

LEMAN AKOGLU

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EDUCATION

- **Carnegie Mellon University** Pittsburgh, PA
Ph.D., Computer Science Sep. 2007 - May 2012 (expected)
Thesis Mining and Modeling Real Graphs: Patterns, Generators, Anomalies, and Tools
Ph.D. advisor Christos Faloutsos
- **Bilkent University** Ankara, Turkey
B.S., Computer Science Sep. 2003 - May 2007
Senior thesis Focused Crawling for Intelligent Portals
Thesis advisor Ozgur Ulusoy
GPA 3.95/4.00 (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 the fields of data mining and social media analysis; with a focus on anomaly and event detection and pattern mining in large, time-varying graphs using scalable algorithms and tools.

Keywords: Mining and modeling of large-scale real-world networks, social network analysis, graph mining, pattern discovery, anomaly and event detection

HONORS & AWARDS

- **Received**, IBM First Patent Application Invention Achievement 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 in PAKDD 2010
- **Winner**, Best Knowledge Discovery Paper Award in 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

REFEREED PUBLICATIONS

1. Leman Akoglu, Duen Horng Chau, U Kang, Danai Koutra, Christos Faloutsos. *OPAvion: Mining and visualization in large graphs*. (Demo paper) **SIGMOD**, Scottsdale, Arizona, May 2012.
2. Leman Akoglu, Hanghang Tong, Brendan Meeder, Christos Faloutsos. *PICS: Parameter-free Identification of Cohesive Subgroups in Large Attributed Graphs*. **SDM**, Anaheim, CA, Apr. 2012.
3. Leman Akoglu, Pedro Olmo Vaz de Melo, Christos Faloutsos. *Quantifying Reciprocity in Large Weighted Communication Networks*. **PAKDD**, Kuala Lumpur, Malaysia, May 2012.
4. 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.
5. U Kang, Mary McGlohon, Leman Akoglu, and Christos Faloutsos. *Patterns on the Connected Components of Terabyte-Scale Graphs*. **ICDM**, Sydney, Australia, Dec. 2010.
6. 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.
7. 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.
8. Leman Akoglu, Mary McGlohon, Christos Faloutsos. *OddBall: Spotting Anomalies in Weighted Graphs*. **PAKDD**, Hyderabad, India, June 2010. **Best Research Paper**
9. Leman Akoglu and Christos Faloutsos. *RTG: A Recursive Realistic Graph Generator using Random Typing*. **ECML PKDD**, Bled, Slovenia, Sep. 2009. **Best Knowledge Discovery Paper**
10. Nan Du, Christos Faloutsos, Bai Wang, Leman Akoglu. *Large Human Communication Networks: Patterns and a Utility-Driven Generator*. **ACM SIGKDD**, Paris, France, June 2009.
11. Leman Akoglu, Mary McGlohon, Christos Faloutsos. *RTM: Laws and a Recursive Generator for Weighted Time-Evolving Graphs*. **ICDM IEEE**, Pisa, Italy, Dec. 2008.
12. Mary McGlohon, Leman Akoglu, Christos Faloutsos. *Weighted Graphs and Disconnected Components: Patterns and a Generator*. **ACM SIGKDD**, Las Vegas, Nevada, Aug. 2008.

OTHER REFEREED PUBLICATIONS

13. Leman Akoglu and Christos Faloutsos. *ValuePick: Towards a Value-Oriented Dual-Goal Recommender System*. ICDM Workshop on Optimization Based Methods for Emerging Data Mining Problems, Sydney, Australia, Dec. 2010.
14. Leman Akoglu and Christos Faloutsos. *Event Detection in Time Series of Mobile Communication Graphs*. 27th Army Science Conference, Orlando, Florida, Dec. 2010.
15. Leman Akoglu and Bhavana Dalvi. *Structure, Tie Persistence and Event Detection in Large Phone and SMS Networks*. ACM SIGKDD Eighth Workshop on Mining and Learning with Graphs, Washington, D.C., July 2010.

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).

GRANTS

- **Spearheaded** the INARC/NS-CTA effort, sponsored by the Army Research Laboratory, \$500,000.
- **Helped** in developing the anomaly detection component for the *multi-million* ADAMS effort, sponsored by DARPA.

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

PATENT APPLICATIONS

1. **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
2. **Anomaly detection in complex datasets using compression** Inventors: Hanghang Tong, Leman Akoglu, Ching-Yung Lin, Ravi Konuru. IBM T. J. Watson Research, filed Dec. 2011

TEACHING & ADVISING EXPERIENCE

- **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.

COURSEWORK

Core CS Ph.D. courses Machine Learning, Graduate Algorithms, Type Systems for Programming Languages, Advanced Computer Architecture, Computer Networks.

Elective courses Spectral Graph Theory and Scientific Computing, Multimedia Databases and Data Mining, Probabilistic Graphical Models, Event and Pattern Detection, Social Media Analysis, Time Series Analysis, Regression Analysis.

SKILLS & ACTIVITIES

Academic Activities Reviewer for Data Mining and Knowledge Discovery Journal (DAMI), IEEE Transactions on Knowledge and Data Engineering (TKDE), ACM Transactions on Knowledge Discovery from Data (TKDD). External reviewer for KDD, ICDM, ICWSM, VLDB, WWW.

Departmental Activities Web master for CMU Databases Lab since Spring 2008. Student contact for admitted students. Active member of Women@SCS at Carnegie Mellon University.

Programming Languages MatLab, Java, C, C++, C#, QT, Visual Basic, SQL, PHP, .NET, Perl, Python, Verilog, Assembly (Intel & MIPS), L^AT_EX

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) dancing, hiking

REFERENCES

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