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 — 08/2015 - 02/2019
Ph.D. in Computer Science
Thesis: "Mining Large Dynamic Graphs and Tensors"
Advisor: Prof. Christos Faloutsos

Seoul National University, Seoul, Korea — 03/2008 - 08/2015
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)

POSITIONS

KAIST, Daejeon, Korea — 02/2019 - Present
Assistant Professor, Graduate School of AI & School of Electrical Engineering

LinkedIn Corporation, Mountain View, CA, USA — 05/2018 - 08/2018
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 — 05/2017 - 08/2017
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 — 01/2011 - 12/2013
Associate Researcher
Projects: NetMiner 4 (social network analysis software), NetExplorer 3 (criminal analysis software), and Sopion.com (Twitter analysis and monitoring service)

AWARDS & HONORS

Awarded the **Siebel Scholar Fellowship**	08/2018
Selected for **Best Papers of ICDM 2016** and Invited to the KAIS Journal	12/2016
Received the **SIGKDD Best Research Paper Award**	08/2016
Awarded the **Korea Foundation for Advanced Studies Scholarship**	2015 - 2019
Received the **Best Senior Thesis Award**, Seoul National University	08/2015
Received the **Samsung Humantech Paper Award** (1st in CS)	02/2015
Awarded the **Kwanjeong Educational Foundation Scholarship**	2010, 2014, 2015
Awarded the **Merit-Based Scholarship**, Seoul National University	2009
Awarded the **National Science & Technology Scholarship**	2008

THESES

[1] Mining Large Dynamic Graphs and Tensors
<u>Kijung Shin</u>
Ph.D. Thesis, Carnegie Mellon University, 2019.

[2] Scalable Methods for Random Walk with Restart and Tensor Factorization
<u>Kijung Shin</u>
Senior Thesis, Seoul National University, 2015. *(Best Senior Thesis Award)*

REFERRED
CONFERENCE
& JOURNAL
PAPERS

[3] TellTail: Fast Scoring and Detection of Dense Subgraphs
Bryan Hooi, <u>Kijung Shin</u>, Hemank Lamba, Christos Faloutsos
AAAI 2020 (*Oral Presentation*)

[4] MIDAS: MIcrocluster-based Detector of Anomalies in Edge Streams
Siddharth Bhatia, Bryan Hooi, Minji Yoon, Kijung Shin, Christos Faloutsos
AAAI 2020 (*Oral Presentation*)

[5] Fast, Accurate and Provable Triangle Counting in Fully Dynamic Graph Streams
<u>Kijung Shin</u>, Sejoon Oh, Jisu Kim, Bryan Hooi, and Christos Faloutsos
ACM TKDD 2020 (Journal)

[6] Fast and Accurate Anomaly Detection in Dynamic Graphs with a Two-Pronged Approach
Minji Yoon, Bryan Hooi, <u>Kijung Shin</u>, and Christos Faloutsos
ACM KDD 2019

[7] SWeG: Lossless and Lossy Summarization of Web-Scale Graphs
<u>Kijung Shin</u>, Amol Ghoting, Myunghwan Kim and Hema Raghavan
TheWebConf 2019 (formerly WWW)

[8] SMF: Drift Aware Matrix Factorization with Seasonal Patterns
Bryan Hooi, <u>Kijung Shin</u>, Shenghua Liu, and Christos Faloutsos
SDM 2019

[9] Think Before You Discard: Accurate Triangle Counting in Graph Streams with Deletions
<u>Kijung Shin</u>, Jisu Kim, Bryan Hooi, and Christos Faloutsos
PKDD 2018

[10] ONE-M: Modeling the Co-evolution of Opinions and Network Connections
Aastha Nigam, <u>Kijung Shin</u>, Ashwin Bahulkar, Bryan Hooi, David Hachen,
Boleslaw Szymanski, Christos Faloutsos, and Nitesh Chawla
PKDD 2018

[11] Discovering Progression Stages in Trillion-Scale Behavior Logs
<u>Kijung Shin</u>, Mahdi Shafiei, Myunghwan Kim, Aastha Jain, and Hema Raghavan
TheWebConf 2018 (formerly WWW) (Industry Track)

[12] Tri-Fly: Distributed Estimation of Global and Local Triangle Counts in Graph Streams
<u>Kijung Shin</u>, Mohammad Hammoud, Euiwoong Lee, Jinoh Oh, and Christos Faloutsos
PAKDD 2018

[13] Fast, Accurate and Flexible Algorithms for Dense Subtensor Mining
<u>Kijung Shin</u>, Bryan Hooi, and Christos Faloutsos
ACM TKDD 2018 (Journal)

[14] Patterns and Anomalies in k-Cores of Real-world Graphs with Applications
<u>Kijung Shin</u>, Tina Eliassi-Rad, and Christos Faloutsos
KAIS 2018 (Journal) (*Special Issue on the Selected Papers from ICDM 2016*)

[15] WRS: Waiting Room Sampling for Accurate Triangle Counting in Real Graph Streams
<u>Kijung Shin</u>
IEEE ICDM 2017

[16] ZooRank: Ranking Suspicious Entities in Time-Evolving Tensors
Hemank Lamba, Bryan Hooi, <u>Kijung Shin</u>, Christos Faloutsos, and Jürgen Pfeffer
PKDD 2017

[17] DenseAlert: Incremental Dense-Subtensor Detection in Tensor Streams
<u>Kijung Shin</u>, Bryan Hooi, Jisu Kim, and Christos Faloutsos
ACM KDD 2017

[18] Why You Should Charge Your Friends for Borrowing Your Stuff
<u>Kijung Shin</u>, Euiwoong Lee, Dhivya Eswaran, and Ariel D. Procaccia
IJCAI 2017 (*Featured in New Scientist*)

[19] D-Cube: Dense-Block Detection in Terabyte-Scale Tensors
<u>Kijung Shin</u>, Bryan Hooi, Jisu Kim, and Christos Faloutsos
ACM WSDM 2017 (*SIGIR Student Travel Grant*)

[20] S-HOT: Scalable High-Order Tucker Decomposition
Jinoh Oh, <u>Kijung Shin</u>, Evangelos E. Papalexakis, Christos Faloutsos, and Hwanjo Yu
ACM WSDM 2017

[21] Graph-Based Fraud Detection in the Face of Camouflage
Bryan Hooi, <u>Kijung Shin</u>, Hyun Ah Song, Alex Beutel, Neil Shah, and Christos Faloutsos
ACM TKDD 2017 (Journal) (*Special Issue on the Best Papers from KDD 2016*)

[22] Fully Scalable Methods for Distributed Tensor Factorization
<u>Kijung Shin</u>, Lee Sael, and U Kang
IEEE TKDE 2017 (Journal)

[23] CoreScope: Graph Mining Using k-Core Analysis - Patterns, Anomalies and Algorithms
<u>Kijung Shin</u>, Tina Eliassi-Rad, and Christos Faloutsos
IEEE ICDM 2016
(*Selected for Best Papers of ICDM 2016 and Invited to the KAIS Journal*)

[24] M-Zoom: Fast Dense-Block Detection in Tensors with Quality Guarantees
<u>Kijung Shin</u>, Bryan Hooi, and Christos Faloutsos
PKDD 2016

[25] FRAUDAR: Bounding Graph Fraud in the Face of Camouflage
Bryan Hooi, Hyun Ah Song, Alex Beutel, Neil Shah, <u>Kijung Shin</u>, and Christos Faloutsos
ACM KDD 2016 (*SIGKDD Best Research Paper Award*)

[26] Random Walk with Restart on Large Graphs Using Block Elimination
Jinhong Jung, <u>Kijung Shin</u>, Lee Sael, and U Kang
ACM TODS 2016 (Journal)

[27] BEAR: Block Elimination Approach for Random Walk with Restart on Large Graphs
<u>Kijung Shin</u>, Jinhong Jung, Lee Sael, and U Kang
ACM SIGMOD 2015
(*Samsung Humantech Paper Award, SIGMOD Student Travel Award*)

[28] Distributed Methods for High-dimensional and Large-scale Tensor Factorization
<u>Kijung Shin</u> and U Kang
IEEE ICDM 2014 (*ICDM Student Travel Award*)

[29] Data/Feature Distributed Stochastic Coordinate Descent for Logistic Regression
Dongyeop Kang, Woosang Lim, <u>Kijung Shin</u>, Lee Sael, and U Kang
ACM CIKM 2014

OTHER
PAPERS

[30] Patterns and Anomalies in k-Cores of Real-world Networks
<u>Kijung Shin</u>, Tina Eliassi-Rad, and Christos Faloutsos
NetSci 2017 (Abstract)

[31] Incorporating Side Information in Tensor Completion
{Hemank Lamba*, Vaishnavh Nagarajan*, <u>Kijung Shin</u>*, and Naji Shajarisales*}
WWW Companion 2016 (Poster)

Technical Reports	[30]	CoCoS: Fast and Accurate Distributed Triangle Counting in Graph Streams Kijung Shin, Euiwoong Lee, Jinoh Oh, Mohammad Hammoud, and Christos Faloutsos Technical Report 2019
	[31]	Out-of-Core and Distributed Algorithms for Dense Subtensor Mining Kijung Shin, Bryan Hooi, Jisu Kim, and Christos Faloutsos Technical Report 2018

Teaching

Instructor
- 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

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 -

Undergraduates
- Yunbum Kook, KAIST Math (URP Program) — Spring 2019 -
- Hyunjin Hwang, KAIST EE (URP Program) — Summer 2019 -
- Taehyung Kwon, KAIST CS (Independent Research) — Summer 2019 -
- Seungwoo Lee, KAIST CS (Independent Research) — Summer 2019 -
- Yewon Eliana Kim, KAIST EE (Independent Research) — Fall 2019 -
- Jaehan Cho, KAIST EE (Independent Research) — 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 -
- 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

Program Committee Member (Others)
- 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
- Seungjae Lee, KAIST EE (Advisor: Prof. Chang D. Yoo)   06/2019 (Proposal)
- Hyeontaek Oh, KAIST EE (Advisor: Prof. Jun Kyun Choi)   11/2019

MS Committee Member
- Geon Heo, KAIST EE (Advisor: Steven Euijong Whang)   12/2019
- Juneha Song, KAIST EE (Advisor: Yung Yi)   12/2019
- Junhyeok Kang, KAIST KSE (Advisor: Jae-Gil Lee)   12/2019
- Yu Yao, KAIST KSE (Advisor: Jae-Gil Lee)   12/2019