

Kijung SHIN

CONTACT INFORMATION	CHiPS (N26), Room #114 291 Daehak-ro, Yuseong-gu Daejeon 34141, Republic of Korea	Phone: +82 - 42 - 350 - 7454 Email: kijungs@kaist.ac.kr Homepage: https://kijungs.github.io
RESEARCH INTERESTS	Data Mining, Graph Mining, Social Network Analysis, Scalable 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 Seoul National University , Seoul, Korea B.S. in Computer Science & Engineering; and B.A. in Economics Thesis: “Scalable Methods for Random Walk with Restart and Tensor Factorization” Advisors: Prof. U Kang and Prof. Byung-Gon Chun GPA: 4.21/4.30 (Ranked 1st in the College of Engineering)	08/2015 - 02/2019 03/2008 - 08/2015
POSITIONS	KAIST , Daejeon, Korea Assistant Professor, Graduate School of AI & School of Electrical Engineering LinkedIn Corporation , Mountain View, CA, USA Research Intern, Growth Relevance Team Project: “Lossless and Lossy Summarization of Web-Scale Graphs” Mentors: Dr. Amol Ghoting and Dr. Myunghwan Kim LinkedIn Corporation , Mountain View, CA, USA Research Intern, Growth Relevance Team Project: “Discovering Progression Stages in Trillion-Scale Behavior Logs” Mentors: Dr. Mahdi Shafiei and Dr. Myunghwan Kim CYRAM , Seoul, Korea Associate Researcher Projects: NetMiner 4 (social network analysis software), NetExplorer 3 (criminal analysis software), and Sopion.com (Twitter analysis and monitoring service)	02/2019 - Present 05/2018 - 08/2018 05/2017 - 08/2017 01/2011 - 12/2013
AWARDS & HONORS	Awarded the Siebel Scholar Fellowship Selected for Best Papers of ICDM 2016 and Invited to the KAIS Journal Received the SIGKDD Best Research Paper Award Awarded the Korea Foundation for Advanced Studies Scholarship Received the Best Senior Thesis Award , Seoul National University Received the Samsung Humantech Paper Award (1st in CS) Awarded the Kwanjeong Educational Foundation Scholarship Awarded the Merit-Based Scholarship , Seoul National University Awarded the National Science & Technology Scholarship	08/2018 12/2016 08/2016 2015 - 2019 08/2015 02/2015 2010, 2014, 2015 2009 2008
THESES	<ul style="list-style-type: none">[1] Mining Large Dynamic Graphs and Tensors Kijung Shin Ph.D. Thesis, Carnegie Mellon University, 2019.[2] Scalable Methods for Random Walk with Restart and Tensor Factorization Kijung Shin Senior Thesis, Seoul National University, 2015. (<i>Best Senior Thesis Award</i>)	

- REFERRED
CONFERENCE
& JOURNAL
PAPERS
- [3] 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
TheWebConf 2020 (formerly WWW) (Short Paper)
 - [4] TellTail: Fast Scoring and Detection of Dense Subgraphs
Bryan Hooi, [Kijung Shin](#), Hemank Lamba, and Christos Faloutsos
AAAI 2020 (*Oral Presentation*)
 - [5] MIDAS: Microcluster-based Detector of Anomalies in Edge Streams
Siddharth Bhatia, Bryan Hooi, Minji Yoon, [Kijung Shin](#), and Christos Faloutsos
AAAI 2020 (*Oral Presentation*)
 - [6] Fast and Memory-Efficient Algorithms for High-Order Tucker Decomposition
Jiyuan Zhang, Jinoh Oh, [Kijung Shin](#), Evangelos E. Papalexakis,
Christos Faloutsos, and Hwanjo Yu
KAIS 2020 (Journal)
 - [7] Fast, Accurate and Provable Triangle Counting in Fully Dynamic Graph Streams
[Kijung Shin](#), Sejoon Oh, Jisu Kim, Bryan Hooi, and Christos Faloutsos
ACM TKDD 2020 (Journal)
 - [8] 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
 - [9] SWeG: Lossless and Lossy Summarization of Web-Scale Graphs
[Kijung Shin](#), Amol Ghoting, Myunghwan Kim and Hema Raghavan
TheWebConf 2019 (formerly WWW)
 - [10] SMF: Drift Aware Matrix Factorization with Seasonal Patterns
Bryan Hooi, [Kijung Shin](#), Shenghua Liu, and Christos Faloutsos
SDM 2019
 - [11] Think Before You Discard: Accurate Triangle Counting in Graph Streams with Deletions
[Kijung Shin](#), Jisu Kim, Bryan Hooi, and Christos Faloutsos
PKDD 2018
 - [12] 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
 - [13] Discovering Progression Stages in Trillion-Scale Behavior Logs
[Kijung Shin](#), Mahdi Shafiei, Myunghwan Kim, Aastha Jain, and Hema Raghavan
TheWebConf 2018 (formerly WWW) (Industry Track)
 - [14] 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
 - [15] Fast, Accurate and Flexible Algorithms for Dense Subtensor Mining
[Kijung Shin](#), Bryan Hooi, and Christos Faloutsos
ACM TKDD 2018 (Journal)
 - [16] Patterns and Anomalies in k-Cores of Real-world Graphs with Applications
[Kijung Shin](#), Tina Eliassi-Rad, and Christos Faloutsos
KAIS 2018 (Journal) (*Special Issue on the Selected Papers from ICDM 2016*)

- [17] WRS: Waiting Room Sampling for Accurate Triangle Counting in Real Graph Streams
Kijung Shin
IEEE ICDM 2017
- [18] ZooRank: Ranking Suspicious Entities in Time-Evolving Tensors
Hemank Lamba, Bryan Hooi, Kijung Shin, Christos Faloutsos, and Jürgen Pfeffer
PKDD 2017
- [19] DenseAlert: Incremental Dense-Subtensor Detection in Tensor Streams
Kijung Shin, Bryan Hooi, Jisu Kim, and Christos Faloutsos
ACM KDD 2017
- [20] Why You Should Charge Your Friends for Borrowing Your Stuff
Kijung Shin, Euiwoong Lee, Dhivya Eswaran, and Ariel D. Procaccia
IJCAI 2017 (*Featured in New Scientist*)
- [21] D-Cube: Dense-Block Detection in Terabyte-Scale Tensors
Kijung Shin, Bryan Hooi, Jisu Kim, and Christos Faloutsos
ACM WSDM 2017 (*SIGIR Student Travel Grant*)
- [22] S-HOT: Scalable High-Order Tucker Decomposition
Jinoh Oh, Kijung Shin, Evangelos E. Papalexakis, Christos Faloutsos, and Hwanjo Yu
ACM WSDM 2017
- [23] 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 2017 (Journal) (*Special Issue on the Best Papers from KDD 2016*)
- [24] Fully Scalable Methods for Distributed Tensor Factorization
Kijung Shin, Lee Sael, and U Kang
IEEE TKDE 2017 (Journal)
- [25] CoreScope: Graph Mining Using k-Core Analysis - Patterns, Anomalies and Algorithms
Kijung Shin, Tina Eliassi-Rad, and Christos Faloutsos
IEEE ICDM 2016
(*Selected for Best Papers of ICDM 2016 and Invited to the KAIS Journal*)
- [26] M-Zoom: Fast Dense-Block Detection in Tensors with Quality Guarantees
Kijung Shin, Bryan Hooi, and Christos Faloutsos
PKDD 2016
- [27] 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 (*SIGKDD Best Research Paper Award*)
- [28] Random Walk with Restart on Large Graphs Using Block Elimination
Jinhong Jung, Kijung Shin, Lee Sael, and U Kang
ACM TODS 2016 (Journal)
- [29] BEAR: Block Elimination Approach for Random Walk with Restart on Large Graphs
Kijung Shin, Jinhong Jung, Lee Sael, and U Kang
ACM SIGMOD 2015
(*Samsung Humantech Paper Award, SIGMOD Student Travel Award*)
- [30] Distributed Methods for High-dimensional and Large-scale Tensor Factorization
Kijung Shin and U Kang
IEEE ICDM 2014 (*ICDM Student Travel Award*)
- [31] Data/Feature Distributed Stochastic Coordinate Descent for Logistic Regression
Dongyeop Kang, Woosang Lim, Kijung Shin, Lee Sael, and U Kang
ACM CIKM 2014

OTHER PAPERS	[32] Patterns and Anomalies in k-Cores of Real-world Networks <u>Kijung Shin</u> , Tina Eliassi-Rad, and Christos Faloutsos NetSci 2017 (Abstract)	
	[33] Incorporating Side Information in Tensor Completion {Hemank Lamba*, Vaishnavh Nagarajan*, <u>Kijung Shin</u> *, and Naji Shajarisales*} WWW Companion 2016 (Poster)	
TECHNICAL REPORTS	[34] CoCoS: Fast and Accurate Distributed Triangle Counting in Graph Streams <u>Kijung Shin</u> , Euiwoong Lee, Jinoh Oh, Mohammad Hammoud, and Christos Faloutsos Technical Report 2019	
	[35] Out-of-Core and Distributed Algorithms for Dense Subtensor Mining <u>Kijung Shin</u> , Bryan Hooi, Jisu Kim, and Christos Faloutsos Technical Report 2018	
TEACHING	Instructor	
	KAIST AI506 Data Mining and Search	Spring 2020
	KAIST AI607 Graph Mining and Social Network Analysis	Fall 2019
	KAIST EE209(B) 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
TEACHING	Guest Lecturer	
	CMU 10-405 Machine Learning with Large Datasets	Spring 2018
MENTORING	Ph.D. Students	
	Dongjin Lee, KAIST EE	Fall 2019 -
	Hyeonsoo Jo, KAIST AI	Fall 2019 -
	Master Students	
	Se-eun Yoon, KAIST EE (Co-advisor: Prof. Yung Yi)	Spring 2019 -
	Manh Tuan Do, KAIST EE	Fall 2019 -
	Jihoon Ko, KAIST AI	Fall 2019 -
	Inkyu Park, KAIST AI	Fall 2019 -
	Hyeonju Lee, KAIST AI	Fall 2019 -
	Hyunjin Hwang, KAIST EE	Spring 2020 -
	Kyuhan Lee, KAIST AI	Spring 2020 -
	Seungwoo Lee, KAIST AI	Spring 2020 -
	Taehyung Kwon, KAIST AI	Spring 2020 -
	Undergraduates	
	Gungyu Lee, KAIST EE (Independent Research)	Winter 2019 -
	HyeonJeong Shin, KAIST EE (Independent Research)	Winter 2019 -
	Jaehan Cho, KAIST EE (Independent Research)	Fall 2019 -
	Yewon Eliana Kim, KAIST EE (URP Program)	Fall 2019 -
	Hyunjin Hwang, KAIST EE (URP Program)	Summer 2019 - Winter 2019
	Taehyung Kwon, KAIST CS (Independent Research)	Summer 2019 - Winter 2019
	Seungwoo Lee, KAIST CS (Independent Research)	Summer 2019 - Winter 2019
	Yunbum Kook, KAIST Math (URP Program)	Spring 2019 - Fall 2019
	Seunghyuk Oh, KAIST EE (Independent Research)	Summer 2019
	Minkyoo Song, KAIST ISysE (Independent Research)	Summer 2019
	Manh Tuan Do, KAIST EE	Spring 2019 - Summer 2019

	Jihoon Ko, KAIST CS	Spring 2019 - Summer 2019
	Jung Uk Yim, KAIST EE (Graduate Research)	Spring 2019
	Visiting Students	
	Kyuhan Lee, Hanyang Univ. CS	Summer 2019 - Winter 2019
	Shaurya Goel, IIT Delhi Math (VSR Program)	Summer 2019
SERVICES	Program Committee Member (Major Conferences)	
	ACM KDD	2019
	The Web Conference (formerly WWW)	2019 - 2020
	IEEE ICDM	2019 - 2020
	Program Committee Member (Others)	
	DASFAA	2020
	Doctoral Consortium @ ACM WSDM	2020
	IDEA Workshop @ ACM KDD	2018
	Conference Reviewer	
	NeurIPS	2019
	Journal Reviewer	
	The VLDB Journal	2019
	ACM Transactions on Knowledge Discovery from Data (TKDD)	2019
	IEEE Transactions on Knowledge and Data Engineering (TKDE)	2018 - 2019
	Physica A: Statistical Mechanics and its Applications	2018
	IEEE Signal Processing Letters (SPL)	2017
	IEEE/ACM Transactions on Networking (ToN)	2017
	PhD Committee Member	
	Wondeuk Yoon, KAIST CS (Advisor: Prof. Daeyoung Kim)	01/2020 (Proposal)
	Yungi Ha, KAIST EE (Advisor: Prof. Chan-Hyun Youn)	01/2020 (Proposal)
	Seungjae Lee, KAIST EE (Advisor: Prof. Chang D. Yoo)	11/2019 (Defense)
	Hyeontaek Oh, KAIST EE (Advisor: Prof. Jun Kyun Choi)	11/2019 (Defense)
	MS Committee Member	
	Geon Heo, KAIST EE (Advisor: Steven Euijong Whang)	12/2019
	Junhyeok Kang, KAIST ISysE (Advisor: Jae-Gil Lee)	12/2019
	Yu Yao, KAIST ISysE (Advisor: Jae-Gil Lee)	12/2019