Kijung Shin

Contact Information

Dept. of Computer Science, GHC 9005
Carnegie Mellon University
5000 Forbes Avenue
Pittsburgh, PA 15213

Homepage: http://kijungshin.com
Email: kijungs@cs.cmu.edu

Research Interests

Data Mining, Graph Mining, Scalable Machine Learning, Big Data

Education

Carnegie Mellon University, Pittsburgh, PA — Sep 2015 to May 2019 (Expected)
PhD in Computer Science
Thesis: *"Mining Large Dynamic Graphs and Tensors"*
Advisor: Prof. Christos Faloutsos

Carnegie Mellon University, Pittsburgh, PA — Dec 2017
MS in Computer Science

Seoul National University, Seoul, Korea — Aug 2015
BS in Computer Science and Engineering
BA in Economics (Double Major)
Ranked 1st in the College of Engineering (GPA: 4.21/4.30)

Work Experience

Carnegie Mellon University, Pittsburgh, PA — Sep 2015 to Present
Research Assistant with Prof. Christos Faloutsos
Developing models and algorithms for analyzing large dynamic graphs and tensors

LinkedIn Corporation, Mountain View, CA — May 2018 to Present
Research Intern with Dr. Amol Ghoting and Dr. Myunghwan Kim

LinkedIn Corporation, Mountain View, CA — May 2017 to Aug 2017
Research Intern with Dr. Mahdi Shafiei and Dr. Myunghwan Kim
Developed a model and a scalable algorithm for progression-stage learning

Seoul National University, Seoul, Korea — Jan 2015 to Jun 2015
Research Assistant (Part Time) with Prof. Byung-Gon Chun
Developed a distributed machine learning library on top of Apache REEF

KAIST, Daejeon, Korea — Jan 2014 to Aug 2014
Research Assistant with Prof. U Kang
Developed scalable algorithms for random walk with restart and tensor factorization

CYRAM, Seoul, Korea — Jan 2011 to Dec 2013
Associate Researcher
Developed a social network analysis software (NetMiner 4), a criminal analysis software (NetExplorer 3), and a Twitter analysis and monitoring service (Sopion.com)

Awards & Honors

Selected for **Best Papers of ICDM 2016** and Invited to the KAIS Journal — Dec 2016
Received the **SIGKDD Best Research Paper Award** (as a coauthor) — Aug 2016
Awarded the **Korea Foundation for Advanced Studies Scholarship** — 2015 to 2020
Received the **Best Senior Thesis Award**, Seoul National University — Aug 2015
Received the **Samsung Humantech Paper Award** (1st in CS) — Feb 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

Referred Journal Papers

[1] Fast, Accurate and Flexible Algorithms for Dense Subtensor Mining
Kijung Shin, Bryan Hooi, and Christos Faloutsos
TKDD 2018 - ACM Transactions on Knowledge Discovery from Data

[2] Patterns and Anomalies in k-Cores of Real-world Graphs with Applications
Kijung Shin, Tina Eliassi-Rad, and Christos Faloutsos
KAIS 2018 - Knowledge and Information Systems
(Special Issue on the Selected Papers from ICDM 2016)

[3] Graph-Based Fraud Detection in the Face of Camouflage
Bryan Hooi, Kijung Shin, Hyun Ah Song, Alex Beutel, Neil Shah, and Christos Faloutsos
TKDD 2017 - ACM Transactions on Knowledge Discovery from Data
(Special Issue on the Best Papers from KDD 2016)

[4] Fully Scalable Methods for Distributed Tensor Factorization
Kijung Shin, Lee Sael, and U Kang
TKDE 2017 - IEEE Transactions on Knowledge and Data Engineering

[5] Random Walk with Restart on Large Graphs Using Block Elimination
Jinhong Jung, Kijung Shin, Lee Sael, and U Kang
TODS 2016 - ACM Transactions on Database Systems

Referred Conference Papers

[6] Discovering Progression Stages in Trillion-Scale Behavior Logs
Kijung Shin, Mahdi Shafiei, Myunghwan Kim, Aastha Jain, and Hema Raghavan
WWW 2018 (Industry Track)

[7] 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

[8] WRS: Waiting Room Sampling for Accurate Triangle Counting in Real Graph Streams
Kijung Shin
ICDM 2017

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

[10] DenseAlert: Incremental Dense-Subtensor Detection in Tensor Streams
Kijung Shin, Bryan Hooi, Jisu Kim, and Christos Faloutsos
KDD 2017

[11] 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*)

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

[13] S-HOT: Scalable High-Order Tucker Decomposition
Jinoh Oh, Kijung Shin, Evangelos E. Papalexakis, Christos Faloutsos, and Hwanjo Yu
WSDM 2017

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

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

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

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

[18] Distributed Methods for High-dimensional and Large-scale Tensor Factorization
Kijung Shin and U Kang
ICDM 2014 (*ICDM Student Travel Award*)

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

Other Papers

[20] Mining Large Dynamic Graphs and Tensors: Thesis Proposal
Kijung Shin
Thesis Proposal, Carnegie Mellon University, March 2018

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

[22] Incorporating Side Information in Tensor Completion
{Hemank Lamba*, Vaishnavh Nagarajan*, Kijung Shin*, and Naji Shajarisales*}
WWW Companion 2016

[23] Scalable Methods for Random Walk with Restart and Tensor Factorization
Kijung Shin
Senior Thesis, Seoul National University, May 2015. *(Best Thesis Award)*

Released Software

NetMiner (http://www.netminer.com) contribution: Jan 2011 to Dec 2013
Commercial social network analysis software

Dolphin (https://github.com/cmssnu/dolphin) contribution: Jan 2015 to Jun 2015
Distributed machine learning on top of Apache REEF

Teaching Experience

Guest Lecturer
CMU 10-405 Machine Learning with Large Datasets — Feb 2018

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

Professional Services

Program Committee Member
IDEA Workshop @ KDD — 2018

Journal Reviewer
Physica A: Statistical Mechanics and its Applications — 2018

	IEEE Transactions on Knowledge and Data Engineering (TKDE)	2018
	IEEE Signal Processing Letters (SPL)	2017
	IEEE/ACM Transactions on Networking (ToN)	2017

Talks

"Tri-Fly: Distributed Estimation of Global and Local Triangle Counts in Graph Streams"	
PAKDD 2018	Jun 2018
"Discovering Progression Stages in Trillion-Scale Behavior Logs"	
WWW 2018	Apr 2018
"Why You Should Charge Your Friends for Borrowing Your Stuff"	
SCS Student Seminar, CMU	Apr 2018
Data Mining Seminar, CMU	Apr 2018
IJCAI 2017	Aug 2017
"Mining Large Dynamic Graphs and Tensors"	
Thesis Proposal, CMU	Mar 2018
KDisTech Research Seminar, CMU	Mar 2018
EE Department Seminar, KAIST	Jan 2018
NAVER Corporation	Jan 2018
"WRS: Waiting Room Sampling for Accurate Triangle Counting in Real Graph Streams"	
ICDM 2017	Nov 2017
Data Mining Seminar, CMU	Nov 2017
"D-Cube: Dense-Block Detection in Terabyte-Scale Tensors"	
WSDM 2017	Feb 2017
"CoreScope: Graph Mining Using k-Core Analysis - Patterns, Anomalies and Algorithms"	
ICDM 2016	Dec 2016
Database Seminar, CMU	Dec 2016
"M-Zoom: Fast Dense-Block Detection in Tensors with Quality Guarantees"	
ECML/PKDD 2016	Sep 2016
KDisTech Research Seminar, CMU	Sep 2016
Data Mining Seminar, Seoul National University	Aug 2016
"BEAR: Block Elimination Approach for Random Walk with Restart on Large Graphs"	
Database Seminar, CMU	Oct 2015
SIGMOD 2015	Jun 2015
"Distributed Methods for High-dimensional and Large-scale Tensor Factorization"	
ICDM 2014	Dec 2014
Data Mining Seminar, KAIST	May 2014

Graduate Coursework

15-859N Spectral Graph Theory and the Laplacian Paradigm	Fall 2016
15-814 Types and Programming Languages	Fall 2016
15-780 Graduate Artificial Intelligence	Spring 2016
15-826 Multimedia Databases and Data Mining	Spring 2016
10-715 Advanced Introduction to Machine Learning	Fall 2015
15-853 Algorithms in the Real World	Fall 2015

References Available on request