

GEON LEE

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RESEARCH INTERESTS

Data Mining, Graph Neural Networks, Recommender Systems

Interested (but not limited to) in analyzing real-world unstructured data (e.g., graphs) to: (1) understand underlying mechanisms, (2) develop representation learning methods, and (3) design algorithms for enhanced applications (e.g., recommendation systems).

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

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] 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

- [2] Resource2Box: Learning to Rank Resources in Distributed Search Using Box Embedding
Ulugbek Ergashev, Geon Lee, Kijung Shin, Eduard Dragut, and Weiyei Meng
ICDM 2024
- [3] 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
- [4] Post-Training Embedding Enhancement for Long-Tail Recommendation
Geon Lee, Kyungho Kim, and Kijung Shin
CIKM 2024 (Short Paper)
- [5] Towards Better Utilization of Multiple Views for Bundle Recommendation
Kyungho Kim, Sunwoo Kim, Geon Lee, and Kijung Shin
CIKM 2024 (Short Paper)
- [6] 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)
- [7] VilLain: Self-Supervised Learning on Homogeneous Hypergraphs without Features
via Virtual Label Propagation
Geon Lee, Soo Yong Lee, and Kijung Shin
WWW 2024
- [8] 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)
- [9] 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)
- [10] 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)
- [11] Temporal Hypergraph Motifs
Geon Lee and Kijung Shin
Knowledge and Information Systems (SCIE Journal, 2023)
- [12] Set2Box: Similarity Preserving Representation Learning for Sets
Geon Lee, Chanyoung Park, and Kijung Shin
ICDM 2022
- [13] HashNWalk: Hash and Random Walk Based Anomaly Detection in Hyperedge Streams
Geon Lee, Minyoung Choe, and Kijung Shin
IJCAI 2022
- [14] MiDaS: Representative Sampling from Real-World Hypergraphs
Minyoung Choe, Jaemin Yoo, Geon Lee, Woonsung Baek, U Kang, and Kijung Shin
WWW 2022
- [15] 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

- [16] 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

- [17] How Do Hyperedges Overlap in Real-World Hypergraphs? - Patterns, Measures, and Generators

Geon Lee*, Minyoung Choe*, and Kijung Shin (* equal contribution)

WWW 2021

- [18] Hypergraph Motifs: Concepts, Algorithms, and Discoveries

Geon Lee, Jihoon Ko, and Kijung Shin

VLDB 2020

- [19] 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

- [20] 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
- IEEE Transactions on Network Science and Engineering (TNSE) 2024
- Data Mining and Knowledge Discovery 2024
- PLOS ONE 2024
- Big Data Research 2024

Session Chair

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

PROJECTS

AI-based Weather Forecast Support Development
COVID-19 Task Force

July 2021 –
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