data Mining (KDD)   2023 - 2025
- ACM International Conference on Information and Knowledge Management (CIKM)   2023 - 2024
- Learning on Graphs Conference (LoG)   2022 - 2024
- International Conference on Learning Representations (ICLR)   2025
- International Conference on Artificial Intelligence and Statistics (AISTATS)   2025
- International Conference on Machine Learning (ICML)   2025
- Conference on Neural Information Processing Systems (NeurIPS)   2024
- SIAM International Conference on Data Mining (SDM)   2024

Journal Reviewer

- 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
- Information Sciences   2024 - 2025
- PLOS ONE   2024 - 2025
- Information Processing and Management   2025
- IEEE Transactions on Network Science and Engineering (TNSE)   2024
- Data Mining and Knowledge Discovery   2024
- Big Data Research   2024

Session Chair

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

PROJECTS

AI-based Weather Forecast Support Development	July 2021 –
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