

Kijung SHIN

CONTACT INFORMATION	Building 9, Room 9503 85, Hoegi-ro, Dongdaemun-gu, Seoul, 02455, Republic of Korea	Phone: + 82 - 2 - 958 - 3915 Email: kijungs@kaist.ac.kr Homepage: https://kijungs.github.io
INTERESTS	Data Mining, Graph Algorithms, Network Science, Machine Learning	
EDUCATION	Carnegie Mellon University , Pittsburgh, PA, USA Ph.D. in Computer Science Thesis: “Mining Large Dynamic Graphs and Tensors” Advisor: Prof. Christos Faloutsos	08/2015 - 02/2019
	Seoul National University , Seoul, Korea B.S. in Computer Science & Engineering; and B.A. in Economics <i>Ranked 1st in the College of Engineering</i>	03/2008 - 08/2015
POSITIONS	KAIST , Seoul, Korea Associate Professor, Kim Jaechul Graduate School of AI	03/2023 - Present
	KAIST , Seoul, Korea Adjunct Professor, School of Electrical Engineering (Computer Division)	09/2019 - Present
	KAIST , Seoul, Korea Ewon Endowed Assistant Professor, Kim Jaechul Graduate School of AI	09/2019 - 02/2023
	KAIST , Daejeon, Korea Assistant Professor, School of Electrical Engineering (Computer Division)	02/2019 - 09/2019
	LinkedIn Corporation , Mountain View, CA, USA Research Intern, Growth Relevance Team	05/2018 - 08/2018
	LinkedIn Corporation , Mountain View, CA, USA Research Intern, Growth Relevance Team	05/2017 - 08/2017
	CYRAM , Seoul, Korea Associate Researcher	01/2011 - 12/2013
AWARDS & HONORS	Selected as One of the Best-Ranked Papers of IEEE ICDM 2024	2024
	Selected as One of the Best Short Paper Candidates of ACM RecSys 2024	2024
	Received the IEEE ICDM Best Student Paper Runner-up Award	2023
	Selected as One of the Best-Ranked Papers of IEEE ICDM 2023	2023
	Selected as One of the Best Reviewers of WWW 2023	2023
	Received the Songam Distinguished Research Award	2022
	Selected as One of the Best-Ranked Papers of IEEE ICDM 2021	2021
	Received the Samsung Patent Award	2021
	Appointed to an Ewon Endowed Assistant Professor	2021
	Selected as One of the Best-Ranked Papers of IEEE ICDM 2020	2020
	Awarded the Siebel Scholar Fellowship	2018
	Selected as One of the Best-Ranked Papers of IEEE ICDM 2016	2016
	Received the SIGKDD Best Research Paper Award	2016
	Awarded the Korea Foundation for Advanced Studies Scholarship	2015
	Received the Best Senior Thesis Award , Seoul National University	2015
	Received the Samsung Humantech Paper Award (1st in CS)	2015
	Awarded the Kwanjeong Educational Foundation Scholarship	2010

- TUTORIALS
- [1] Hypergraph Neural Networks: An In-depth and Step-By-Step Guide
Sunwoo Kim*, Soo Yong Lee*, Yue Gao, Alessia Antelmi, Mirko Polato, and [Kijung Shin](#)
AAAI 2025 / ACM KDD 2024 / IEEE ICDM 2024
 - [2] Mining of Real-world Hypergraphs: Patterns, Tools, and Generators
Geon Lee, Jaemin Yoo, and [Kijung Shin](#)
ACM KDD 2023 / WWW 2023 / IEEE ICDM 2022 / ACM CIKM 2022
- REFEREED PAPERS
- [1] On Measuring Unnoticeability of Graph Adversarial Attacks: Observations, New Measure, and Applications
Hyeonsoo Jo*, Hyunjin Hwang*, Fanchen Bu, Soo Yong Lee, Chanyoung Park, [Kijung Shin](#)
ACM KDD 2025 (Acceptance Rate \approx 19%)
 - [2] KGMEEL: Knowledge Graph-Enhanced Multimodal Entity Linking
Juyeon Kim, Geon Lee, Taeuk Kim, and [Kijung Shin](#)
ACM SIGIR 2025 (Short Paper) (Acceptance Rate \approx 28%)
 - [3] MARIOH: Multiplicity-Aware Hypergraph Reconstruction
Kyuhan Lee, Geon Lee, and [Kijung Shin](#)
IEEE ICDE 2025
 - [4] Simple yet Effective Node Property Prediction on Edge Streams under Distribution Shifts
Jongha Lee, Taehyung Kwon, Heechan Moon, and [Kijung Shin](#)
IEEE ICDE 2025
 - [5] Multi-Behavior Recommender Systems: A Survey
Kyungho Kim, Sunwoo Kim, Geon Lee, Jinhong Jung, and [Kijung Shin](#)
PAKDD 2025 (Survey Paper) (Acceptance Rate \approx 25%)
 - [6] TiGer: Self-Supervised Purification for Time-evolving Graphs
Hyeonsoo Jo, Jongha Lee, Fanchen Bu [Kijung Shin](#)
PAKDD 2025 (Acceptance Rate \approx 25%)
 - [7] Kronecker Generative Models for Power-Law Patterns in Real-World Hypergraphs
Minyoung Choe, Jihoon Ko, Taehyung Kwon, [Kijung Shin](#), and Christos Faloutsos
WWW 2025 (Acceptance Rate \approx 20%)
 - [8] Beyond Neighbors: Distance-Generalized Graphlets for Enhanced Graph Characterization
Yeongho Kim, Yuyeong Kim, Geon Lee, and [Kijung Shin](#)
WWW 2025 (Acceptance Rate \approx 20%)
 - [9] DiffIM: Differentiable Influence Minimization with Surrogate Modeling and Continuous Relaxation
Junghun Lee, Hyunju Kim, Fanchen Bu, Jihoon Ko, and [Kijung Shin](#)
AAAI 2025 (Acceptance Rate \approx 23%)
 - [10] 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 (Acceptance Rate \approx 23%)
 - [11] RASP: Robust Mining of Frequent Temporal Sequential Patterns under Temporal Variations
Hyunjin Choo, Minh Eom, Gyuri Kim, Young-Gyu Yoon, and [Kijung Shin](#)
EDBT 2025
 - [12] A Survey on Hypergraph Mining: Patterns, Tools, and Generators
Geon Lee*, Fanchen Bu*, Tina Eliassi-Rad, and [Kijung Shin](#)
ACM Computing Surveys (SCI(E) Journal, 2025)

- [13] Estimating Simplex Counts via Sampling
Hyunju Kim*, Heechan Moon*, Fanchen Bu, Jihoon Ko, and [Kijung Shin](#)
The VLDB Journal (SCI(E) Journal, 2025)
- [14] BeGIn: Extensive Benchmark Scenarios and An Easy-to-use Framework for Graph Continual Learning
Jihoon Ko*, Shinhwan Kang*, Taehyung Kwon, Heechan Moon, and [Kijung Shin](#)
ACM TIST (SCI(E) Journal, 2025)
- [15] Compact Lossy Compression of Tensors via Neural Tensor-Train Decomposition
Taehyung Kwon, Jihoon Ko, Jinhong Jung, Jun-Gi Jang, and [Kijung Shin](#)
Knowledge and Information Systems (SCI(E) Journal, 2025)
Invited as One of the Best-Ranked Papers of ICDM 2023
- [16] Rethinking Reconstruction-based Graph-Level Anomaly Detection: Limitations and a Simple Remedy
Sunwoo Kim, Soo Yong Lee, Fanchen Bu, Shinhwan Kang, Kyungho Kim, Jaemin Yoo, and [Kijung Shin](#)
NeurIPS 2024 (Acceptance Rate $\approx 26\%$)
- [17] ELiCiT: Effective and Lightweight Lossy Compression of Tensors
Jihoon Ko, Taehyung Kwon, Jinhong Jung, and [Kijung Shin](#)
IEEE ICDM 2024 (Long Presentation Acceptance Rate $\approx 11\%$)
Selected as One of the Best-Ranked Papers of ICDM 2024 for Fast-track Journal Invitation
- [18] Resource2Box: Learning To Rank Resources in Distributed Search Using Box Embedding
Ulugbek Ergashev, Geon Lee, [Kijung Shin](#), Eduard Dragut, and Weiyi Meng
IEEE ICDM 2024 (Long Presentation Acceptance Rate $\approx 11\%$)
- [19] Revisiting LightGCN: Unexpected Inflexibility, Inconsistency, and A Remedy Towards Improved Recommendation
Geon Lee, Kyungho Kim, and [Kijung Shin](#)
ACM RecSys 2024 (Short Paper)
Selected as One of the Best Short Paper Candidates of RecSys 2024
- [20] Towards Better Utilization of Multiple Views for Bundle Recommendation
Kyungho Kim, Sunwoo Kim, Geon Lee, and [Kijung Shin](#)
ACM CIKM 2024 (Short Paper) (Acceptance Rate $\approx 27\%$)
- [21] Post-Training Embedding Enhancement for Long-Tail Recommendation
Geon Lee, Kyungho Kim, and [Kijung Shin](#)
ACM CIKM 2024 (Short Paper) (Acceptance Rate $\approx 27\%$)
- [22] A Survey on Hypergraph Neural Networks: An In-Depth and Step-By-Step Guide
Sunwoo Kim*, Soo Yong Lee*, Yue Gao, Alessia Antelmi, Mirko Polato, and [Kijung Shin](#)
ACM KDD 2024 (Survey Paper)
- [23] Compact Decomposition of Irregular Tensors for Data Compression:
From Sparse to Dense to High-Order Tensors
Taehyung Kwon, Jihoon Ko, Jinhong Jung, Jun-Gi Jang, and [Kijung Shin](#)
ACM KDD 2024 (Acceptance Rate $\approx 20\%$)
- [24] SLADE: Detecting Dynamic Anomalies in Edge Streams without Labels
via Self-Supervised Learning
Jongha Lee, Sunwoo Kim, and [Kijung Shin](#)
ACM KDD 2024 (Acceptance Rate $\approx 20\%$)

- [25] Unsupervised Alignment of Hypergraphs with Different Scales
Manh Tuan Do and [Kijung Shin](#)
ACM KDD 2024 (Acceptance Rate \approx 20%)
- [26] Tackling Prevalent Conditions in Unsupervised Combinatorial Optimization: Cardinality, Minimum, Covering, and More
Fanchen Bu, Hyeonsoo Jo, Soo Yong Lee, Sungsoo Ahn, and [Kijung Shin](#)
ICML 2024 (Acceptance Rate \approx 28%)
- [27] Feature Distribution on Graph Topology Mediates the Effect of Graph Convolution: Homophily Perspective
Soo Yong Lee, Sunwoo Kim, Fanchen Bu, Jaemin Yoo, Jiliang Tang, and [Kijung Shin](#)
ICML 2024 (Acceptance Rate \approx 28%)
- [28] Sign is Not a Remedy: Multiset-to-Multiset Message Passing for Learning on Heterophilic Graphs
Langzhang Liang, Sunwoo Kim, [Kijung Shin](#), Zenglin Xu, Shirui Pan, and Yuan Qi
ICML 2024 (Acceptance Rate \approx 28%)
- [29] FlowerFormer: Empowering Neural Architecture Encoding using a Flow-aware Graph Transformer
Dongyeong Hwang, Hyunju Kim, Sunwoo Kim, and [Kijung Shin](#)
IEEE/CVF CVPR 2024 (Acceptance Rate \approx 24%)
- [30] VilLain: Self-Supervised Learning on Homogeneous Hypergraphs without Features via Virtual Label Propagation
Geon Lee, Soo Yong Lee, and [Kijung Shin](#)
WWW 2024 (Acceptance Rate \approx 20%)
- [31] Self-Guided Robust Graph Structure Refinement
Yeonjun In, Kanghoon Yoon, Kibum Kim, [Kijung Shin](#), and Chanyoung Park
WWW 2024 (Acceptance Rate \approx 20%)
- [32] HypeBoy: Generative Self-Supervised Representation Learning on Hypergraphs
Sunwoo Kim, Shinhwan Kang, Fanchen Bu, Soo Yong Lee, Jaemin Yoo, and [Kijung Shin](#)
ICLR 2024 (Acceptance Rate \approx 31%)
- [33] Spear and Shield: Adversarial Attacks and Defense Methods for Model-Based Link Prediction on Continuous-Time Dynamic Graphs
Dongjin Lee, Juho Lee, and [Kijung Shin](#)
AAAI 2024 (Acceptance Rate \approx 24%)
- [34] VITA: ‘Carefully Chosen and Weighted Less’ Is Better in Medication Recommendation
Taeri Kim, Jiho Heo, Hongil Kim, [Kijung Shin](#), and Sang-Wook Kim
AAAI 2024 (Oral Presentation Acceptance Rate \approx 0.6%)
Selected for Oral Presentation
- [35] Representative and Back-In-Time Sampling from Real-world Hypergraphs
Minyoung Choe, Jaemin Yoo, Geon Lee, Woonsung Baek, U Kang, and [Kijung Shin](#)
ACM TKDD (SCI(E) Journal, 2024)
- [36] Deep Learning Model for Heavy Rainfall Nowcasting in South Korea
Seok-Geun Oh, Seok-Woo Son, Young-Ha Kim, Chanil Park, Jihoon Ko, [Kijung Shin](#), Ji-Hoon Ha, and Hyesook Lee
Weather and Climate Extremes (SCI(E) Journal, 2024)
- [37] 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(E) Journal, 2024)

- [38] Hypergraph Motifs and Their Extensions Beyond Binary
Geon Lee*, Seokbum Yoon*, Jihoon Ko, Hyunju Kim, and [Kijung Shin](#)
The VLDB Journal (SCI(E) Journal, 2024)
- [39] TensorCodec: Compact Lossy Compression of Tensors without Strong Data Assumptions
Taehyung Kwon, Jihoon Ko, Jinhong Jung, and [Kijung Shin](#)
IEEE ICDM 2023 (Long Presentation Acceptance Rate \approx 9%)
Received the IEEE ICDM Best Student Paper Runner-up Award
Selected as One of the Best-Ranked Papers of ICDM 2023 for Fast-track Journal Invitation
- [40] Robust Graph Clustering via Meta Weighting for Noisy Graphs
Hyeonsoo Jo, Fanchen Bu, and [Kijung Shin](#)
ACM CIKM 2023 (Acceptance Rate \approx 24%)
- [41] You're Not Alone in Battle: Combat Threat Analysis Using Attention Networks
and a New Open Benchmark
Soo Yong Lee*, Juwon Kim*, Kiwoong Park, Dongkuk Ryu, Sangheun Shim, and [Kijung Shin](#)
ACM CIKM 2023 (Short Paper) (Acceptance Rate \approx 27%)
- [42] How Transitive Are Real-World Group Interactions? - Measurement and Reproduction
Sunwoo Kim, Fanchen Bu, Minyoung Choe, Jaemin Yo, and [Kijung Shin](#)
ACM KDD 2023 (Acceptance Rate \approx 22%)
- [43] On Improving the Cohesiveness of Graphs by Merging Nodes:
Formulation, Analysis, and Algorithm
Fanchen Bu and [Kijung Shin](#)
ACM KDD 2023 (Acceptance Rate \approx 22%)
- [44] Classification of Edge-dependent Labels of Nodes in Hypergraphs
Minyoung Choe, Sunwoo Kim, Jaemin Yo, and [Kijung Shin](#)
ACM KDD 2023 (Acceptance Rate \approx 22%)
- [45] Towards Deep Attention in Graph Neural Networks: Problems and Remedies
Soo Yong Lee, Fanchen Bu, Jaemin Yoo, and [Kijung Shin](#)
ICML 2023 (Acceptance Rate \approx 28%)
- [46] NeuKron: Constant-Size Lossy Compression of Sparse Reorderable Matrices and Tensors
Taehyung Kwon*, Jihoon Ko*, Jinhong Jung, and [Kijung Shin](#)
WWW 2023 (Acceptance Rate \approx 19%)
- [47] Characterization of Simplicial Complexes Using Simplets Beyond Four Nodes
Hyunju Kim, Jihoon Ko, Fanchen Bu, and [Kijung Shin](#)
WWW 2023 (Acceptance Rate \approx 19%)
- [48] Disentangling Degree-related Biases and Interest for Out-of-Distribution Generalized
Directed Network Embedding
Hyunsik Yoo, Yeon-Chang Lee, [Kijung Shin](#), and Sang-Wook Kim
WWW 2023 (Acceptance Rate \approx 19%)
- [49] I'm Me, We're Us, and I'm Us: Tridirectional Contrastive Learning on Hypergraphs
Dongjin Lee and [Kijung Shin](#)
AAAI 2023 (Acceptance Rate \approx 20%)
- [50] Robust and Efficient Alignment of Calcium Imaging Data through Simultaneous
Low Rank and Sparse Decomposition
Junmo Cho*, Seungjae Han*, Eun-Seo Cho, [Kijung Shin](#), and Young-Gyu Yoon
IEEE/CVF WACV 2023 (Acceptance Rate \approx 41%)

- [51] Reciprocity in Directed Hypergraphs: Measures, Findings, and Generators
Sunwoo Kim, Minyoung Choe, Jaemin Yoo, and [Kijung Shin](#)
Data Mining and Knowledge Discovery (SCI(E) Journal, 2023)
- [52] Datasets, Tasks, and Training Methods for Large-Scale Hypergraph Learning
Sunwoo Kim*, Dongjin Lee*, Yul Kim, Jungho Park, Taeho Hwang, and [Kijung Shin](#)
Data Mining and Knowledge Discovery (SCI(E) Journal, 2023)
- [53] Improving the Core Resilience of Real-world Hypergraphs
Manh Tuan Do and [Kijung Shin](#)
Data Mining and Knowledge Discovery (SCI(E) Journal, 2023)
- [54] Hypercore Decomposition for Non-Fragile Hyperedges:
Concepts, Algorithms, Observations, and Applications
Fanchen Bu, Geon Lee, and [Kijung Shin](#)
Data Mining and Knowledge Discovery (SCI(E) Journal, 2023)
- [55] Interplay between Topology and Edge Weights in Real-World Graphs:
Concepts, Patterns, and an Algorithm
Fanchen Bu, Shinhwan Kang, and [Kijung Shin](#)
Data Mining and Knowledge Discovery (SCI(E) Journal, 2023)
- [56] Temporal Hypergraph Motifs
Geon Lee and [Kijung Shin](#)
Knowledge and Information Systems (SCI(E) Journal, 2023)
Invited as One of the Best-Ranked Papers of ICDM 2021
- [57] Evaluation of Deep-Learning-Based Very Short-Term Rainfall Forecasts in South Korea
Seok-Geun Oh, Chanil Park, Seok-Woo Son, Jihoon Ko, [Kijung Shin](#), Sunyoung Kim, and
Junsang Park
Asia-Pacific Journal of Atmospheric Sciences (SCI(E) Journal, 2023)
- [58] Two-Stage Training of Graph Neural Networks for Graph Classification
Manh Tuan Do, Noseng Park, and [Kijung Shin](#)
Neural Processing Letters (SCI(E) Journal, 2023)
- [59] Reciprocity in Directed Hypergraphs: Measures, Findings, and Generators
Sunwoo Kim, Minyoung Choe, and [Kijung Shin](#)
IEEE ICDM 2022 (Acceptance Rate $\approx 20\%$)
- [60] Set2Box: Similarity Preserving Representation Learning for Sets
Geon Lee, Chanyoung Park, and [Kijung Shin](#)
IEEE ICDM 2022 (Acceptance Rate $\approx 20\%$)
- [61] MARIO: Modality-Aware Attention and Modality-Preserving Decoders for
Multimedia Recommendation
Taeri Kim*, Yeon-Chang Lee*, [Kijung Shin](#), and Sang-Wook Kim
ACM CIKM 2022 (Acceptance Rate $\approx 23\%$)
- [62] HashNWalk: Hash and Random Walk Based Anomaly Detection in Hyperedge Streams
Geon Lee, Minyoung Choe, [Kijung Shin](#)
IJCAI 2022 (Acceptance Rate $\approx 15\%$)
- [63] AHP: Learning to Negative Sample for Hyperedge Prediction
Hyunjin Hwang*, Seungwoo Lee*, Chanyoung Park, and [Kijung Shin](#)
ACM SIGIR 2022 (Short Paper) (Acceptance Rate $\approx 25\%$)

- [64] Are Edge Weights in Summary Graphs Useful? - A Comparative Study
Shinhwan Kang, Kyuhan Lee, and [Kijung Shin](#)
PAKDD 2022 (Acceptance Rate \approx 19%)
- [65] Personalized Graph Summarization: Formulation, Scalable Algorithms, and Applications
Shinhwan Kang, Kyuhan Lee, and [Kijung Shin](#)
IEEE ICDE 2022 (Acceptance Rate \approx 27%)
- [66] SLUGGER: Lossless Hierarchical Summarization of Massive Graphs
Kyuhan Lee*, Jihoon Ko*, and [Kijung Shin](#)
IEEE ICDE 2022 (Acceptance Rate \approx 27%)
- [67] MiDaS: Representative Sampling from Real-world Hypergraphs
Minyoung Choe, Jaemin Yoo, Geon Lee, Woonsung Baek, U Kang, and [Kijung Shin](#)
WWW 2022 (Acceptance Rate \approx 18%)
- [68] On the Persistence of Higher-Order Interactions in Real-World Hypergraphs
Hyunjin Choo and [Kijung Shin](#)
SDM 2022 (Acceptance Rate \approx 28%)
- [69] Meta-Learning for Online Update of Recommender Systems
Minseok Kim, Hwanjun Song, Yooju Shin, Dongmin Park, [Kijung Shin](#), and Jae-Gil Lee
AAAI 2022 (Acceptance Rate \approx 15%)
- [70] Finding a Concise, Precise, and Exhaustive Set of Near Bi-Cliques in Dynamic Graphs
Hyeonjeong Shin, Taehyung Kwon, Neil Shah, [Kijung Shin](#)
ACM WSDM 2022 (Acceptance Rate \approx 20%)
- [71] Directed Network Embedding with Virtual Negative Edges
Hyunsik Yoo*, Yeon-Chang Lee*, [Kijung Shin](#), and Sang-Wook Kim
ACM WSDM 2022 (Acceptance Rate \approx 20%)
- [72] Growth Patterns and Models of Real-world Hypergraphs
Jihoon Ko*, Yunbum Kook*, and [Kijung Shin](#)
Knowledge and Information Systems (SCI(E) Journal, 2022)
Invited as One of the Best-Ranked Papers of ICDM 2020
- [73] Real-Time Anomaly Detection in Edge Streams
Siddharth Bhatia, Rui Liu, Bryan Hooi, Minji Yoon, [Kijung Shin](#), and Christos Faloutsos
ACM TKDD (SCI(E) Journal, 2022)
- [74] Effective Training Strategies for Deep-Learning-Based Precipitation Nowcasting and Estimation
Jihoon Ko*, Kyuhan Lee*, Hyunjin Hwang*, Seok-Geun Oh, Seok-Woo Son, and [Kijung Shin](#)
Computers and Geosciences (SCI(E) Journal, 2022)
- [75] Simple Epidemic Models with Segmentation Can Be Better than Complex Ones
Geon Lee, Se-eun Yoon, and [Kijung Shin](#)
PLOS ONE (SCI(E) Journal, 2022)
- [76] Efficient Neural Network Approximation of Robust PCA for Automated Analysis of Calcium Imaging Data
Seungjae Han, Eun-Seo Cho, Inkyu Park, [Kijung Shin](#), and Young-Gyu Yoon
MICCAI 2021 (Acceptance Rate \approx 33%)
- [77] THyMe+: Temporal Hypergraph Motifs and Fast Algorithms for Exact Counting
Geon Lee and [Kijung Shin](#)
IEEE ICDM 2021 (Long Presentation Acceptance Rate \approx 10%)
Selected as One of the Best-Ranked Papers of ICDM 2021 for Fast-track Journal Invitation

- [78] SliceNStitch: Continuous CP Decomposition of Sparse Tensor Streams
Taehyung Kwon*, Inkyu Park*, Dongjin Lee, and [Kijung Shin](#)
IEEE ICDE 2021 (Acceptance Rate \approx 28%)
- [79] Robust Factorization of Real-world Tensor Streams with Patterns, Missing Values, and Outliers
Dongjin Lee and [Kijung Shin](#)
IEEE ICDE 2021 (Acceptance Rate \approx 28%)
- [80] How Do Hyperedges Overlap in Real-World Hypergraphs? - Patterns, Measures, and Generators
Geon Lee*, Minyoung Choe*, and [Kijung Shin](#)
WWW 2021 (Acceptance Rate \approx 21%)
- [81] PREMERE: Meta-Reweighting via Self-Ensembling for Point-of-Interest Recommendation
Minseok Kim, Hwanjun Song, Doyoung Kim, [Kijung Shin](#), and Jae-Gil Lee
AAAI 2021 (Acceptance Rate \approx 21%)
- [82] DPGS: Degree-Preserving Graph Summarization
Houquan Zhou, Shenghua Liu, Kyuhan Lee, [Kijung Shin](#), Huawei Shen, and Xueqi Cheng
SDM 2021 (Acceptance Rate \approx 21%)
- [83] CoCoS: Fast and Accurate Distributed Triangle Counting in Graph Streams
[Kijung Shin](#), Euiwoong Lee, Jinoh Oh, Mohammad Hammoud, and Christos Faloutsos
ACM TKDD (SCI(E) Journal, 2021)
- [84] MONSTOR: An Inductive Approach for Estimating and Maximizing Influence over Unseen Networks
Jihoon Ko, Kyuhan Lee, [Kijung Shin](#), and Noseong Park
ASONAM 2020 (Acceptance Rate \approx 18%)
Selected for Fast-track Journal Invitation
- [85] Evolution of Real-world Hypergraphs: Patterns and Models without Oracles
Yunbum Kook, Jihoon Ko, and [Kijung Shin](#)
IEEE ICDM 2020 (Long Presentation Acceptance Rate \approx 10%)
Selected as One of the Best-Ranked Papers of ICDM 2020 for Fast-track Journal Invitation
- [86] Hypergraph Motifs: Concepts, Algorithms, and Discoveries
Geon Lee, Jihoon Ko, and [Kijung Shin](#)
VLDB 2020 (Acceptance Rate \approx 25%)
- [87] Incremental Lossless Graph Summarization
Jihoon Ko*, Yunbum Kook*, and [Kijung Shin](#)
ACM KDD 2020 (Acceptance Rate \approx 17%)
- [88] SSumM: Sparse Summarization of Massive Graphs
Kyuhan Lee*, Hyeonsoo Jo*, Jihoon Ko, Sungsu Lim, and [Kijung Shin](#)
ACM KDD 2020 (Acceptance Rate \approx 17%)
- [89] Structural Patterns and Generative Models of Real-world Hypergraphs
Manh Tuan Do, Se-eun Yoon, Bryan Hooi, and [Kijung Shin](#)
ACM KDD 2020 (Acceptance Rate \approx 17%)
- [90] How Much and When Do We Need Higher-order Information in Hypergraphs?
A Case Study on Hyperedge Prediction
Se-eun Yoon, Hyungseok Song, [Kijung Shin](#), and Yung Yi
WWW 2020 (Short Paper) (Acceptance Rate \approx 25%)
- [91] TellTail: Fast Scoring and Detection of Dense Subgraphs
Bryan Hooi, [Kijung Shin](#), Hemank Lamba, and Christos Faloutsos
AAAI 2020 (Acceptance Rate \approx 21%)

- [92] MIDAS: Microcluster-Based Detector of Anomalies in Edge Streams
Siddharth Bhatia, Bryan Hooi, Minji Yoon, [Kijung Shin](#), and Christos Faloutsos
AAAI 2020 (Acceptance Rate \approx 21%)
- [93] Temporal Locality-Aware Sampling for Accurate Triangle Counting in Real Graph Streams
Dongjin Lee, [Kijung Shin](#), and Christos Faloutsos
The VLDB Journal (SCI(E) Journal, 2020)
- [94] Fast and Memory-Efficient Algorithms for High-Order Tucker Decomposition
Jiyuan Zhang, Jinoh Oh, [Kijung Shin](#), Evangelos E. Papalexakis,
Christos Faloutsos, and Hwanjo Yu
Knowledge and Information Systems (SCI(E) Journal, 2020)
- [95] Fast, Accurate and Provable Triangle Counting in Fully Dynamic Graph Streams
[Kijung Shin](#), Sejoon Oh, Jisu Kim, Bryan Hooi, and Christos Faloutsos
ACM TKDD (SCI(E) Journal, 2020)
- [96] Fast and Accurate Anomaly Detection in Dynamic Graphs with a Two-Pronged Approach
Minji Yoon, Bryan Hooi, [Kijung Shin](#), and Christos Faloutsos
ACM KDD 2019 (Acceptance Rate \approx 14%)
- [97] SWEg: Lossless and Lossy Summarization of Web-Scale Graphs
[Kijung Shin](#), Amol Ghoting, Myunghwan Kim and Hema Raghavan
WWW 2019 (Acceptance Rate \approx 18%)
- [98] SMF: Drift Aware Matrix Factorization with Seasonal Patterns
Bryan Hooi, [Kijung Shin](#), Shenghua Liu, and Christos Faloutsos
SDM 2019 (Acceptance Rate \approx 23%)
- [99] Think Before You Discard: Accurate Triangle Counting in Graph Streams with Deletions
[Kijung Shin](#), Jisu Kim, Bryan Hooi, and Christos Faloutsos
PKDD 2018 (Acceptance Rate \approx 26%)
- [100] ONE-M: Modeling the Co-evolution of Opinions and Network Connections
Aastha Nigam, [Kijung Shin](#), Ashwin Bahulkar, Bryan Hooi, David Hachen,
Boleslaw Szymanski, Christos Faloutsos, and Nitesh Chawla
PKDD 2018 (Acceptance Rate \approx 26%)
- [101] Discovering Progression Stages in Trillion-Scale Behavior Logs
[Kijung Shin](#), Mahdi Shafiei, Myunghwan Kim, Aastha Jain, and Hema Raghavan
WWW 2018 (Industry Track)
- [102] Tri-Fly: Distributed Estimation of Global and Local Triangle Counts in Graph Streams
[Kijung Shin](#), Mohammad Hammoud, Euiwoong Lee, Jinoh Oh, and Christos Faloutsos
PAKDD 2018 (Acceptance Rate \approx 18%)
- [103] Fast, Accurate and Flexible Algorithms for Dense Subtensor Mining
[Kijung Shin](#), Bryan Hooi, and Christos Faloutsos
ACM TKDD (SCI(E) Journal, 2018)
- [104] Patterns and Anomalies in k-Cores of Real-world Graphs with Applications
[Kijung Shin](#), Tina Eliassi-Rad, and Christos Faloutsos
Knowledge and Information Systems (SCI(E) Journal, 2018)
Invited as One of the Best-Ranked Papers of ICDM 2016
- [105] WRS: Waiting Room Sampling for Accurate Triangle Counting in Real Graph Streams
[Kijung Shin](#)
IEEE ICDM 2017 (Acceptance Rate \approx 20%)

- [106] ZooRank: Ranking Suspicious Entities in Time-Evolving Tensors
Hemank Lamba, Bryan Hooi, [Kijung Shin](#), Christos Faloutsos, and Jürgen Pfeffer
PKDD 2017 (Acceptance Rate \approx 27%)
- [107] DenseAlert: Incremental Dense-Subtensor Detection in Tensor Streams
[Kijung Shin](#), Bryan Hooi, Jisu Kim, and Christos Faloutsos
ACM KDD 2017 (Acceptance Rate \approx 18%)
- [108] Why You Should Charge Your Friends for Borrowing Your Stuff
[Kijung Shin](#), Euiwoong Lee, Dhivya Eswaran, and Ariel D. Procaccia
IJCAI 2017 (Acceptance Rate \approx 26%)
Featured in New Scientist
- [109] D-Cube: Dense-Block Detection in Terabyte-Scale Tensors
[Kijung Shin](#), Bryan Hooi, Jisu Kim, and Christos Faloutsos
ACM WSDM 2017 (Long Presentation Acceptance Rate \approx 5%)
Long Oral Presentation
- [110] S-HOT: Scalable High-Order Tucker Decomposition
Jinoh Oh, [Kijung Shin](#), Evangelos E. Papalexakis, Christos Faloutsos, and Hwanjo Yu
ACM WSDM 2017 (Acceptance Rate \approx 16%)
- [111] Graph-Based Fraud Detection in the Face of Camouflage
Bryan Hooi, [Kijung Shin](#), Hyun Ah Song, Alex Beutel, Neil Shah, and Christos Faloutsos
ACM TKDD (SCI(E) Journal, 2017)
Invited as One of the Best-Ranked Papers of KDD 2016
- [112] Fully Scalable Methods for Distributed Tensor Factorization
[Kijung Shin](#), Lee Sael, and U Kang
IEEE TKDE (SCI(E) Journal, 2017)
- [113] CoreScope: Graph Mining Using k-Core Analysis - Patterns, Anomalies and Algorithms
[Kijung Shin](#), Tina Eliassi-Rad, and Christos Faloutsos
IEEE ICDM 2016 (Long Presentation Acceptance Rate \approx 9%)
Selected as One of the Best-Ranked Papers of ICDM 2016 for Fast-track Journal Invitation
- [114] M-Zoom: Fast Dense-Block Detection in Tensors with Quality Guarantees
[Kijung Shin](#), Bryan Hooi, and Christos Faloutsos
PKDD 2016 (Acceptance Rate \approx 28%)
- [115] FRAUDAR: Bounding Graph Fraud in the Face of Camouflage
Bryan Hooi, Hyun Ah Song, Alex Beutel, Neil Shah, [Kijung Shin](#), and Christos Faloutsos
ACM KDD 2016 (Long Presentation Acceptance Rate \approx 9%)
Received the SIGKDD Best Research Paper Award
- [116] Random Walk with Restart on Large Graphs Using Block Elimination
Jinhong Jung, [Kijung Shin](#), Lee Sael, and U Kang
ACM TODS (SCI(E) Journal, 2016)
- [117] BEAR: Block Elimination Approach for Random Walk with Restart on Large Graphs
[Kijung Shin](#), Jinhong Jung, Lee Sael, and U Kang
ACM SIGMOD 2015 (Acceptance Rate \approx 26%)
Received the Samsung Humantech Paper Award (1st in CS)
- [118] Distributed Methods for High-dimensional and Large-scale Tensor Factorization
[Kijung Shin](#) and U Kang
IEEE ICDM 2014 (Acceptance Rate \approx 20%)

- [119] Data/Feature Distributed Stochastic Coordinate Descent for Logistic Regression
Dongyeop Kang, Woosang Lim, [Kijung Shin](#), Lee Sael, and U Kang
ACM CIKM 2014 (Acceptance Rate \approx 21%)

- WORKSHOP PAPERS [1] Prediction Is NOT Classification: On Formulation and Evaluation of Hyperedge Prediction
Taehyung Yu, Soo Yong Lee, Hyunjin Hwang, and [Kijung Shin](#)
High Dimensional Data Mining 2024
- [2] Graphlets over Time: A New Lens for Temporal Network Analysis
Deukryeol Yoon, Dongjin Lee, Minyoung Choe, and [Kijung Shin](#)
Mining and Learning Real-world Dynamics via High-order Networks 2024
- [3] Deep-Learning-Based Precipitation Nowcasting with Ground Weather Station Data and Radar Data
Jihoon Ko*, Kyuhan Lee*, Hyunjin Hwang, and [Kijung Shin](#)
Spatial and Spatio-Temporal Data Mining 2022

TEACHING **Instructor**

KAIST AI607 Graph Mining and Social Network Analysis	Fall 2019 - 2024
KAIST AI506 Data Mining and Search	Spring 2020 - 2025
KAIST EE210 Probability and Introductory Random Processes	Fall 2020
KAIST EE209 Programming Structures for Electrical Engineering	Spring 2019

Teaching Assistant

CMU 10-601 Introduction to Machine Learning	Fall 2017
CMU 15-780 Graduate Artificial Intelligence	Spring 2017

Guest Lecturer

CMU 10-405 Machine Learning with Large Datasets	Spring 2018
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MENTORING **Postdoctoral Researchers**

Hyunjin Choo	Spring 2025 -
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Ph.D. Students

Dongjin Lee, KAIST EE	Graduated in Fall 2023
Jihoon Ko, KAIST AI (MS/PhD Integrated)	Graduated in Fall 2024
Manh Tuan Do, KAIST AI (MS/PhD Integrated)	Graduated in Fall 2024
Kyuhan Lee, KAIST AI (MS/PhD Integrated)	Graduated in Fall 2024
Hyunjin Choo, KAIST EE	Graduated in Fall 2024
Hyeonsoo Jo, KAIST AI	Graduated in Spring 2025
Geon Lee, KAIST AI (MS/PhD Integrated)	Fall 2020 -
Minyoung Choe, KAIST AI (MS/PhD Integrated)	Spring 2021 -
Hyunjin Hwang, KAIST AI (MS/PhD Integrated)	Spring 2022 -
Taehyung Kwon, KAIST AI	Spring 2022 -
Fanchen Bu, KAIST EE	Spring 2022 -
Shinhwan Kang, KAIST AI	Spring 2023 -
Soo Yong Lee, KAIST AI	Fall 2023 -
Sunwoo Kim, KAIST AI	Spring 2024 -
Heechan Moon, KAIST AI	Fall 2024 -
Langzhang Liang, KAIST AI	Fall 2024 -
Jaewan Chun, KAIST AI	Spring 2025 -
Sojeong Kim, KAIST AI	Spring 2025 -
Jongha Lee, KAIST AI	Spring 2025 -

Master Students

Inkyu Park, KAIST AI	Graduated in Spring 2021
Hyeonju Lee, KAIST AI	Graduated in Spring 2021
Hyunjin Hwang, KAIST EE	Graduated in Fall 2021
Taehyung Kwon, KAIST AI	Graduated in Fall 2021
Shinhwan Kang, KAIST AI	Graduated in Fall 2022
Hyeonjeong Shin, KAIST AI	Graduated in Fall 2022
Deukryeol Yoon, KAIST AI	Graduated in Fall 2022
Juwon Kim, KAIST AI	Graduated in Spring 2023
Seungwoo Lee, KAIST EE	Graduated in Spring 2023
Soo Yong Lee, KAIST AI	Graduated in Spring 2023
Taehyung Yu, KAIST AI	Graduated in Spring 2023
Dongyeong Hwang, KAIST AI	Graduated in Fall 2023
Hyunju Kim, KAIST AI	Graduated in Fall 2023
Sunwoo Kim, KAIST AI	Graduated in Fall 2023
Heechan Moon, KAIST AI	Graduated in Spring 2024
Jaewan Chun, KAIST AI	Graduated in Fall 2024
Sojeong Kim, KAIST AI	Graduated in Fall 2024
Jongha Lee, KAIST AI	Graduated in Fall 2024
Chunji Cui, KAIST AI	Fall 2023 -
Yuyeong Kim, KAIST AI	Fall 2023 -
Seokbeom Yoon, KAIST AI	Fall 2023 -
Dongwon Choi, KAIST AI	Fall 2024 -
Juyeon Kim, KAIST AI	Fall 2024 -
Kyungho Kim, KAIST AI	Fall 2024 -
Yeonje Choi, KAIST AI	Spring 2025 -
Yeongho Kim, KAIST AI	Spring 2025 -

SERVICES

Conference Organizing Committee

DASFAA (Tutorial Co-chair)	2026
ACM CIKM (Short-Paper Program Co-Chair)	2025
IEEE DSAA (Publicity Co-chair)	2024

Conference Senior Program Committee (or Area Chair)

ACM KDD	2023 - 2025
NeurIPS (Datasets and Benchmark Track)	2023 - 2024
ICLR	2025

Conference Program Committee (or Reviewer)

ACM KDD	2019 - 2022
ACM WWW	2019 - 2025
ACM SIGIR	2025
IEEE ICDM	2019 - 2024
ACM CIKM	2021 - 2024
ACM WSDM	2022 - 2025
SDM	2022 - 2025
PAKDD	2023 - 2024

Workshop Organizing Committee

Workshop on Graph Learning with Foundation Models	2025
Workshop on Mining and Learning Real-world Dynamics via High-order Networks	2024

Journal Editor

Big Data Research (Associate Editor)

2022 - Present