

# LEMAN AKOGLU

Assistant Professor, Information Systems  
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## EMPLOYMENT

- **Carnegie Mellon University** Pittsburgh, PA  
*Asst. Professor of Information Systems (Tenure-Track)* September 2016 - Present  
*H. John Heinz III College*  
Affiliated Faculty of SCS Computer Science Department  
Affiliated Faculty of SCS Machine Learning Department
- **Stony Brook University** Stony Brook, NY  
*Asst. Professor (Tenure-Track)* August 2012 - August 2016  
*Department of Computer Science*

## EDUCATION

- **Carnegie Mellon University** Pittsburgh, PA  
*Ph.D., Computer Science* Sep. 2007 - August 2012  
**Thesis** Mining and Modeling Real-world Networks: Patterns, Anomalies, and Tools.  
**Ph.D. advisor** Christos Faloutsos  
**Committee** Christos Faloutsos (Chair), Andrew Moore (CMU, Google Inc.), Aarti Singh (CMU), Andrew Tomkins (Google Inc.)
- **Bilkent University** Ankara, Turkey  
*B.S., Computer Science (with distinction)* Sep. 2003 - May 2007  
**Senior thesis** *Focused Crawling for Intelligent Portals*  
**Thesis advisor** Ozgur Ulusoy  
**GPA** 3.95/4.00, **Major GPA** 4.00/4.00 (Ranked 2nd/150)
- **Bursa Tan College** Bursa, Turkey  
*High School Education, GPA: 5.00/5.00* Sep. 2002 - June 2003  
Ranked 1st among 2003 graduates
- **İzmir Science High School** İzmir, Turkey  
*High School Education, GPA: 5.00/5.00* Sep. 2000 - June 2002

## RESEARCH INTERESTS

My research is in data mining and knowledge discovery, network science, and applied machine learning and statistics; with a focus on pattern discovery, anomaly, fraud, and event detection in large-scale, time-varying/streaming, multi-modal, noisy data through effective and scalable computational methods.

### Areas:

- Data Mining and Knowledge Discovery
- Graph Mining
- Big Data & Statistics
- Pattern Discovery
- Network Science
- Real-World Graph Modeling
- Machine Learning
- Anomaly & Event Detection

## HONORS & AWARDS

- Runner-up, **Best Student Machine Learning Paper** Award at ECML PKDD 2018
- Runner-up, **Best Research Paper** Award at SIAM SDM 2016
- Received, Stony Brook University Discretionary Award by the CS Dept, Dec 2015
- Received, Facebook Faculty Gift (discretionary funds), May 2015
- Winner, **Best Research Paper** Award at SIAM SDM 2015
- Received, SIAM SDM Early Career Travel Award, Feb 2015
- Received, **NSF CAREER Award**, Jan 2015
- Received, Stony Brook University Discretionary Award by the CS Dept, Dec 2014
- Winner, **Best Paper** Award at ADC 2014
- Received, SIAM SDM Early Career Travel Award, Jan 2014
- Received, **Army Research Office Young Investigator Program Award**, Dec 2013
- Received, IBM First Patent Application Invention Achievement Award, 2012
- Received, PAKDD Student Travel Grant Award, 2012
- Winner, “Top IBM Intern” plaque in the Fifth Annual IBM Research Chess Tournament, 2011
- Winner, Facebook Grace Hopper Scholarship 2010
- Winner, Google ECML PKDD Conference and Travel Grant Award for Women in CS, 2010
- Winner, **Best Paper** Award at PAKDD 2010
- Winner, **Best Knowledge Discovery Paper** Award in ECML PKDD 2009
- Winner, “Instructors’ Choice” Award for the Graphical Models class project 2008
- Winner, CMU Graduate Student Assembly Conference Funding on August 2008
- Ranked 2nd, Computer Science Department, Bilkent University, among 150 graduates, 2007
- High Honor Student, Bilkent University, for all terms, 2003-07
- Full Scholarship, Bilkent University, including tuition and monthly stipend, 2003-07
- Ranked 300th, National University Entrance Exam in Turkey among over 1 million students, 2003
- Ranked 5th, Science High School Entrance Exam in Turkey among over 300,000 students, 2000
- Winner, two bronze medals at Bursa Secondary Schools Chess Tournaments, 1996 and 1997

## THESIS

- Leman Akoglu. *Mining and Modeling Real-world Networks: Patterns, Anomalies, and Tools*.  
Doctoral Dissertation, Carnegie Mellon University, Computer Science Department (CSD), 2012.

## PUBLICATIONS

Also see my Google Scholar and DBLP pages.

### PEER-REVIEWED JOURNAL ARTICLES

1. Meghanath Macha and Leman Akoglu  
*Explaining Anomalies in Groups with Characterizing Subspace Rules*  
**ECML PKDD** Journal Track, 2018.
2. Bryan Perozzi and Leman Akoglu  
*Discovering Communities and Anomalies in Attributed Graphs: Interactive Visual Exploration and Summarization*  
**ACM Transactions on Knowledge Discovery from Data (TKDD)**, Volume 12, Issue 2,  
Article No. 24, Jan 2018.

3. Sokratis Vidros, Constantinos Koliass, Georgios Kambourakis, Leman Akoglu  
*Automatic Detection of Online Recruitment Frauds: Characteristics, Methods, and a Public Dataset*  
**Future Internet**, 9(1), 6; doi:10.3390/fi9010006, Mar 2017.
4. Véronique Van Vlasselaer, Tina Eliassi-Rad, Leman Akoglu, Monique Snoeck, Bart Baesens.  
*GOTCHA! Network-based Fraud Detection for Social Security Fraud.*  
**Management Science (INFORMS)** MS-14-00232.R4, Feb 2016.
5. Shebuti Rayana and Leman Akoglu  
*Less is More: Building Selective Anomaly Ensembles*  
**ACM Transactions on Knowledge Discovery from Data (TKDD)**, Jan 2016.
6. Hau Chan and Leman Akoglu  
*Optimizing Network Robustness by Edge Rewiring: A General Framework*  
**Data Mining and Knowledge Discovery**, Volume 30, Issue 5, pp 1395–1425.  
(DAMI-D-14-00490R3; DOI: 10.1007/s10618-015-0447-5) (ECML PKDD Journal Track), 2016.
7. Vasudev Bhat, Adheesh Gokhale, Ravi Jadhav, Jagat Sastry Pudipeddi, Leman Akoglu  
*Effects of Tag Usage on Question Response Time: Analysis and Prediction in StackOverflow*  
**Social Network Analysis and Mining (SNAM-D-14-00101R1)** 5(1) (Springer), 2015.
8. Véronique Van Vlasselaer, Cristián Bravo, Olivier Caelen, Tina Eliassi-Rad, Leman Akoglu,  
Monique Snoeck, Bart Baesens  
*APATE: A Novel Approach for Automated Credit Card Transaction Fraud Detection using  
Network-Based Extensions*  
**Decision Support Systems** (Elsevier), 2015.
9. Leman Akoglu, Hanghang Tong, Danai Koutra  
*Graph-based Anomaly Detection and Description: A Survey*  
**Data Mining and Knowledge Discovery (DAMI)**, 29(3), 2015.
10. Yuan Yao, Hanghang Tong, Tao Xie, Leman Akoglu, Feng Xu, Jian Lu  
*Detecting High-quality Posts in Community Question Answering Sites*  
**Information Sciences**, 2015.
11. Leman Akoglu and Christos Faloutsos  
*RTG: A Recursive Realistic Graph Generator using Random Typing*  
**Data Mining and Knowledge Discovery (DAMI)** 19(2): 194-209, 2009.

## PEER-REVIEWED CONFERENCE PAPERS

1. Hemank Lamba and Leman Akoglu  
*Learning On-the-Job to Re-rank Anomalies from Top-1 Feedback*  
**SIAM SDM** (22.7%), Calgary, Canada, May 2019.
2. Xuan Wu\*, Lingxiao Zhao\* Leman Akoglu  
*A Quest for Structure: Jointly Learning the Graph Structure and Semi-Supervised Classification*  
**ACM CIKM** (17%), Turin, Italy, Oct. 2018.
3. Bryan Hooi, Leman Akoglu, Dhivya Eswaran, Hyun Ah Song, Amritanshu Pandey, Marko  
Jereminov, Larry Pileggi, Christos Faloutsos  
*Online Localized Change Detection for Sensor Data on a Graph*  
**ACM CIKM** (17%), Turin, Italy, Oct. 2018.
4. Shubhranshu Shekhar and Leman Akoglu  
*Incorporating Privileged Information to Unsupervised Anomaly Detection*  
**ECML PKDD** (26%), Dublin, Ireland, Sep. 2018.  
**Best Student Machine Learning Paper Runner-up (plenary talk)**
5. Meghanath Macha, Deepak Pai, Leman Akoglu

- Contextual Outlier Detection with Multiple Contexts: Application to Ad Fraud*  
**ECML PKDD** (26%), Dublin, Ireland, Sep. 2018.
6. Nikhil Gupta, Dhivya Eswaran, Neil Shah, Leman Akoglu, Christos Faloutsos  
*Beyond Outlier Detection: LookOut for Pictorial Explanation*  
**ECML PKDD** (26%), Dublin, Ireland, Sep. 2018.
  7. Abhinav Maurya, Leman Akoglu, Ramayya Krishnan, Daniel Bay  
*A Lens into Employee Peer Reviews via Sentiment-Aspect Modeling*  
**ACM/IEEE ASONAM** (industry track), Barcelona, Spain, Aug. 2018.
  8. Emaad A. Manzoor, Hemank Lamba, Leman Akoglu  
*x-STREAM: Outlier Detection in Feature-Evolving Data Streams*  
**ACM SIGKDD** (18.4%), London, UK, Aug. 2018.
  9. Junting Ye and Leman Akoglu.  
*Robust Semi-Supervised Learning on Multiple Networks with Noise*  
**PAKDD** (regular, 17.8%), Melbourne, Australia, June 2018.
  10. Emaad A. Manzoor and Leman Akoglu  
*RUSH! Targeted Time-limited Coupons via Purchase Forecasts*  
**ACM SIGKDD** (poster, 21.46%), Halifax, Nova Scotia, Canada, Aug. 2017.
  11. Heeyoung Kwon, Mirza Basim Baig, Leman Akoglu  
*A Domain-Agnostic Approach to Spam-URL Detection via Redirects*  
**PAKDD** (28.2%), Jeju, South Korea, May 2017.
  12. Abhinav Mishra and Leman Akoglu  
*Ranking in Heterogeneous Networks with Geo-Location Information*  
**SIAM SDM** (26%), Houston, Texas, April 2017.
  13. Aria Rezaei, Bryan Perozzi, Leman Akoglu  
*Ties That Bind - Characterizing Classes by Attributes and Social Ties*  
**WWW Companion**, Alternate Web Science Track, Perth, AU, April 2017.
  14. Shebuti Rayana, Wen Zhong, Leman Akoglu  
*Sequential Ensemble Learning for Anomaly Mining: A Bias-Variance Perspective*  
**IEEE ICDM** (19.6%), Barcelona, Spain, Dec. 2016.
  15. Emaad A. Manzoor, Sadegh M. Milajerdi, Leman Akoglu  
*Fast Memory-Efficient Anomaly Detection in Streaming Heterogeneous Graphs*  
**ACM SIGKDD** (full paper, 8.93%), San Francisco, CA, USA, Aug. 2016.
  16. Junting Ye, Santhosh Kumar, Leman Akoglu  
*Temporal Opinion Spam Detection Using Multiple Indicative Signals*  
**ICWSM** (poster), Cologne, Germany, May 2016.
  17. Bryan Perozzi and Leman Akoglu  
*Scalable Anomaly Ranking of Attributed Neighborhoods*  
**SIAM SDM** (25.9%), Miami, Florida, May 2016.  
**Best Research Paper Runner-up**
  18. Shebuti Rayana and Leman Akoglu  
*Collective Opinion Spam Detection using Active Inference*  
**SIAM SDM** (25.9%), Miami, Florida, May 2016.
  19. Bryan Hooi, Neil Shah, Alex Beutel, Stephan Gunnemann, Leman Akoglu, Mohit Kumar, Disha Makhija, and Christos Faloutsos  
*BIRDNEST: Bayesian Inference for Ratings-Fraud Detection*  
**SIAM SDM** (25.9%), Miami, Florida, May 2016.

20. Junting Ye and Leman Akoglu  
*Discovering Opinion Spammer Groups by Network Footprints*  
**ECML/PKDD** (23.2%), Porto, Portugal, Sep. 2015.
21. Shebuti Rayana and Leman Akoglu  
*Collective Opinion Spam Detection: Bridging Review Networks and Metadata*  
**ACM SIGKDD** (19.4%), Sydney AU, Aug. 2015.
22. Veronique Van Vlasselaer, Tina Eliassi-Rad, Leman Akoglu, Monique Snoeck, Bart Baesens  
*AFRAID: Fraud Detection via Active Inference in Time-evolving Social Networks*  
**IEEE/ACM ASONAM**, Paris, France, Aug. 2015.
23. Mirza Basim Baig and Leman Akoglu  
*Correlation of Node Importance Measures: An Empirical Study through Graph Robustness*  
**WWW Companion**, Web Science Track (13.8%), Florence, Italy, May 2015.  
*Invited to a Special Issue of the Journal of Web Science (JWS)*
24. Shebuti Rayana and Leman Akoglu  
*Less is More: Building Selective Anomaly Ensembles—Application to Event Detection in Temporal Graphs*  
**SIAM SDM**, Vancouver, BC, Canada, April 2015. (Oral presentation)
25. Hau Chan, Shuchu Han, Leman Akoglu  
*Where Graph Topology Matters: The Robust Subgraph Problem*  
**SIAM SDM**, Vancouver, BC, Canada, April 2015. (Oral presentation)  
**Best Research Paper**  
*Invited to “Best of SDM 2015” Special Issue of Statistical Analysis and Data Mining J. (SAM)*
26. Veronique Van Vlasselaer, Leman Akoglu, Tina Eliassi-Rad, Monique Snoeck, Bart Baesens  
*Guilt-by-Constellation: Fraud Detection by Suspicious Clique Memberships*  
**HICSS**, Kauai, HI, Jan. 2015.
27. Leman Akoglu, Rohit Khandekar, Vibhore Kumar, Srinivasan Parthasarathy, Deepak Rajan, Kun-Lung Wu  
*Fast Nearest Neighbor Search on Large Time-Evolving Graphs*  
**ECML/PKDD**, Nancy, France, September 2014.
28. Bryan Perozzi, Leman Akoglu, Patricia Iglesias Sánchez, Emmanuel Müller  
*Focused Clustering and Outlier Detection in Large Attributed Graphs*  
**ACM SIGKDD**, NYC, New York, August 2014.
29. Vasudev Bhat, Adheesh Gokhale, Ravi Jadhav, Jagat Sastry Pudipeddi, Leman Akoglu  
*Min(e)d Your Tags: Analysis of Question Response Time in StackOverflow*  
**IEEE/ACM ASONAM**, Beijing, China, August 2014.  
*Invited to appear in **SNAM** (Social Network Analysis and Mining) journal by Springer (ASONAM best papers)*
30. Yuan Yao, Hanghang Tong, Tao Xie, Leman Akoglu, Feng Xu, Jian Lu  
*Joint Voting Prediction for Questions and Answers in CQA*  
**IEEE/ACM ASONAM**, Beijing, China, August 2014.  
*Invited to appear in **SNAM** (Social Network Analysis and Mining) journal by Springer (ASONAM best papers)*
31. Tiantian Gao, Leman Akoglu  
*Fast Information-Theoretic Agglomerative Co-Clustering*  
**ADC**, Brisbane, Australia, July 2014. (Oral presentation)  
**Best Paper**
32. Leman Akoglu  
*Quantifying Political Polarity Based on Bipartite Opinion Networks*  
**ICWSM**, Ann Arbor, Michigan, June 2014.

33. Jun Seok Kang, Song Feng, Leman Akoglu, Yejin Choi  
*ConnotationWordNet: Learning Connotation of the Word+Sense Network*  
**ACL**, Baltimore, MD, June 2014. (Oral presentation)
34. Jagat Sastry Pudipeddi, Leman Akoglu, Hanghang Tong  
*User Churn in Focused Q&A Sites: Characterizations and Prediction*  
**WWW**, Web Science Track, Seoul, Korea, Apr. 2014.
35. Hau Chan, Leman Akoglu, Hanghang Tong  
*Make It or Break It: Manipulating Robustness in Large Networks*  
**SIAM SDM**, Philadelphia, PA, Apr. 2014. (Oral presentation)
36. Hau Chan and Leman Akoglu  
*External Evaluation of Topic Models: A Graph Mining Approach*  
**IEEE ICDM**, Dallas, Texas, Dec. 2013.
37. Vivek Kulkarni, Jagat S. Pudipeddi, Leman Akoglu, Joshua T. Vogelstein, R. Jacob Vogelstein, Sephira Ryman, Rex E. Jung  
*Sex Differences in the Human Connectome*  
**BHI: Brain and Health Informatics**, Maebashi, Japan, Oct. 2013.
38. Leman Akoglu, Rishi Chandy, Christos Faloutsos  
*Opinion Fraud Detection in Online Reviews by Network Effects*  
**ICWSM**, Boston, MA, July 2013.
39. Evangelos E. Papalexakis, Leman Akoglu, Dino Ienco  
*Do more views of a graph help? Community Detection and Clustering in Multi-Graphs*  
**FUSION**, Istanbul, Turkey, July 2013.
40. Leman Akoglu, Jilles Vreeken, Hanghang Tong, Duen H. Chau, Nikolaj Tatti, Christos Faloutsos  
*Mining Connection Pathways for Marked Nodes in Large Graphs*  
**SIAM SDM**, Austin, Texas, May 2013.
41. Leman Akoglu, Hanghang Tong, Jilles Vreeken, Christos Faloutsos  
*Fast and Reliable Anomaly Detection in Categorical Data*  
**ACM CIKM**, Maui, Hawaii, Oct 2012.
42. Duen Horng Chau, Leman Akoglu, Jilles Vreeken, Hanghang Tong, Christos Faloutsos  
*TourViz: Interactive Visualization of Connection Pathways in Large Graphs* (Demo paper)  
**ACM SIGKDD**, Beijing, China, Aug 2012.
43. Keith Henderson, Brian Gallagher, Tina Eliassi-Rad, Hanghang Tong, Sugato Basu, Leman Akoglu, Danai Koutra, Lei Li, Christos Faloutsos  
*RoIX: Structural Role Extraction & Mining in Large Graphs*  
**ACM SIGKDD**, Beijing, China, Aug 2012.
44. Leman Akoglu, Duen Horng Chau, U Kang, Danai Koutra, Christos Faloutsos  
*OPAvion: Mining and visualization in large graphs* (Demo paper)  
**ACM SIGMOD**, Arizona, May 2012.
45. Leman Akoglu, Hanghang Tong, Brendan Meeder, Christos Faloutsos  
*PICS: Parameter-free Identification of Cohesive Subgroups in Large Attributed Graphs*  
**SIAM SDM**, CA, Apr. 2012.
46. Leman Akoglu, Pedro Olmo Vaz de Melo, Christos Faloutsos  
*Quantifying Reciprocity in Large Weighted Communication Networks*  
**PAKDD**, Kuala Lumpur, Malaysia, May 2012.
47. Keith Henderson, Brian Gallagher, Lei Li, Leman Akoglu, Tina Eliassi-Rad, Hanghang Tong, Christos Faloutsos  
*It's Who You Know: Graph Mining Using Recursive Structural Features*

ACM SIGKDD, San Diego, CA, Aug. 2011.

48. U Kang, Mary McGlohon, Leman Akoglu, and Christos Faloutsos  
*Patterns on the Connected Components of Terabyte-Scale Graphs*  
**IEEE ICDM**, Sydney, Australia, Dec. 2010.
49. Pedro Olmo Vaz de Melo, Leman Akoglu, Christos Faloutsos, Antonio Loureiro  
*Surprising Patterns for the Call Duration Distribution of Mobile Phone Users*  
**ECML PKDD**, Barcelona, Spain, Sep. 2010.
50. Keith Henderson, Tina Eliassi-Rad, Christos Faloutsos, Leman Akoglu, Lei Li, Koji Maruhashi, B. Aditya Prakash, Hanghang Tong  
*MetricForensics: A Multi-Level Approach for Mining Volatile Graphs*  
**ACM SIGKDD**, Washington, D.C., July 2010.
51. Leman Akoglu, Mary McGlohon, Christos Faloutsos  
*OddBall: Spotting Anomalies in Weighted Graphs*  
**PAKDD**, Hyderabad, India, June 2010.  
**Best Research Paper**
52. Leman Akoglu and Christos Faloutsos  
*Event Detection in Time Series of Mobile Communication Graphs*  
27th Army Science Conference, Orlando, Florida, Dec. 2010.
53. Leman Akoglu and Christos Faloutsos  
*RTG: A Recursive Realistic Graph Generator using Random Typing*  
**ECML PKDD**, Bled, Slovenia, Sep. 2009.  
**Best Knowledge Discovery Paper**
54. Nan Du, Christos Faloutsos, Bai Wang, Leman Akoglu  
*Large Human Communication Networks: Patterns and a Utility-Driven Generator*  
**ACM SIGKDD**, Paris, France, June 2009.
55. Leman Akoglu, Mary McGlohon, Christos Faloutsos  
*RTM: Laws and a Recursive Generator for Weighted Time-Evolving Graphs*  
**IEEE ICDM**, Pisa, Italy, Dec. 2008.
56. Mary McGlohon, Leman Akoglu, Christos Faloutsos  
*Weighted Graphs and Disconnected Components: Patterns and a Generator*  
**ACM SIGKDD**, Las Vegas, Nevada, Aug. 2008.

## WORKSHOP PAPERS

57. Nikhil Gupta, Dhivya Eswaran, Neil Shah, Leman Akoglu, Christos Faloutsos  
*Beyond Outlier Detection: LookOut for Pictorial Explanation*  
5th ACM SIGKDD Workshop on Outlier Detection De-constructed, Aug. 2018.
58. Neil Shah, Alex Beutel, Bryan Hooi, Leman Akoglu, Stephan Gunnemann, Disha Makhija, Mohit Kumar, Christos Faloutsos  
*EdgeCentric: Anomaly Detection in Edge-Attributed Networks*  
IEEE ICDM Workshop on Data Mining for Cyber Security, Dec. 2016.
59. Rachee Singh, Hyungjoon Koo, Najmehalsadat Miramirkhani, Fahimeh Mirhaj, Leman Akoglu, Phillipa Gill.  
*The Politics of Routing: Investigating the Relationship Between AS Connectivity and Internet Freedom*  
6th USENIX Workshop on Free and Open Communications on the Internet (FOCI), Aug. 2016.
60. Shebuti Rayana and Leman Akoglu  
*Collective Opinion Spam Detection: Bridging Review Networks and Metadata* (Presentation)  
WIN: Workshop on Information in Networks, NYC, USA, Oct. 2015.

61. Bryan Perozzi, Leman Akoglu, Patricia Sanchez, Emmanuel Muller  
*Focused Clustering and Outlier Detection in Large Attributed Graphs*. (Poster)  
WIN: Workshop on Information in Networks, NYC, USA, Oct. 2015.
62. Shebuti Rayana and Leman Akoglu  
*An Ensemble Approach for Event Detection and Characterization in Dynamic Graphs*  
ACM SIGKDD 2nd Workshop on Outlier Detection and Description under Data Diversity  
(ODD<sup>2</sup>@KDD 2014), NYC, NY, USA, Aug. 2014.
63. Charu Aggarwal, Leman Akoglu, Emmanuel Muller, Raymond T. Ng (editors)  
*Proceedings of the KDD 2014 Workshop on Outlier Detection and Description under Data Diversity*  
ACM SIGKDD 2nd Workshop on Outlier Detection and Description (ODD<sup>2</sup>@KDD 2014), NYC,  
New York, USA, Aug. 2014.
64. Leman Akoglu, Emmanuel Muller, Jilles Vreeken (editors)  
*Proceedings of the KDD 2013 Workshop on Outlier Detection and Description*  
ACM SIGKDD 1st Workshop on Outlier Detection and Description (ODD@KDD 2013), Chicago,  
IL, USA, Aug. 2013.
65. Leman Akoglu  
*Classifying & Ranking Political Polarity by Network Effects*. (Presentation)  
WIN: Workshop on Information in Networks, New York, USA, Oct. 2013.
66. Leman Akoglu, Jilles Vreeken, Hanghang Tong, Duen Horng Chau, Christos Faloutsos  
*Mining and Visualizing Connection Pathways in Large Information Networks*. (Poster)  
WIN: Workshop on Information in Networks, New York, USA, Sep. 2012.
67. Leman Akoglu and Christos Faloutsos  
*ValuePick: Towards a Value-Oriented Dual-Goal Recommender System*  
IEEE ICDM Workshop on Optimization Based Methods for Emerging Data Mining Problems,  
Sydney, Australia, Dec. 2010.
68. Leman Akoglu and Bhavana Dalvi  
*Structure, Tie Persistence and Event Detection in Large Phone and SMS Networks*  
ACM SIGKDD 8th Workshop on Mining and Learning with Graphs, Washington, D.C., July 2010.

All articles can be downloaded from [www.cs.cmu.edu/~lakoglu/pubs.html](http://www.cs.cmu.edu/~lakoglu/pubs.html)

## BOOK CHAPTER

- Mary McGlohon, Leman Akoglu, Christos Faloutsos  
*Statistical Properties of Social Networks*  
**Chapter 2 in Social Network Data Analytics** (Edited by Charu C. Aggarwal).
- Leman Akoglu  
*Graph-based Anomaly Mining: Methods and Applications* (Invited)  
**Big Data in Complex and Social Networks**, CRC Press, Taylor & Francis Group. (Edited by  
My T. Thai, Weili Wu, and Hui Xiong).

## GRANTS

- **PI:** PwC Risk and Regulatory Services Innovation Center  
*Detecting Accounting Abnormalities in General Ledger Detail Reports*.  
\$220,098 (October 1, 2018 - September 30, 2019)
- **PI:** PwC Risk and Regulatory Services Innovation Center  
*Early Detection of Risk from Streaming Media Documents*.  
\$146,980 (October 1, 2018 - September 30, 2019)



- **PI:** Adobe University Marketing Research Awards Program  
*Real-time Detection of Online Click & Display Advertising Exchange Fraud.*  
\$50,000 (June 1, 2017 - May 31, 2018)
- **PI:** PwC Risk and Regulatory Services Innovation Center  
*Fraud Analytics: Description, Sense-making and Detection.*  
\$121,425 (April 1, 2017 - April 30, 2018)
- **PI:** PNC Center for Financial Services Innovation  
*Dynamic Customer Spendings Modeling for Business Analytics.*  
\$30,000 (Sep 15, 2016 - Sep 15, 2017)
- **PI:** Defense Advanced Research Projects Agency (DARPA) (Award# FA8650-15-C-7561)  
*MARPLE: Mitigating APT damage by Reasoning with Provenance in Large Enterprise networks.*  
with (IBM) J.R. Rao, S. Chari, I. Molloy, X. Hu, D. Schales; (Northwestern) Y. Chen; (Stony Brook) R. Sekar, S. Stoller; (UIC) V. Venkatakrishnan, R. Gjomemo.  
(CMU transfer = \$417,052) (2015–2019)
- Facebook Faculty Gift (\$25,000 in discretionary funds). (2015)
- **PI:** National Science Foundation (NSF) (**CAREER Award#** IIS-1452425)  
*A General Framework for Methodical and Interpretable Anomaly Mining.*  
\$507,165 (5/1/2015–4/30/2020)
- **PI:** National Science Foundation (NSF) (Medium Award# IIS-1408287)  
*Collective Opinion Fraud Detection: Identifying and Integrating Cues from Language, Behavior, and Networks.* with Yejin Choi (U of Washington), Christos Faloutsos (CMU), Bing Liu (UIC).  
\$1,200,000 (CMU portion = \$309,700) (2014–2018)
- **Lead Investigator:** Northrop Grumman Aerospace Systems (NSF Center for Dynamic Data Analysis) *Ensemble Methods for Event Detection.*  
\$35,000 (annual, 2013–2014, 2014–2015, 2015–2016)
- **PI:** Army Research Office (ARO) Young Investigator Award. (Contract No. W911NF-14-1-0029)  
*Anomaly Detection and Description in Complex Dynamic Networks* \$50,000 (06/2014–05/2016)
- **Co-PI:** Office of Naval Research (ONR) SBIR (Award#N141-075)  
*Patterns of Life Calculation from Big Graphs.* with Narayanan Ramanathan (ObjectVideo).  
\$50,000. (May 2014–Nov 2014).

## RESEARCH & PROFESSIONAL EXPERIENCE

- **IBM T. J. Watson Research Labs** Hawthorne, NY, USA  
*Graduate assistant* May 2011 - Sep. 2011
  - Interned with the SmallBlue Data Analytics research group under Dr. Ravi Konuru, and supervised by Dr. Hanghang Tong.
  - Developed effective methods to spot anomalous data instances, interactions and events in complex data. **Keywords:** data compression, anomaly detection, filtering
- **IBM T. J. Watson Research Labs** Hawthorne, NY, USA  
*Graduate assistant* June 2010 - Sep. 2010
  - Interned with the Large-Scale Streaming Graph Analytics research group under Dr. Kun-Lung Wu, and supervised by Dr. Rohit Khandekar.
  - Developed efficient distributed approximation algorithms to compute Personalized PageRank scores for a given node for very large graphs that grow in a streaming fashion. **Keywords:** incremental PageRank, disk-resident graphs, distributed graph algorithms
- **Microsoft Research Labs** Redmond, WA, USA  
*Summer intern* June 2009 - August 2009

- Interned with the Search Quality & Cyber-Intelligence research group under Dr. Yi-Min Wang, and supervised by Dr. Chao Liu.
- Analyzed the structure and dynamics of the User Browsing Graph with over 1 billion trails.
- **Bilkent University** Ankara, Turkey  
*Senior Thesis: Focused Crawling for Intelligent Portals* *Sep. 2006 - May 2007*
  - Extended the Rule-Based Focused Crawling algorithm by applying page fragmentation, and developed effective information extraction algorithms using machine learning approaches.
- **BOSCH Industry and Trade Inc.** Bursa, Turkey  
*Summer training in the Research and Development Department* *July 2006 - Sep. 2006*
  - Designed the relational database for tracking the hardware and employees in the department and designed and implemented the GUI for searching and making updates in the system.
- **Bilkent University** Ankara, Turkey  
*RETINA Research Project* *June 2006 - July 2006*
  - Worked with Dr. Pinar Duygulu and Dr. Selim Aksoy on a research project on content-based classification and retrieval of image and video data.
  - Participated in the database design of the image/video repository, the GUI design and the implementation for classification and retrieval, and experiments on TRECVID 2006 data.
- **Armakom IT Inc.** Ankara, Turkey  
*Summer training in the IT department* *June 2006 - July 2006*
- **Havelsan Aerospace Electronics Industry and Trade Inc.** Ankara, Turkey  
*Summer training in the IT Department* *June 2005 - July 2005*

## TEACHING EXPERIENCE

- **Instructor** (Spring A4 2019) 95-869 *Big Data and Large Scale Computing*, CMU (Enrollment: 45)
- **Instructor** (Spring 2019) 95-828 *Machine Learning for Problem Solving*, CMU (Two sections; Enrollments: 67 and 51)
- **Instructor** (Spring A4 2018) 95-869 *Big Data and Large Scale Computing*, CMU (Enrollment: 27)
- **Instructor** (Spring 2018) 95-828 *Machine Learning for Problem Solving*, CMU (Enrollment: 68)
- **Instructor** (Fall A2 2017) 95-801 *Data Mining Techniques*, CMU (Enrollment: 23)
- **Instructor** (Fall A2 2017) 95-869 *Big Data and Large Scale Computing*, CMU (Enrollment: 35)
- **Instructor** (Spring A4 2017) 95-869 *Big Data and Large Scale Computing*, CMU (Enrollment: 34)
- **Instructor** (Spring 2017) 95-828 *Machine Learning for Problem Solving*, CMU (Enrollment: 46)
- **Instructor** CSE-591 Data Science Fundamentals, Stony Brook, Fall 2015. (Enrolled: 44)
- **Instructor** CSE-512 Machine Learning, Stony Brook, Spring 2015. (Enrolled: 46; 10 AMS)
- **Instructor** CSE-590 Data Mining meets Graph Mining, Stony Brook, Fall 2014. (Enrolled: 50)
- **Instructor** CSE-512 Machine Learning, Stony Brook, Spring 2014. (Enrolled: 58)
- **Instructor** CSE-590 Networks & Data Mining Techniques, Stony Brook, Fall 2013. (Enrolled: 49)
- **Instructor** CSE-512 Machine Learning, Stony Brook, Spring 2013. (Enrolled: 40)
- **Instructor** CSE-590 Selected Topics in Data Mining & Networks, Stony Brook, Fall 2012. (Enrolled: 33)
- **Teaching Assistant** Database Applications, Instructor: Prof. Christos Faloutsos, Fall 2009.
- **Teaching Assistant** Machine Learning, Instructor: Prof. Aarti Singh, Fall 2010. Guided 5 groups of 2-3 each, on research course projects.

## INVITED TALKS

- Gilbreth Lecture at the National Academy of Engineering National Meeting, February 7, 2019; Irvine, CA  
*Anomaly Mining: Detection and Beyond*
- Singapore Management University Research Seminar, Nov 14, 2018  
*Event Detection and Localization via Time-Varying Sensing on a Graph*
- Aalto University, Nov 8, 2018; Finland. Host: Aristides Gionis  
*Anomaly Mining: Detection and Beyond*
- Capital One Workshop on Anomaly Detection, Oct 23, 2018; McLean, Virginia  
*Anomaly Mining: Detection with Networks and Beyond*
- Dagstuhl Seminar on Automating Data Science, Germany, Sep 30–Oct 5, 2018; Dagstuhl, Germany  
*Moderator: Automation in Data Science for Unsupervised Tasks*
- Japan-American Frontiers of Engineering Symposium (partnership of US National Academy of Engineering and Engineering Academy of Japan), June 18-20, 2018; Tsukuba, Japan  
*Anomaly Mining: Detection and Beyond*
- NetSci 2018 Satellite on Machine Learning In Network Science, June 12, Paris, France  
*Attributed Networks: Social Circles, Summarization, Comparison*
- NetSci 2018 Satellite on Statistical Inference of Network Models, June 11, Paris, France  
*A Quest for Structure: Joint Graph Structure & Semi-Supervised Inference*
- ACM WSDM International Workshop on Misinformation and Misbehavior Mining on the Web (MIS2), February 9, 2018  
*Opinion Spam Detection: A Story of Networks, Meta-data and an Oracle*
- ACM WSDM International Workshop on Heterogeneous Networks Analysis, February 9, 2018  
*Mining Rich Graphs: Ranking, Classification, and Anomaly Detection*
- IEEE ICDM 2017 Workshop on High Performance Graph Data Mining and Machine Learning, November 18, 2017  
*Online Detection of Anomalous Heterogeneous Graphs with Streaming Edges*
- UT Southwestern Medical Center CSB (Computational & Systems Biology) Seminar, Host: Murat Cobanoglu, October 23, 2017  
*automated Data Description (ODD): Explaining Anomalies for Human Interpretation*
- UT Austin McCombs School of Business Information Management Seminar, October 18, 2017  
*Discovering Networks of Fraudulent Users in Online Review Platforms*
- University of Pittsburgh Big Data Science Colloquium, Host: Yu-ru Lin, September 22, 2017  
*Discovering Communities and Anomalies in Attributed Graphs: Interactive Visual Exploration and Summarization*
- ACM KDD Interactive Data Exploration and Analytics (IDEA) Workshop, August 14, 2017  
*Understanding Node-Attributed Networks: Interactive Exploration and Summarization*
- SIAM SDM 2017 Workshop Women in Data Science (WinDS), April 29, 2017  
*Opinion Spam Detection with Multimodal Data*
- SCS Network Science Seminar Series, April 25, 2017  
*Ranking in Heterogeneous Networks with Geo-Location Information*
- Machine Learning Special Seminar, CMU, October 18, 2016  
*Tackling Anomaly Mining Problems in the Wild with Networks and Beyond*
- ACM KDD International Workshop on Mining and Learning with Graphs (MLG), August 14, 2016  
*Communities and Anomalies in Attributed Networks*
- Army Research Labs, Adelphi, MD, July 15, 2016  
*Tackling Anomaly Mining Problems in the Wild*
- ICML 2016 Anomaly Detection Workshop, June 24, 2016  
*Tackling Anomaly Mining Problems in the Wild*

- Amazon India, Machine Learning Team, June 8, 2016  
*Opinion Spam Detection with Networks and Beyond*
- Flipkart, Host: Mohit Kumar, June 6, 2016  
*Opinion Spam Detection with Networks and Beyond*
- Keynote talk at SDM 2016 Workshop on Mining Networks and Graphs, May 7, 2016  
*Fraud Detection with Networks and Beyond*
- Georgia Tech, Computational Science and Engineering, Host: Le Song, March 2016  
*3 D's of Anomaly Mining in Complex Graphs: Definition, Detection, Description*
- University of Southern California, Host: Yan Liu, March 2016  
*3 D's of Anomaly Mining in Complex Graphs: Definition, Detection, Description*
- University of Maryland, College Park, February 2016  
*3 D's of Anomaly Mining in Complex Graphs: Definition, Detection, Description*
- Carnegie Mellon University, Heinz College, Host: Daniel Neill, February 2016  
*3 D's of Anomaly Mining in Complex Graphs: Definition, Detection, Description*
- Northeastern University (Network Science Institute), Hosts: Tina Eliassi-Rad, Yizhou Sun, February 2016  
*3 D's of Anomaly Mining in Complex Graphs: Definition, Detection, Description*
- University of Massachusetts Amherst, Host: Andrew McCallum, February 2016  
*3 D's of Anomaly Mining in Complex Graphs: Definition, Detection, Description*
- Carnegie Mellon University, Electrical and Computer Engineering, January 2016  
*3 D's of Anomaly Mining in Complex Graphs: Definition, Detection, Description*
- NII Shonan Meeting on “Analytics on Complex Networks: Scalable Solutions for Empirical Questions” Japan, February 2016.
- University of Illinois at Chicago, Hosts: Bing Liu and Tanya Berger-Wolf, November 2015  
*3 D's of Anomaly Mining in Complex Graphs: Definition, Detection, and Description*
- CMU Tepper School of Business, Host: Wolfgang Gatterbauer, November 2015  
*Robust Semi-Supervised Classification with Multi-Relational Graphs*
- KU Leuven, Host: Bart Baesens, October 2015  
*3 D's of Anomaly Mining in Complex Graphs: Definition, Detection, and Description*
- Workshop on Statistical and Computational Challenges in Networks and Cybersecurity. Montreal, Canada. May 2015  
*Mining Large Graphs for Detecting Anomalies, Events, and Fraud*
- University of Pittsburgh, Host: Alexandros Labrinidis, April 2015  
*3 D's of Anomaly Mining in Complex Graphs: Definition, Detection, and Description*
- Huawei Technologies R&D, Santa Clara, CA. Nov. 2014  
*Large-scale Graph Analytics for Anomaly Mining and Event Detection*
- NICTA and University of Sydney, Sydney, AU. Host: Sanjay Chawla, July 2014.  
*Anomaly Detection and Description in Large Complex Graphs*
- KPMG LLP, Woodcliff Lake, NJ. Host: Rajiv Dulepet, April 2014.  
*Data Analytics Round Table*
- Twitter Inc., San Francisco, CA. Host: Ramnath Balasubramanian, Mar. 2014.  
*Mining Typed Information Networks with Applications to Finding Fraud, Polarization, and Word-Sense Connotation*
- University of California Santa Barbara, CA. Host: Xifeng Yan, Mar. 2014.  
*Measuring and Manipulating the Robustness of Large Networks*
- Stony Brook University, East-West Biomedical Informatics Workshop, Mar. 2014.  
*Sex Differences in the Human Connectome*
- Lawrence Berkeley National Lab, Berkeley, CA. Host: Aydin Buluc, Jan. 2014.  
*Robustness of Large Networks: Measuring and Manipulating*

- Rensselaer Polytechnic Institute, Troy, NY. Host: Sibel Adali, Nov. 2013.  
*Mining Signed Information Networks with Applications to Detecting Fraud and Polarization*
- Northrop Grumman Information Systems University Tech Day, Colshire, VA Nov. 2013  
*Cyber Network Anomaly Detection, Analysis, Visualization*
- NEC Laboratories America Inc., Princeton Campus, NJ. Host: Abhishek Sharma, Oct. 2013.  
*Detecting and Characterizing Highly Volatile Events in Large Temporal Graphs*
- NSF CDDA Workshop at Rutgers University. Sep. 2013.  
*Anomaly Detection in Large Graphs*
- City University of New York (CUNY), NY. Host: Hanghang Tong, April 2013.  
*Opinion Fraud Detection in Online Reviews using Network Effects*
- NSF CDDA Workshop at CEWIT, March 2013.  
*Fast and Reliable Information-Theoretic Anomaly Detection and Description*
- Google, Pittsburgh, PA. Host: Andrew Moore, October 2012.  
*Spotting Opinion Fraud in Online Reviews*
- Singapore Management University (SMU). Host: Kyriakos Mouratidis, June 2012.  
*Large Graph Analytics: Patterns, Anomalies, and Tools*
- Sabanci University, Turkey. Host: Yucel Saygin, May 2012.  
*Large Graph Analytics: Patterns, Anomalies, and Tools*
- Google Research, New York City, Research Talk, April 2012.  
*Large-scale Graph Analytics: Patterns, Anomalies, and Tools*
- Carnegie Mellon, Machine Learning Lunch Seminar, April 2012.  
*Efficient Vertex-Proximity Query Processing on Large Time-Evolving Graphs*
- Washington State University, CS Seminar, March 2012. Host: Larry Holder  
*Large-scale Graph Analytics: Patterns, Anomalies, and Tools*
- Virginia Tech, CS Seminar, March 2012. Host: Lenny Heat  
*Massive Graph Analytics: Patterns, Anomalies, and Tools*
- University of Waterloo, Research Seminar and Mock Lecture, March 2012. Host: Bill Cowan  
*Large-scale Graph Analytics: Patterns, Anomalies, and Tools*
- IBM Research, Yorktown NY, Machine Learning Group Talk, Feb. 2012.  
*Large-scale Graph Analytics: Patterns, Anomalies, and Tools*
- Stony Brook University, Research Talk, Feb. 2012.  
*Large-scale Graph Analytics: Patterns, Anomalies, and Tools*
- Clemson University, Research Talk. Host: Brian Dean, Feb. 2012.  
*Large-scale Graph Analytics: Patterns, Anomalies, and Tools*

## ADVISING&MENTORING

DATA Lab website can be found at <http://datalab.heinz.cmu.edu/>

### News/Awards

- Lingxiao Zhao receives 2018 SIGIR Student Travel Grant to present his paper at CIKM
- Xuejian Wang receives 2018 PwC Presidential PhD Fellowship Award
- Meghanath Macha receives 2018 Suresh Konda Award for his 1st Heinz paper
- Bryan Perozzi receives the ACM SIGKDD 2017 Doctoral Dissertation Award
- Emaad A. Manzoor receives KDD 2017 Student Travel Award and CMU Graduate Student Assembly Conference Funding
- Meghanath Macha receives 2017 PwC Presidential PhD Fellowship Award
- Junting Ye receives AAAI ICWSM 2016 Student Travel Award
- Bryan Perozzi receives SIAM SDM 2016 Student Travel Award
- Shebuti Rayana receives SIAM SDM 2016 Student Travel Award

- Hau Chan wins Catacosinos Fellowship for Excellence in Computer Science
- Shebuti Rayana receives SIAM SDM 2015 Student Travel Award
- Hau Chan receives SIAM SDM 2014 Student Travel Award
- Hau Chan receives IEEE ICDM 2013 Student Travel Award

### Research assistants

- Hung T. Nguyen (Post-Doc, PhD: Virginia Commonwealth University), Aug 2018 –
- Tuan M. V. Le (Post-Doc, PhD: Singapore Management University), Aug 2017 – Jul 2018
- Lingxiao Zhao, (Research Assistant, MS: Carnegie Mellon University), Feb 2018 – Aug 2018

### Graduate (PhD/MS) students

- Sachin Grover, (PhD, Carnegie Mellon University), F 2018 –
- Lingxiao Zhao, (PhD, Carnegie Mellon University), F 2018 –
- Xuejian Wang, (PhD, Carnegie Mellon University), F 2018 –
- Hemank Lamba (PhD, Carnegie Mellon University), advisor, F 2017 – present
- Shubhranshu Shekhar (PhD, Carnegie Mellon University), advisor, F 2017 – present
- Meghanath Macha (PhD, Carnegie Mellon University), advisor, F 2016 – present
- Emaad Ahmed Manzoor (PhD, Carnegie Mellon University), advisor, F 2015 - S 2018
- Shebuti Rayana (PhD, Stony Brook University), advisor, 2013 - 2017
- Abhinav Maurya (PhD, Carnegie Mellon University), project advisor, Summer 2017
- Runshan Fu (PhD, Carnegie Mellon University), project advisor, F 2016 - S 2017
- Iris Roelens (PhD, Ghent University), visiting student, F 2016 - S 2017
- Junting Ye (PhD, Stony Brook University), advisor, F 2014 - S 2016
- Aria Rezaei (PhD, Stony Brook University), advisor, F 2015 - S 2016
- Mohammadzaman Zamani (PhD, Stony Brook University), advisor, F 2014 - S 2015
- Hau Chan (PhD, Stony Brook University), co-advisor with Luis Ortiz, 2015 - 2016
- Mirza Basim Baig (PhD, Stony Brook University), advisor, 2014 - 2015
- Bryan Perozzi (PhD, Stony Brook University), collaboration, 2013 -
- Shuchu Han (PhD, Stony Brook University), collaboration, 2012 - 2014
- Lingxiao Zhao, (MS, ECE, Carnegie Mellon University), Independent Study, F 2017 - S 2018
- Xuan Wu, (MS, ISR/SCS, Carnegie Mellon University), Independent Study, S 2017 - F 2017
- Anurag Gandhi, (MISM, Carnegie Mellon University), Independent Study, F 2017
- {Rashmi Raghunandan, Shruti Sridhar, Upasna Suman} (MISM, Carnegie Mellon University), Independent Project, S 2017
- {Qianyi Hu, Le Le, Ting Ying Yin, Lewen Zhang} (MS, Carnegie Mellon University), Capstone Project Research Practicum, S 2017
- Christian Perez, (MS, LTI, Carnegie Mellon University), Independent Study, F 2016
- {Emilio Esposito, Luan Jiang, Xiao Gong, Bingnan Zhou} (MISM, Carnegie Mellon University), Capstone Project Research Practicum, F 2016
- {Kee Wei Lam, Yu-Hsin Lin, Ming-Hsun Tsai} (MISM, Carnegie Mellon University), Independent Study, F 2016
- Abhinav Mishra (MS, Stony Brook University), MS project advisor, S 2015 - F 2016
- Santhosh K. M. Lakshminarayanan (MS, Stony Brook), MS project advisor, F 2014 - F 2016
- Heeyoung Kwon (MS, Stony Brook University), MS thesis advisor, S 2014 - S 2015
- Zichao Dai (MS, Stony Brook University), MS project advisor, 2013 - 2014
- Vasudev Bhat (MS, Stony Brook University), MS project advisor, 2013 - 2014
- Jagat S. Pudipeddi (MS, Stony Brook University), MS project advisor, 2012 - 2013
- Vivek Kulkarni (MS, Stony Brook University), MS project advisor, 2012 - 2013

- Tiantian Gao (MS, Stony Brook University), MS project advisor, Fall 2012

### Undergraduate/High-school students

- Nikhil Gupta (IIT Delhi), summer research advisor, 06/2017-08/2017
- Monica Helena Ribeiro (Stony Brook University), summer research advisor, 06/2015-09/2015
- Gabriel Augusto Baierle (Stony Brook University), summer research advisor, 06/2015-09/2015
- Junhee Park (Stony Brook University), research project advisor, 06/2013-09/2013
- Melissa Thomas (Herricks High School), summer research advisor, 06/2015-09/2015

### PhD thesis committee

- William Herlands (PhD, MLD/Heinz, Carnegie Mellon), expected 2019
- Bryan Hooi (PhD, SCS, Carnegie Mellon), expected 2019
- Junting Ye (PhD, CS, Stony Brook University), expected 2019
- Kijung Shin (PhD, SCS, Carnegie Mellon), expected 2018
- Tahora H. Nazer (PhD, Arizona State University), expected 2018
- Ankita Mangal (PhD, Materials Science and Engineering, Carnegie Mellon), 2018
- Rami Al-Rfou' (PhD, CS, Stony Brook University), 2015
- Bryan Perozzi (PhD, CS, Stony Brook University), 2016
- Hao Huang (PhD, CS, Stony Brook University), 2014

### PhD thesis committee (International)

- Edward Toth (Doctor of Philosophy (Engineering and IT), University of Sydney), 2019
- Polina Rozenshtein (Doctoral programme in Science, Aalto University), 2018
- Aleksi Kallio (Doctoral programme in Science, Aalto University), 2015
- Véronique Van Vlasselaer (Doctor of Philosophy, CS, KU Leuven), 2015
- Laura Langohr (Doctor of Philosophy, CS, University of Helsinki), 2014

## COMMUNITY ACTIVITIES

### Program Committees

- **Tutorials Co-Chair** (2019, 2018) Conference on Knowledge Discovery and Data Mining (KDD)
- **Tutorials Co-Chair** (2019) Conference on Information and Knowledge Management (CIKM)
- **Senior Member** (2019) Conference on Knowledge Discovery and Data Mining (KDD)
- **Senior Member** (2019, 2018, 2017, 2016) SIAM International Conference on Data Mining (SDM)
- **Senior Member** (2019, 2018, 2017, 2016) International Conference on Web Search and Data Mining (WSDM)
- **Area Chair** (2018, 2017, 2016) IEEE International Conference on Data Mining (ICDM)
- **Member** (2018, 2016, 2015, 2014) Conference on Knowledge Discovery and Data Mining (KDD)
- **Program Co-Chair** (2018) International Conference on Intelligent Information Technologies (ICIIT)
- **Tutorials Co-Chair** (2018) IEEE International Conference on Data Mining (ICDM)
- **Co-Chair** (2018) Social Networks and Graph Analysis Track of the World Wide Web Conference (WWW)
- **Member** (2018) Conference on Information and Knowledge Management (CIKM)
- **Member** (2018) IEEE International Conference on Big Knowledge (ICBK)
- **Member** (2018) 7th International Conference on Computational Data and Social Networks (CSoNet)
- **Member** (2018) First International Workshop on Online Social Networks and Media: Network Properties and Dynamics (in conj. with WWW)

- **Panelist** (2017) IEEE ICDM PhD Forum
- **Senior Member** (2017) Conference on Information and Knowledge Management (CIKM)
- **Publicity Chair** (2017) INFORMS Conference on Data Science
- **Workshops Co-Chair** (2017) Conference on Knowledge Discovery and Data Mining (KDD)
- **Workshops Co-Chair** (2017) SIAM International Conference on Data Mining (SDM)
- **Member** (2017) International School and Conference on Network Science (NetSci)
- **Member** (2017, 2016, 2014) International Conference on Social Informatics (SocInfo)
- **Member** (2017, 2016, 2013) Mining and Learning with Graphs (MLG) (in conj. with KDD)
- **Member** (2017) High Performance Graph Data Mining and Machine Learning Workshop (HPGDML) (in conj. with ICDM)
- **Student Travel Awards Co-Chair** (2016) Conference on Knowledge Discovery and Data Mining (KDD)
- **PhD Forum Co-Chair** (2016) European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD)
- **Tutorial Co-Chair** (2016) Pacific Asia Conference on Knowledge Discovery and Data Mining (PAKDD)
- **Member** (2016) International Joint Conference on Artificial Intelligence (IJCAI)
- **Member** (2016) International Workshop on Machine learning, Optimization & big Data (MOD)
- **Member** (2016) Third Workshop on Mining Networks and Graphs at the SIAM Data Mining (SDM)
- **Member** (2015, 2014, 2013) IEEE International Conference on Data Mining (ICDM)
- **Member** (2015, 2014) European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD)
- **Member** (2015, 2014, 2013) SIAM International Conference on Data Mining (SDM)
- **PhD Forum Co-Chair** (2015) IEEE International Conference on Data Mining (ICDM)
- **Publicity Co-Chair** (2015) SIAM International Conference on Data Mining (SDM)
- **Member** (2015, 2014) SIAM Workshop on Network Science (SIAMNS)
- **Member** (2015, 2014, 2013) Interactive Data Exploration and Analytics (IDEA) (in conj. with KDD)
- **Member** (2015) Workshop on Ensemble of Anomaly Detection Algorithms (EADA) (in conj. IEEE/WIC/ACM IAT 2015)
- **Member** (2015) BigGraphs Workshop at IEEE BigData 2015
- **Member** (2015) 1st International Workshop on Dynamics in Networks (DyNo) (in conj. with IEEE/ACM ASONAM)
- **Member** (2015) Workshop on Diffusion, Activity and Events in Networks: Models, Methods & Applications (in conj. with WWW 2015)
- **Member** (2015) WWW Social Networks and Graph Analysis Track
- **Member** (2014) ECML/PKDD 2014 Nectar Track
- **Member** (2014) Workshop on Diffusion Networks and Cascade Analytics of the ACM WSDM
- **Member** (2014) Ph.D. Workshop in Information and Knowledge Management (PIKM) (in conjunction with CIKM)
- **Member** (2014) International Conference on Web Search and Data Mining (WSDM)
- **Member** (2014) International Conference on Big Data Science (BigDataScience)
- **Member** (2014) Workshop on Big Scholarly Data: Towards the Web of Scholars (BigScholar) (in conjunction with WWW)
- **Member** (2013) IEEE ICDM PhD Student Forum
- **Member** (2013) Conference on Knowledge Discovery and Data Mining Demo Track (KDD)
- **Member** (2013) IEEE International Conference on Data Engineering (ICDE)
- **Member** (2013) Association for the Advancement of Artificial Intelligence (AAAI)
- **Member** (2013) The International Workshop on Large Scale Network Analysis (LSNA) (in conjunction with WWW)
- **Co-chair** (2013) International Workshop on Graph Data Management (GDM) (in conjunction with ICDE)



## Workshop Organizer

- 5th ACM SIGKDD Workshop on Outlier Detection De-constructed **ODDv5.0 @ KDD 2018** with Evgeny Burnaev, Charu Aggarwal, Christos Faloutsos
- WWW 2018 the 2nd Women in Data Science (WinDS) Workshop
- 4th ACM SIGKDD Workshop on Outlier Definition, Detection, and Description on Demand **ODD4.0 @ KDD 2016** with Franziska Bell, Emmanuel Müller, Ted E. Senator
- 3rd ACM SIGKDD Workshop on Outlier Definition, Detection, and Description **ODDx3 @ KDD 2015** with Sanjay Chawla, Emmanuel Müller, Ted E. Senator
- IJCAI (2016, 2015) Workshop on Heterogeneous Information Network Analysis (HINA)
- 2nd ACM SIGKDD Workshop on Outlier Detection and Description under Data Diversity **ODD<sup>2</sup> @ KDD 2014** with Charu Aggarwal, Emmanuel Müller, Raymond T. Ng
- WWW Workshop on Big Graph Mining (1st BGM@WWW 2014)
- IEEE ICDM Workshop on Mining Social Data at Work (1st MSDW@ICDM 2013)
- 1st ACM SIGKDD Workshop on Outlier Detection and Description **ODD @ KDD 2013** with Emmanuel Müller and Jilles Vreeken
- ACM SIGMOD Workshop on Dynamic Networks Management and Mining (DyNetMM 2013)

## Tutorials

- (ACM CCS 2015) Fraud Detection through Graph-Based User Behavior Modeling. Alex Beutel, Leman Akoglu, Christos Faloutsos. (3 hours)
- (ACM KDD 2015) Graph-Based User Behavior Modeling: From Prediction to Fraud Detection. Alex Beutel, Leman Akoglu, Christos Faloutsos. (3 hours)
- (ACM WSDM 2014) Big Graph Mining for Web & Social Media: Algorithms, Anomaly Detection, Applications. U Kang, Leman Akoglu, Polo Chau. (3 hours)
- (IEEE/ACM ASONAM 2013) Big Graph Mining: Algorithms, Anomaly Detection, and Applications. U Kang, Leman Akoglu, Polo Chau. (2 hours)
- (ACM WSDM 2013) Anomaly, Event, and Fraud Detection in Large Graph Datasets. Leman Akoglu, Christos Faloutsos. (6 hours)
- (IEEE ICDM 2012) What is Strange in Large Networks? Graph-based Irregularity and Fraud Detection. Leman Akoglu, Christos Faloutsos. (4 hours)

## Reviewer

- NSF III CAREER Review Panelist, Nov 2016
- NSF CISE/IIS Review Panelist, June 2015
- NSF CISE/III Review Panelist, Dec 2014
- NSF IIS Review Panelist, 2013
- NSF BIGDATA Review Panelist, 2012
- Data Mining and Knowledge Discovery Journal (DAMI)
- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- ACM Transactions on Knowledge Discovery from Data (TKDD)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- Transactions on Dependable and Secure Computing (TDSC)
- Knowledge and Information Systems (KAIS)
- KDD, ICDM, SDM, WWW, WSDM, ICWSM, ECML/PKDD

## University Service

- 2017-18 Co-organizer for the College Seminar and HILS (Heinz Informal Lunch Seminar) series
- Sep 2017 PhD Seminar research talk for 1st year students, CMU
- 2017 Committee Lead for ML-PP joint PhD program curriculum
- Sep 2016 PhD Seminar research talk for 1st year students, CMU
- 2016–2018 PhD (Admissions) Committee, Heinz College, CMU
- 2015 CS Graduate Student Orientation Talk on Data Mining Research, SBU

- Coordinator: Data Science & Engineering Specialization to MS in CS (MSCS) Program, SBU
- April 2015 Women in CS Professor Mixer, SBU
- 2014-15 Graduate student admissions committee, SBU
- 2014 IACS Graduate Program Committee member, SBU
- 2013 CS Graduate Student Orientation Talk on Data Mining Research, SBU
- 2013-14 Graduate student admissions committee, SBU
- 2012-13 Graduate student admissions committee, SBU

### Other Service

- **Book Review** *Outlier Analysis* by Charu C. Aggarwal
- **Book Review** *Introduction to Data Mining Ch. 9 on Anomaly Detection* by Pang-Ning Tan, Michael Steinbach, Anuj Karpatne, Vipin Kumar
- **Book Review** *Outlier Detection for Temporal Data* by Manish Gupta, Charu C. Aggarwal, Jiawei Han, and Jing Gao
- **Mentor** Broadening Participation in Data Mining Workshop (BPDM 2016, in conj. w/ KDD)
- Editorial Board Member: Data Mining & Knowledge Discovery (DMKD) (Jan-Sep 2016)
- Associate Editor: IEEE Trans. on Knowledge & Data Engineering (TKDE) (Jan'16-Jan'17)
- 2013 Guest Editor for Discrete Dynamics in Nature and Society (Special Issue on Discrete Analysis of Social Networks and Societies)

### PATENTS

1. **System and Method for Large Volume Data Analytics** Inventors: Leman Akoglu and Narayanan Ramanathan (ObjectVideo). U.S. Provisional Application No. 62/061,935, filed October 9, 2014.
2. **Vertex-proximity query processing in large time-evolving graphs** Inventors: Rohit M. Khandekar, Kun-Lung Wu, Leman Akoglu, Deepak Rajan, Vibhore Kumar, Srinivasan Parthasarathy. IBM T. J. Watson Research, filed Sep. 2011, approved: July 2014. US20130151536
3. **Anomaly, association and clustering detection** Inventors: Hanghang Tong, Leman Akoglu, Ching-Yung Lin, Ravi Konuru. IBM T. J. Watson Research, filed Dec. 2011, approved: US20140074838
4. **Dynamic anomaly, association and clustering detection** Inventors: Hanghang Tong, Leman Akoglu, Ching-Yung Lin, Ravi Konuru. IBM T. J. Watson Research, filed Dec. 2011, approved: US20140074796

### SKILLS

**Programming Languages** MatLab, Java, C, C++, C#, QT, Visual Basic, SQL, PHP, .NET, Perl, Python, Verilog, Assembly (Intel & MIPS), L<sup>A</sup>T<sub>E</sub>X

**Databases** PostgreSQL, Oracle, MySql, Microsoft SQL Server

**Spoken Languages** Turkish (native), English (fluent), Spanish (intermediate level), German (intermediate level), Japanese (beginner level).

**Extracurricular Activities** Chess, (Latin, Ballroom, Argentine tango, Swing) dancing, hiking, zumba

## REFERENCES

**Christos Faloutsos**, Professor  
Computer Science Department  
Carnegie Mellon University  
5000 Forbes Ave.  
8019 Gates Hillman Complex  
Pittsburgh, PA 15213  
christos@cs.cmu.edu  
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**Charu Aggarwal**, IEEE, ACM, SIAM Fellow,  
Distinguished Research Staff Member  
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1101 Kitchawan Rd, Yorktown Heights  
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