

# Adam Tauman Kalai – Curriculum Vitae

November, 2005

Toyota Technological Institute  
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## Research Interests

Machine learning, computational learning theory, and data mining  
Online and Randomized algorithms  
Efficient high-dimensional algorithms  
Game Theory

## Professional Employment

Toyota Technological Institute (TTI) Chicago, IL  
Assistant Professor, 2003-present.

## Education

Harvard University Cambridge, MA  
B.A. Computer Science, 1996, Magna Cum Laude.

Carnegie Mellon University Pittsburgh, PA  
M.A. Computer Science, 1999.  
Ph.D. Computer Science, 2001.  
Advisor: Avrim Blum.  
Support: NSF Graduate Fellowship and IBM Distinguished Graduate Fellowship.

Massachusetts Institute of Technology Cambridge, MA  
Postdoctoral fellowship, 2001-2003.  
Advisor: Santosh Vempala.  
Departments: Computer Science and Mathematics.  
Support: NSF Mathematical Sciences Postdoctoral Fellowship.

## Honors and Awards

PI on \$700K NSF grant SES-0527656, joint with an economist and game theorist, 2006.  
CoPI on U.S.-Israel Binational Science Foundation grant, 2005 (joint with game theorists).  
NSF Mathematical Sciences Postdoctoral Fellowship, 2001-2003.  
IBM Distinguished Graduate Fellowship, 1999-2001.  
NSF Graduate Fellowship, 1996-1999.  
Second Place, ACM World Programming Contest, 1996 (3-person Harvard team).  
First Place, Harvard Programming Contest, 1994.  
Eighteenth Place, William Lowell Putnam Math Contest, 1994.  
First Place, Illinois Junior Invitational Chess Championship, 1992.

## Publications

- [KK05] Adam Tauman Kalai and Sham Kakade. From Batch to Transductive Online Learning. To appear in *Advances in Neural Information Processing Systems* 18 (full oral presentation at NIPS).
- [KKMS05] Adam Tauman Kalai, Adam Klivans, Yishay Mansour, and Rocco Servedio. Agnostically Learning Halfspaces. In *Proceedings of the 46th Annual Symposium on the Foundations of Computer Science*, 2005 (FOCS).
- [FKM05] Abie Flaxman, Adam Tauman Kalai, and Brendan McMahan. Online Convex Optimization in the Bandit Setting: Gradient Descent Without a Gradient. In *Proceedings of the Sixteenth Annual ACM-SIAM Symposium on Discrete Algorithms*, 2005 (SODA).
- [DKM05] Sanjoy Dasgupta, Adam Tauman Kalai, and Claire Monteleoni. Analysis of Perceptron-Based Active Learning. In *Proceedings of 18th Annual Conference on Learning Theory*, 2005 (COLT).
- [KV05] Adam Kalai and Santosh Vempala. Simulated Annealing for Convex Optimization. To appear in *Math of OR*.
- [KS05] Adam Kalai and Rocco Servedio. Boosting in the Presence of Noise. *Journal of Computer and System Sciences* 71(3): 266-290, 2005 (also at STOC).
- [KV05] Adam Kalai and Santosh Vempala. Efficient Algorithms for On-line Optimization. *Journal of Computer and System Sciences* 71(3): 291-307, 2005 (also at COLT).
- [K04] Adam Tauman Kalai. Learning Monotonic Linear Functions. In *Proceedings of 17th Annual Conference on Learning Theory*, 2004 (COLT).
- [BCK03] Avrim Blum, Suchi Chawla, and Adam Kalai. Static Optimality and Dynamic Search Optimality in Lists and Trees. *Algorithmica* 36:3, pp. 249-260, 2003 (also at SODA).
- [BKW03] Avrim Blum, Adam Kalai, and Hal Wasserman. Noise-Tolerant Learning, the Parity Problem, and the Statistical Query Model. *JACM* 50(4):506–519, 2003 (also at STOC).
- [K03] Adam Kalai. Generating Random Factored Numbers, Easily. *Journal of Cryptology* 16(4):287-289, 2003 (also at SODA).
- [K02] Adam Kalai. Efficient Pattern-Matching with Don't Cares. In *Proceedings of the Thirteenth Annual ACM-SIAM Symposium on Discrete Algorithms*, 2002 (SODA).
- [KV02] Adam Kalai and Santosh Vempala. Efficient Algorithms for Universal Portfolios. *Journal of Machine Learning Research* 3(3):423–440, 2002 (FOCS).

- [KK01] Adam and Ehud Kalai. Strategic Polarization. *Journal of Mathematical Psychology*, 45:4, pp 656-663, 2001.
- [K01] Adam Kalai. Probabilistic and On-Line Methods in Machine Learning. Ph.D. dissertation, Technical report CMU-CS-01-132, 2001.
- [BBK99] Avrim Blum, Carl Burch, and Adam Kalai. Finely Competitive Paging. In *Proceedings of the 40th Annual Symposium on the Foundations of Computer Science*, 1999 (FOCS).
- [SKS99] Heung-Yeung Shum, Adam Kalai, and Steve Seitz. Omnivergent Stereo. *Journal of Computer Vision (VISI)* 48:3, pp 159-172, 2002 (also at ICCV).
- [BKL99] Avrim Blum, Adam Kalai, and John Langford. Beating the Holdout: Bounds for K-Fold and Progressive Cross-Validation. In *Proceedings of the 10th Annual Conference on Computational Learning Theory*, 1999 (COLT).
- [CKBR99] Stan Chen, Adam Kalai, Avrim Blum, and Roni Rosenfeld. On-line Algorithms for Combining Language Models. In *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing*, 1999 (ICASSP).
- [KS98] Adam Kalai and Mel Siegel. Improved Rendering of Parallax Panoramagrams for a Time-Multiplexed Autostereoscopic Display. In *Stereoscopic Displays and Applications IX Proceedings of SPIE 3295*, 1998.
- [BK98] Avrim Blum and Adam Kalai. A Note on Learning from Multiple-Instance Examples. *Machine Learning* 30:1, pp 23-30, 1998.
- [BK99] Avrim Blum and Adam Kalai. Universal Portfolios With and Without Transaction Costs. *Machine Learning* 35:3, pp 193-205, 1999 (also at COLT).

## Program Committees

2006: International Conference on Machine Learning (ICML)

2005: ACM Symposium on Theory of Computing (STOC)

2004: Randomization and Approximation Techniques in Computer Science (RANDOM), Conference on Learning Theory (COLT), International Conference on Machine Learning (ICML)

## Invited Talks

Invited tutorial, Machine learning summer school, University of Chicago, 2005.

*Neyman* seminar in statistics, Berkeley, 2005.

Invited lectures, statistics: Berkeley, University of Chicago, University of Iowa. Computer science: MIT, Stanford University, UC Berkeley, UC San Diego, CMU, University of Washington, Institute for Advanced Studies, University of Wisconsin-Madison, University of Chicago, University of Illinois at Urbana-Champaign, Northwestern University, Illinois Institute of Technology, University of Texas at Austin, Weizmann Institute, Tel Aviv University, Bar Ilan University, Hebrew University at Jerusalem. Operations research: MIT. Game Theory: Hebrew University at Jerusalem.

## References

Professor Avrim Blum  
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Professor Michael Kearns  
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Professor Santosh Vempala  
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