

## Kijung Shin

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CONTACT INFORMATION	Dept. of Computer Science, GHC 9005 Carnegie Mellon University 5000 Forbes Avenue Pittsburgh, PA 15213	Homepage: <a href="http://kijungshin.com">http://kijungshin.com</a> Email: <a href="mailto:kijungs@cs.cmu.edu">kijungs@cs.cmu.edu</a>
RESEARCH INTERESTS	Data Mining, Graph Mining, Scalable Machine Learning, Big Data	
EDUCATION	<b>Carnegie Mellon University</b> , Pittsburgh, PA PhD in Computer Science - Thesis: <i>"Mining Large Dynamic Graphs and Tensors"</i> - Advisor: Prof. Christos Faloutsos MS in Computer Science	Feb 2019 (Expected)    Dec 2017
	<b>Seoul National University</b> , Seoul, Korea BS in Computer Science and Engineering BA in Economics (Double Major) <i>Ranked 1st in the College of Engineering (GPA: 4.21/4.30)</i>	Aug 2015 Aug 2015
WORK EXPERIENCE	<b>Carnegie Mellon University</b> , Pittsburgh, PA Research Assistant with Prof. Christos Faloutsos Developing models and algorithms for analyzing large dynamic graphs and tensors	Sep 2015 to Present
	<b>LinkedIn Corporation</b> , Mountain View, CA Research Intern with Dr. Amol Ghoting and Dr. Myunghwan Kim Developed a lossless/lossy compression algorithm for billion-scale graphs	May 2018 to Aug 2018
	<b>LinkedIn Corporation</b> , Mountain View, CA Research Intern with Dr. Mahdi Shafiei and Dr. Myunghwan Kim Developed a progression-stage learning algorithm for trillion-scale behavior logs	May 2017 to Aug 2017
	<b>Seoul National University</b> , Seoul, Korea Research Assistant with Prof. Byung-Gon Chun Developed a distributed machine learning library on top of Apache REEF	Jan 2015 to Jun 2015
	<b>KAIST</b> , Daejeon, Korea Research Assistant with Prof. U Kang Developed a tensor-factorization algorithm for billion-scale tensors, and a similarity-search algorithm for million-scale graphs	Jan 2014 to Aug 2014
	<b>CYRAM</b> , Seoul, Korea 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)	Jan 2011 to Dec 2013
AWARDS & HONORS	Selected for <b>Best Papers of ICDM 2016</b> and Invited to the KAIS Journal Received the <b>SIGKDD Best Research Paper Award</b> (as a coauthor) Awarded the <b>Korea Foundation for Advanced Studies Scholarship</b> Received the <b>Best Senior Thesis Award</b> , Seoul National University Received the <b>Samsung Humantech Paper Award</b> (1st in CS) Awarded the <b>Kwanjeong Educational Foundation Scholarship</b> Awarded the <b>Merit-Based Scholarship</b> , Seoul National University Awarded the <b>National Science &amp; Technology Scholarship</b>	Dec 2016 Aug 2016 2015 to 2020 Aug 2015 Feb 2015 2010, 2014, 2015 2009 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] Think before You Discard: Accurate Triangle Counting in Graph Streams with Deletions  
Kijung Shin, Jisu Kim, Bryan Hooi, and Christos Faloutsos  
**ECML/PKDD 2018** (To Appear)
- [7] 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  
**ECML/PKDD 2018** (To Appear)
- [8] Discovering Progression Stages in Trillion-Scale Behavior Logs  
Kijung Shin, Mahdi Shafiei, Myunghwan Kim, Aastha Jain, and Hema Raghavan  
**WWW 2018** (Industry Track)
- [9] 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**
- [10] WRS: Waiting Room Sampling for Accurate Triangle Counting in Real Graph Streams  
Kijung Shin  
**ICDM 2017**
- [11] ZooRank: Ranking Suspicious Entities in Time-Evolving Tensors  
Hemank Lamba, Bryan Hooi, Kijung Shin, Christos Faloutsos, and Jürgen Pfeffer  
**ECML/PKDD 2017**
- [12] DenseAlert: Incremental Dense-Subtensor Detection in Tensor Streams  
Kijung Shin, Bryan Hooi, Jisu Kim, and Christos Faloutsos  
**KDD 2017**
- [13] 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*)
- [14] D-Cube: Dense-Block Detection in Terabyte-Scale Tensors  
Kijung Shin, Bryan Hooi, Jisu Kim, and Christos Faloutsos  
**WSDM 2017** (*SIGIR Student Travel Grant*)

- [15] S-HOT: Scalable High-Order Tucker Decomposition  
Jinoh Oh, [Kijung Shin](#), Evangelos E. Papalexakis, Christos Faloutsos, and Hwanjo Yu  
**WSDM 2017**
- [16] 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*)
- [17] M-Zoom: Fast Dense-Block Detection in Tensors with Quality Guarantees  
[Kijung Shin](#), Bryan Hooi, and Christos Faloutsos  
**ECML/PKDD 2016**
- [18] 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*)
- [19] 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*)
- [20] Distributed Methods for High-dimensional and Large-scale Tensor Factorization  
[Kijung Shin](#) and U Kang  
**ICDM 2014** (*ICDM Student Travel Award*)
- [21] Data/Feature Distributed Stochastic Coordinate Descent for Logistic Regression  
Dongyeop Kang, Woosang Lim, [Kijung Shin](#), Lee Sael, and U Kang  
**CIKM 2014**

OTHER  
PAPERS

- [22] Patterns and Anomalies in k-Cores of Real-world Networks  
[Kijung Shin](#), Tina Eliassi-Rad, and Christos Faloutsos  
**NetSci 2017** (Abstract)
- [23] Incorporating Side Information in Tensor Completion  
{Hemank Lamba\*, Vaishnavh Nagarajan\*, [Kijung Shin](#)\*, and Najj Shajarisales\*}  
**WWW Companion 2016** (Poster)
- [24] 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	<b>Program Committee Member</b> - IDEA Workshop @ KDD	2018
	<b>Journal Reviewer</b>	
	- 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	<i>“Tri-Fly: Distributed Estimation of Global and Local Triangle Counts in Graph Streams”</i> - PAKDD 2018, Melbourne, Australia	Jun 2018
	<i>“Discovering Progression Stages in Trillion-Scale Behavior Logs”</i> - WWW 2018, Lyon, France	Apr 2018
	<i>“Why You Should Charge Your Friends for Borrowing Your Stuff”</i> - SCS Student Seminar, CMU, Pittsburgh, USA	Apr 2018
	- Data Mining Seminar, CMU, Pittsburgh, USA	Apr 2018
	- IJCAI 2017, Melbourne, Australia	Aug 2017
	<i>“Mining Large Dynamic Graphs and Tensors”</i> - Thesis Proposal, CMU, Pittsburgh, USA	Mar 2018
	- KDisTech Research Seminar, CMU, Pittsburgh, USA	Mar 2018
	- EE Department Seminar, KAIST, Daejeon, Korea	Jan 2018
	- NAVER Corporation, Seongnam, Korea	Jan 2018
	<i>“WRS: Waiting Room Sampling for Accurate Triangle Counting in Real Graph Streams”</i> - ICDM 2017, New Orleans, USA	Nov 2017
	- Data Mining Seminar, CMU, Pittsburgh, USA	Nov 2017
	<i>“D-Cube: Dense-Block Detection in Terabyte-Scale Tensors”</i> - WSDM 2017, Cambridge, UK	Feb 2017
	<i>“CoreScope: Graph Mining Using k-Core Analysis - Patterns, Anomalies and Algorithms”</i> - ICDM 2016, Barcelona, Spain	Dec 2016
	- Database Seminar, CMU, Pittsburgh, USA	Dec 2016
	<i>“M-Zoom: Fast Dense-Block Detection in Tensors with Quality Guarantees”</i> - ECML/PKDD 2016, Riva del Garda, Italy	Sep 2016
	- KDisTech Research Seminar, CMU, Pittsburgh, USA	Sep 2016
	- Data Mining Seminar, Seoul National University, Seoul, Korea	Aug 2016
	<i>“BEAR: Block Elimination Approach for Random Walk with Restart on Large Graphs”</i> - Database Seminar, CMU, Pittsburgh, USA	Oct 2015
	- SIGMOD 2015, Melbourne, Australia	Jun 2015
	<i>“Distributed Methods for High-dimensional and Large-scale Tensor Factorization”</i> - ICDM 2014, Shenzhen, China	Dec 2014
	- Data Mining Seminar, KAIST, Daejeon, Korea	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  
10-715 Advanced Introduction to Machine Learning  
15-853 Algorithms in the Real World

Spring 2016  
Fall 2015  
Fall 2015

REFERENCES Available on request