Lisa D. Friedland

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Network Science Institute
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EDUCATION

University of Massachusetts Amherst, Amherst, MA
Ph.D. in Computer Science 2016
Dissertation: "Detecting Anomalously Similar Entities in Unlabeled Data."
M.S. in Computer Science 2006

Harvard University, Cambridge, MA
A.B. with honors in Computer Science 1998

RESEARCH EXPERIENCE

Lazer Lab, Northeastern University, Boston, MA. (Director: David Lazer.)
Postdoctoral Research Associate 2016–present
Visiting Ph.D. Student 2013–2016

Computational social science projects:

- Constructing a large panel of U.S. voters on Twitter, then studying their election-season behaviors with respect to poll prediction, the spread of fake news, and stance towards candidates. Project has involved entity matching, natural language processing, classification, and regression.
- Analyzing the employment histories of Congressional staffers.

Knowledge Discovery Laboratory, College of Information and Computer Sciences, University of Massachusetts Amherst. (Advisor: David Jensen.)
Research Assistant 2002–2013

Focus on analyzing and modeling large network-structured data sets using statistical techniques from data mining, machine learning, and social network analysis. Research experience in anomaly and fraud detection, computational social science, network science, relational learning, complex systems, information retrieval, citation analysis, entity resolution, and bioinformatics.

PROFESSIONAL AND TEACHING EXPERIENCE

LinkedIn, Mountain View, CA Summer 2010
Intern, Analytics Group. Created a personalized "Connection Timeline" tool to visualize users' activity on the site. Analyzed trends of shared affiliations among connected pairs of users. Built a queryable database interface for sales team by systematically importing corporate account information.

PricewaterhouseCoopers, San Jose, CA Summer 2009
Intern, Center for Advanced Research. Designed social network-based graphical model for detecting cases of prescription drug fraud. Developed code and evaluated on real health insurance claims.

University of Massachusetts Amherst, Amherst, MA Spring 2009
Teaching Assistant. Reasoning About Uncertainty, new undergraduate computer science course on probability. Developed three programming assignments, produced solutions for written problem sets, graded all homework.

St. Stephen's School, Rome, Italy Spring 2005
Teacher. Geometry, class of 9th and 10th graders at an international high school.

Starlab, Brussels, Belgium 2000–2001
Researcher. Used L-systems framework to populate virtual environment with fractal-like creatures.

Whitehead Institute / MIT Center for Genome Research,
Cambridge, MA 1998–2000
Scientific Programmer. Designed, built and supported software automating large-scale biology project: polymorphism (SNP) discovery in human genes. Developed pipeline for setting up sequencing gels, processing and analyzing incoming data, uploading and validating user-scored results.

Harvard Summer School, Cambridge, MA Summer 1998
Harvard Extension School, Cambridge, MA Spring 1998
Teaching Assistant. Introduction to Applied Computer Science, and Elements of Computer Science Using C++. New courses designed to introduce novice programmers to sophisticated concepts such as ray tracing and NP-completeness. Spring: contributed to curriculum, held office hours, graded assignments. Summer: taught and graded twice weekly section, coordinating responsibilities with eight other TA's and two professors for class of 150, aged high school to adult.

REFEREED PUBLICATIONS

ConStance: Modeling annotation contexts to improve stance classification. Kenneth Joseph, Lisa Friedland, William Hobbs, David Lazer, Oren Tsur. 2017. In *Proc. 2017 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, pp. 1126–1135.

"Voters of the year": 19 voters who were unintentional election poll sensors on Twitter. William Hobbs, Lisa Friedland, Kenneth Joseph, Oren Tsur, Stefan Wojcik, David Lazer. 2017. In *Proc. International AAAI Conference on Web and Social Media (ICWSM)*, pp. 544–547.

Classifier-adjusted density estimation for anomaly detection and one-class classification. Lisa Friedland, Amanda Gentzel, David Jensen. 2014. In *Proc. 2014 SIAM Conference on Data Mining (SDM)*, pp. 578–586.

Copy or coincidence? A model for detecting social influence and duplication events. Lisa Friedland, David Jensen, Michael Lavine. 2013. In *JMLR W&CP 28(3), Proc. 30th International Conference on Machine Learning (ICML)*, pp. 1175–1183.

Detecting insider threats in a real corporate database of computer usage activities. Ted Senator, Henry Goldberg, et al. 2013. In *Proc. 19th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, pp. 1393–1401.

Feature extraction and machine learning on symbolic music using the music21 toolkit. Michael Cuthbert, Chris Ariza, Lisa Friedland. 2011. In *Proc. 12th International Society for Music Information Retrieval Conference (ISMIR)*, pp. 387–392.

Detecting social ties and copying events from affiliation data. Lisa Friedland. 2010. In *Proc. 24th AAAI Conference on Artificial Intelligence (15th AAAI/SIGART Doctoral Consortium)*, pp. 1982–1983.

Anomaly detection for inferring social structure. Lisa Friedland. 2008. In John Wang (Ed.), *Encyclopedia of Data Warehousing and Mining, 2nd Edition*, pp. 39–44. Hershey, PA: IGI Global.

Joke retrieval: Recognizing the same joke told differently. Lisa Friedland and James Allan. 2008. In *Proc. 17th ACM Conference on Information and Knowledge Management (CIKM)*, pp. 883–892.

Finding tribes: Identifying close-knit individuals from employment patterns. Lisa Friedland and David Jensen. 2007. In *Proc. 13th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, pp. 290–299.

Relational data pre-processing techniques for improved securities fraud detection. Andrew Fast, Lisa Friedland, Marc Maier, Brian Taylor, David Jensen, Henry G. Goldberg, and John Komoroske. 2007. In *Proc. 13th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, pp. 941–949.

Learning relational probability trees. Jennifer Neville, David Jensen, Lisa Friedland, and Michael Hay. 2003. In *Proc. 9th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)*, pp. 625–630.

Exploiting relational structure to understand publication patterns in high-energy physics. Amy McGovern, Lisa Friedland, Michael Hay, Brian Gallagher, Andrew Fast, Jennifer Neville, and David Jensen. 2003. *SIGKDD Explorations*, 5(2):165–172.

Characterization of single-nucleotide polymorphisms in coding regions of human genes. Michele Cargill, David Altshuler, et al. 1999. *Nature Genetics* 22(3):231–8.

PUBLISHED REPORTS

Combating fake news: An agenda for research and action. David Lazer, Matthew Baum, Nir Grinberg, Lisa Friedland, Kenneth Joseph, Will Hobbs, Carolina

Mattsson. Conference report published May 2017 from event held February 2017, Harvard and Northeastern Universities.

POSTERS

The patterns of staffer movement across Congressional offices. Lisa Friedland, David Lazer. Political Networks, June 2014, Montreal, QC.

Predicting protein-protein interactions using high-throughput data and network structures. Lisa Friedland, David Jensen, and David Kulp. North East Student Colloquium on Artificial Intelligence, April 2006, Ithaca, NY.

PUBLIC TALKS

Detecting anomalously similar entities in unlabeled data. Ph.D. thesis defense, College of Information and Computer Sciences, UMass Amherst, December 8, 2015.

Keeping Congress connected: The influence of staff movements on Congressional working relationships. Lisa Friedland, Stefan Wojcik, David Lazer. Political Networks, June 19, 2015, Portland, OR.

Copy or coincidence? A model for detecting social influence and duplication events. ICML presentation, June 17, 2013, Atlanta, GA.

Detecting social ties and copying events from affiliation data. AAAI Doctoral Consortium presentation, July 12, 2010, Atlanta, GA.

Data mining: Finding fraud, analyzing patterns, and crunching numbers. Lunch talk at Mount Holyoke College, November 18, 2009.

Finding tribes: Detecting social ties from affiliation data. Colloquium at Tufts University, May 15, 2009.

Joke retrieval: Recognizing the same joke told differently. CIKM presentation, October 28, 2008, Napa, CA.

Finding tribes: Identifying close-knit individuals from employment patterns. KDD presentation, August 14, 2007, San Jose, CA; Machine Learning & Friends Lunch, UMass Amherst, March 29, 2007.

PROGRAMS AND WORKSHOPS

Summer School on Social Networks, Whistler, British Columbia June 21–26, 2010
Machine Learning Summer School, Cambridge, U.K. Aug. 29–Sept. 10, 2009
Complex Systems Summer School, Santa Fe Institute, New Mexico June 2–27, 2008

AWARDS

#HackTrafficking4Good hackathon, Most Impactful project, January 2016.
2009/2010 Observational Medical Outcomes Partnership Cup, 2nd place, progress prize. November 2009. Detecting adverse reactions to drugs.

KDD Cup 2003, 1st place, open task. (See *SIGKDD Explorations* publication above.)
NSF Graduate Research Fellowship Program, Honorable mention, 2004.
National Merit, National Science Foundation scholarships, 1994.

ACADEMIC SERVICE

Reviewing: SIAM International Conference on Data Mining (member of program committee, 2017–2018). One-time reviews for International Conference on Web and Social Media; *Data Mining and Knowledge Discovery*; *IBM Journal of Research and Development*; North East Student Colloquium on Artificial Intelligence; International Conference on Machine Learning; *Encyclopedia of Data Warehousing and Mining*.

Professional Memberships: ACM SIGKDD, SIAM.

Departmental Activities at UMass: volunteer at Girls Connect Day (for elementary school girls) (2011, 2013), at UMass Amherst's Women in Engineering & Computing Career Day (for local schools) (2011), at Wearable Electronics workshop (for undergraduates) (2011), at Girls, Inc. visit (summer camp) (2009); panelist at CS Women's internships and jobs discussion (2012); co-organized CS Women's mentoring program (2004) and served as mentor (2004, 2008); created graduate student Wiki site (2004); ran summer Linear Algebra study group (2004); served on New Student Committee (2002–4).

TECHNICAL SKILLS

Programming Languages: most recent work in R, java, python. Experienced with SQL, Perl, Weka, Hadoop, Matlab, C/C++, LISP.

Graduate Coursework: Graphical models, Machine learning, Computational social network analysis, Information retrieval, Artificial intelligence, Reasoning and acting under uncertainty, Mathematical statistics, Multivariate statistics, Statistical methods in bioinformatics, Research methods for empirical computer science, Writing for scientists, Computation theory, Advanced algorithms, Computer networking lab, Distributed operating systems.