

Lev Reyzin

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Current Position

I am a Simons Postdoctoral Fellow in the Algorithms and Randomness Center at the Georgia Institute of Technology. My research lies in the theory and practice of machine learning.

Education

YALE UNIVERSITY, New Haven, CT

- Ph.D. (December 2009) in Computer Science
 - dissertation title: Active Learning of Interaction Networks
 - thesis committee: Dana Angluin (advisor), James Aspnes, Daniel A. Spielman, and Robert E. Schapire (external reader)
- M.Phil. (December 2008) in Computer Science
- M.S. (December 2006) in Computer Science

PRINCETON UNIVERSITY, Princeton, NJ

- B.S.E. (May 2005) in Computer Science, *cum laude*
- Certificate (May 2005) in Applied and Computational Mathematics

Relevant Employment

GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, GA

- Postdoctoral Fellow (Fall 2010 – present)

YAHOO! RESEARCH, New York, NY

- Postdoctoral Research Scientist (Fall 2009 – Fall 2010)

GOOGLE LABS, Mountain View, CA

- Research Intern (Summers 2006, 2007)

Selected Awards

For Papers/Dissertation

- 2011 AISTATS Notable Paper Award
- 2009 Nominated by Yale for the ACM Doctoral Dissertation Award
- 2007 COLT Best Student Paper Award
- 2006 ICML Best Student Paper Award (and one of three Outstanding Papers)

Fellowships

- 2010 Simons Postdoctoral Fellowship
- 2009 NSF/CRA Computing Innovation Fellowship
- 2007 NSF Graduate Research Fellowship
- 2006 Yahoo! Research Kern Family Scholarship

Papers (authors in alphabetical order)

Preprints

- P1 Vitaly Feldman, Elena Grigorescu, Lev Reyzin, and Santosh Vempala. **The Complexity of Statistical Algorithms**. arXiv:1201.1214v1, 2012.
- P2 Lev Reyzin. **Data Stability in Clustering: A Closer Look**. arXiv:1107.2379v4, 2011.
- P3 Dana Angluin, James Aspnes, and Lev Reyzin. **Network Construction with Subgraph Connectivity Constraints**. *Manuscript*, 2011. (This is an extended version of paper C8.)

Journal Publications

- J1 Dana Angluin, James Aspnes, and Lev Reyzin. **Optimally Learning Social Networks with Activations and Suppressions**. In the ALT 2008 Special Issue of *Theoretical Computer Science, Volume 411, Issues 29-30 (TCS)*, 2010.
- J2 Dana Angluin, James Aspnes, Jiang Chen, David Eisenstat, and Lev Reyzin. **Learning Acyclic Probabilistic Circuits Using Test Paths**. In the *Journal of Machine Learning Research, Volume 10 (JMLR)*, 2009.
- J3 Dana Angluin, James Aspnes, Jiang Chen, and Lev Reyzin. **Learning Large-Alphabet and Analog Circuits with Value Injection Queries**. In the COLT 2007 Special Issue of *Machine Learning, Volume 72, Issues 1-2 (MLJ)*, 2008.
- J4 Lev Reyzin and Nikhil Srivastava. **On the Longest Path Algorithm for Reconstructing Trees from Distance Matrices**. In *Information Processing Letters, Volume 101, Issue 3 (IPL)*, 2007.

Conference Publications

- C1 Elena Grigorescu, Lev Reyzin, and Santosh Vempala. **On Noise-Tolerant Learning of Sparse Parities and Related Problems**. In the *Proceedings of the 22nd International Conference on Algorithmic Learning Theory (ALT)*, 2011.
- C2 Miroslav Dudik, Daniel Hsu, Satyen Kale, Nikos Karampatziakis, John Langford, Lev Reyzin, and Tong Zhang. **Efficient Optimal Learning for Contextual Bandits**. In the *Proceedings of the 27th Conference on Uncertainty in Artificial Intelligence (UAI)*, 2011.
- C3 Lev Reyzin. **Boosting on a Budget: Sampling for Feature-Efficient Prediction**. In the *Proceedings of the 28th International Conference on Machine Learning (ICML)*, 2011.
- C4 Wei Chu, Lihong Li, Lev Reyzin, and Robert E. Schapire. **Contextual Bandits with Linear Payoff Functions**. In the *Proceedings of the 14th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2011.
- C5 Alina Beygelzimer, John Langford, Lihong Li, Lev Reyzin, and Robert E. Schapire. **Contextual Bandit Algorithms with Supervised Learning Guarantees**.¹ In the *Proceedings of the 14th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2011.
- C6 Satyen Kale, Lev Reyzin, and Robert E. Schapire. **Non-Stochastic Bandit Slate Problems**. In the *Proceedings of the 24th Annual Conference on Neural Information Processing Systems (NIPS)*, 2010.

¹AISTATS 2011 Notable Paper.

- C7 Dana Angluin, David Eisenstat, Leonid Kontorovich, and Lev Reyzin. **Lower Bounds on Learning Random Structures with Statistical Queries.** In the *Proceedings of the 21st International Conference on Algorithmic Learning Theory (ALT)*, 2010.
- C8 Dana Angluin, James Aspnes, and Lev Reyzin. **Inferring Social Networks from Outbreaks.** In the *Proceedings of the 21st International Conference on Algorithmic Learning Theory (ALT)*, 2010.
- C9 Dana Angluin, Leonor Becerra-Bonache, Adrian Horia Dediu, and Lev Reyzin. **Learning Finite Automata Using Label Queries.** In the *Proceedings of the 20th International Conference on Algorithmic Learning Theory (ALT)*, 2009.
- C10 Dana Angluin, James Aspnes, Jiang Chen, David Eisenstat, and Lev Reyzin. **Learning Acyclic Probabilistic Circuits Using Test Paths.** In the *Proceedings of the 21st Annual Conference on Learning Theory (COLT)*, 2008.
- C11 Dana Angluin, James Aspnes, and Lev Reyzin. **Optimally Learning Social Networks with Activations and Suppressions.** In the *Proceedings of the 19th International Conference on Algorithmic Learning Theory (ALT)*, 2008. Invited to a special issue of *Theoretical Computer Science*.
- C12 Dana Angluin, James Aspnes, Jiang Chen, and Lev Reyzin. **Learning Large-Alphabet and Analog Circuits with Value Injection Queries.**² In the *Proceedings of the 20th Annual Conference on Learning Theory (COLT)*, 2007. Invited to a special issue of *Machine Learning*.
- C13 Lev Reyzin and Nikhil Srivastava. **Learning and Verifying Graphs Using Queries with a Focus on Edge Counting.** In the *Proceedings of the 18th International Conference on Algorithmic Learning Theory (ALT)*, 2007.
- C14 Lev Reyzin and Robert E. Schapire. **How Boosting the Margin Can Also Boost Classifier Complexity.**³ In the *Proceedings of the 23rd International Conference on Machine Learning (ICML)*, 2006.

Refereed Workshop Papers

- W1 Miroslav Dudik, Daniel Hsu, Satyen Kale, Nikos Karampatziakis, John Langford, Lev Reyzin, and Tong Zhang. **Efficient Optimal Learning for Contextual Bandits.** In the *ICML Workshop on Online Trading off Exploration and Exploitation 2 (ICMLw)*, 2011.
- W2 Alina Beygelzimer, Satyen Kale, Nikos Karampatziakis, John Langford, and Lev Reyzin. **Aggressive Learning for Contextual Bandits.** In the *Snowbird Learning Workshop (Snowbird)*, 2011.
- W3 Lev Reyzin. **Boosting on a Feature Budget.** In the *ICML/COLT Workshop on Budgeted Learning (ICMLw)*, 2010.
- W4 Lev Reyzin. **2 Player Tetris is PSPACE Hard.** In the *Abstracts of the 16th Annual Fall Workshop on Computational Geometry (FWCG)*, 2006.

²COLT 2007 Best Student Paper.

³ICML 2006 Best Student Paper, also named Outstanding Paper.

Miscellaneous Publications

- M1 Lev Reyzin. **A Review of *Famous Puzzles of Great Mathematicians* by Miodrag S. Petković.** In *SIGACT News, Volume 42, Issue 3 (SIGACT)*, September 2011.
- M2 Dave Clarke, David Eppstein, Kaveh Ghasemloo, Lev Reyzin, Andrs Salamon, Peter Shor, Aaron Sterling, and Suresh Venkatasubramanian. **Questions Answered. In Theory.** In *SIGACT News, Volume 41, Issue 4 (SIGACT)*, December 2010.
- M3 Lev Reyzin. **Lower Bounds on the VC Dimension of Unions of Concept Classes.** *Yale University Technical Report 1349* YALEU/DCS/TR-1349, April 2006.

Teaching and Advising

GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, GA

- Co-Instructor for CS 8803, Discrete Fourier Analysis and Applications (Spring 2012)

YALE UNIVERSITY, New Haven, CT

- Teaching Fellow for CPSC 463/563, Machine Learning (Spring 2009)
- Teaching Fellow for CPSC 365, Design and Analysis of Algorithms (Spring 2007 and Spring 2008)
- Teaching Fellow for CPSC 202, Mathematical Tools for Computer Science (Fall 2006 and Fall 2008)

PRINCETON UNIVERSITY, Princeton, NJ

- Lab Teaching Assistant for introductory computer science courses (2003–2005)
- Engineering School advisor for incoming freshmen (2004–2005)

Selected Talks

From Queries to Bandits: Learning by Interacting

- ALCATEL-LUCENT BELL LABS, Murray Hill, NJ, 2012
- Seminar, SANDIA NATIONAL LABS, Livermore, CA, 2011

The Complexity of Statistical Algorithms

- Mathematics Colloquium, UNIVERSITY OF ILLINOIS – CHICAGO, Chicago, IL, 2012
- PRiML Seminar, UNIVERSITY OF PENNSYLVANIA, Philadelphia, PA, 2011
- Theory Colloquium, YALE UNIVERSITY, New Haven, CT, 2011
- ARC Colloquium, GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, GA, 2011

New Algorithms for Contextual Bandits

- Theory Lunch, GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, GA, 2010 (*short talk*)
- Computer Science Colloquium, BEN GURION UNIVERSITY, Beersheba, Israel, 2010

Active Learning of Interaction Networks

- ARC Colloquium, GEORGIA INSTITUTE OF TECHNOLOGY, Atlanta, GA, 2010

Learning Social Networks, Actively and Passively

- SANTA FE INSTITUTE, Santa Fe, NM, 2010

Learning Circuits, Graphical Models, and Social Networks by Injecting Values

- Theory Lunch, IBM T.J. WATSON RESEARCH CENTER, Yorktown Heights, NY, 2010

Optimally Learning Social Networks with Activations and Suppressions

- YAHOO! RESEARCH, New York, NY, 2008

Learning Large-Alphabet and Analog Circuits with Value Injection Queries

- Key Technical Challenges, YAHOO! RESEARCH, Santa Clara, CA, 2007 (*short talk*)

Learning and Verifying Graphs Using Queries with a Focus on Edge Counting

- Machine Learning Lunch, UNIVERSITY OF MASSACHUSETTS AMHERST, MA, 2007
- Theory Colloquium, YALE UNIVERSITY, New Haven, CT, 2006

How Boosting the Margin Can Also Boost Classifier Complexity

- Theory Colloquium, YALE UNIVERSITY, New Haven, CT, 2006
- Machine Learning Symposium, NY ACADEMY OF SCIENCES, NY, 2006 (*short talk*)
- Machine Learning Reading Group, PRINCETON UNIVERSITY, NJ, 2006

Professional Activities, Memberships, and Service

Reviewing

- PC Member: ALT 2012 (main), ICML 2012 (extended), ICML 2010 (extended)
- Referee at-Large: NIPS 2011, NIPS 2010
- Referee for Conferences: ITCS 2012, ICML 2011, ESA 2011, EC 2011, COLT 2011, COLT 2010, ALT 2009, COLT 2009, STOC 2008
- Referee for Journals: *Journal of Machine Learning Research*, *Machine Learning Journal*, *Theoretical Computer Science*, *Transactions on Neural Networks*, *Transactions on Pattern Analysis and Machine Intelligence*, *Journal of Combinatorial Optimization*

Memberships and Service

- SIGMA XI, Associate Member (2005 – 2010), Member (2010 – present)
- ACM/SIGACT, Student Member (2007 – 2009), Professional Member (2009 – present)
- NY ACADEMY OF SCIENCES, Student/Postdoctoral Member (2005-2006, 2009-2011)
- CLIQUE, Yale’s CS Theory Colloquium, Organizer (2007-2008), Member (2005-2009)
- PRINCETON ALUMNI SCHOOLS COMMITTEE OF NEW JERSEY, Member (2005 – 2009)

References

Prof. Dana Angluin, Computer Science, YALE UNIVERSITY

Prof. James Aspnes, Computer Science, YALE UNIVERSITY

Prof. Michael Kearns, Computer and Information Science, UNIVERSITY OF PENNSYLVANIA

Prof. Robert E. Schapire, Computer Science, PRINCETON UNIVERSITY

Prof. Santosh Vempala, Computer Science, GEORGIA INSTITUTE OF TECHNOLOGY