

Curriculum Vitae: Adam R. Klivans

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Education

- Ph.D.** Mathematics, Massachusetts Institute of Technology (2002)
- M.S.** Mathematics, Carnegie-Mellon University (1997)
- B.S.** Math/Computer Science, Carnegie-Mellon University (1997)

Professional Experience

- 09/10 - present: Associate Professor of Computer Science, The University of Texas at Austin
- 01/05 - 8/10: Assistant Professor of Computer Science, The University of Texas at Austin
- 07/04 - 12/04: Visiting Assistant Professor of Computer Science, Toyota Technological Institute at Chicago
- 06/02 - 6/04: NSF Mathematical Sciences Postdoctoral Research Fellow, Harvard University
- 09/97 - 5/02: Graduate Student Researcher, Mathematics and Computer Science, MIT

Title of Dissertation

“A Complexity-Theoretic Approach to Learning,” Ph.D. Dissertation, Department of Mathematics, MIT, 2002.

Dissertation Advisor

Professor Daniel Spielman, Department of Mathematics and Lab for Computer Science, MIT.

Current Research Areas

Learning Theory, Computational Complexity Theory, Randomized Algorithms, Cryptography, Optimization.

Awards and Honors

- PC Co-Chair, Conference on Learning Theory (COLT), 2009.
- Faculty Fellowship in Computer Sciences, Department of Computer Sciences, UT Austin, 2008-present.
- National Science Foundation CAREER Award, 2007-2012.
- Nine papers selected to appear in special issues of computer science journals (including Selected Papers of STOC, Selected Papers of FOCS, and Selected Learning Theory Papers from 2003, 2004, and 2006).
- Best Student Paper Award, with A. Sherstov, Conference on Learning Theory (COLT), 2006.
- NSF Mathematical Sciences Postdoctoral Research Fellowship, 2002.
- Best Student Paper Award, Symposium on Theory of Computing (STOC), 2001.
- Charles and Jennifer Johnson Best Student Research Prize, MIT Math Department, 2001.
- Andrew Carnegie Presidential Scholarship (given to one graduating computer science major at CMU each year), 1997.

Grants

- **“Learning in Worst-Case Noise Models.”**
NSF Algorithmic Foundations Grant (\$500,000; 9/11-9/14).
- **“Efficient Algorithms for Complex Machine Learning Tasks.”**
Texas Advanced Research Program Award (\$150,000; 5/08-5/10).
- **“The Computational Intractability of Machine Learning Tasks.”**
NSF Theory of Computation Grant (\$250,000; 10/07-10/10).
- **“The Computational Complexity of Halfspace-Based Learning.”**
NSF CAREER Award (\$400,000; 2/07-2/12).

Students

- Alexander Sherstov, Ph.D., August, 2009 (currently a postdoctoral researcher at Microsoft New England).
- Alex Tang (expected graduation Summer 2013).

Postdocs

- Parikshit Gopalan (PhD Georgia Tech.), 2006-2007 (currently staff researcher at Microsoft Silicon Valley).
- Prahladh Harsha (PhD MIT), 2008-2009 (currently at TIFR Mumbai).
- Homin Lee (PhD Columbia), 2009-2010.

Journal Editing and Editorial Boards

- Editorial Board, *Machine Learning Journal*, (<http://http://pages.stern.nyu.edu/~fprovost/>), May 2006 – present.
- Editorial Board, *Theory of Computing*, (<http://www.theoryofcomputing.org>), July 2004 – present.

Conference Chair Positions

- Program Committee Co-Chair for the 22nd Annual Conference on Learning Theory (COLT), Montreal, 2009 (responsible for 135 submissions).

Major Conference Program Committees

I was a program committee member for all of the following conferences.

- Symposium on Discrete Algorithms (SODA), 2009 (reviewed 60 papers).
- European Conference on Machine Learning (ECML), 2008 (reviewed 10 papers).
- Workshop on Randomization and Approximation (RANDOM), 2008 (reviewed 12 papers).
- Foundations of Computer Science (FOCS), 2007 (reviewed 50 papers).
- International Conference on Machine Learning (ICML), 2007 (reviewed 8 papers).
- Conference on Learning Theory (COLT), 2007 (reviewed 13 papers).
- Conference on Computational Complexity (CCC), 2007 (reviewed 25 papers).
- Algorithmic Learning Theory (ALT), 2007 (reviewed 10 papers).
- Symposium on Theory of Computing (STOC), 2004 (reviewed 45 papers).
- International Conference on Machine Learning (ICML), 2004 (reviewed 8 papers).

Publications

Journal Articles

1. A. R. Klivans and A. Sherstov,
“Lower Bounds for Agnostic Learning via Approximate Rank,” To appear in *Computational Complexity*, 2010.
2. A. R. Klivans, P. Long, and R. Servedio,
“Learning Halfspaces with Malicious Noise,” *Journal of Machine Learning Research*, Vol. 10:2715–2740, 2009.
3. A. R. Klivans and A. Sherstov,
“Cryptographic Hardness for Learning Intersections of Halfspaces,” *Journal of Computer and System Sciences*, Vol. 75(1):2–12, 2009 (Special Issue for Selected Papers in Learning Theory, 2006).
4. L. Fortnow and A. R. Klivans,
“Efficient Learning Algorithms Yield Circuit Lower Bounds,” *Journal of Computer and System Sciences*, Vol. 75(1):27–36, 2009 (Special Issue for Selected Papers in Learning Theory, 2006).
5. A. Kalai, A. R. Klivans, Y. Mansour, and R. Servedio,
“Agnostically Learning Halfspaces,” *SIAM Journal on Computing*, Vol. 37(6):1777–1805, 2008 (Special Issue for Selected Papers of FOCS 2005).
6. M. Alekhnovich, M. Braverman, V. Feldman, A. R. Klivans, and T. Pitassi,
“The Complexity of Properly Learning Simple Concept Classes,” *Journal of Computer and System Sciences*, Vol. 74(1):16–34, 2008 (Special Issue for Selected Papers in Learning Theory, 2004).
7. A. R. Klivans and R. Servedio,
“Learning Intersections of Halfspaces with a Margin,” *Journal of Computer and System Sciences*, Vol. 74(1):35–48, 2008 (Special Issue for Selected Papers in Learning Theory, 2004).
8. A. R. Klivans and A. Sherstov,
“Unconditional Lower Bounds for Learning Intersections of Halfspaces,” *Machine Learning Journal*, Vol. 69(2-3):97–114, 2007 (Special Issue for Selected Papers at COLT 2006).
9. A. R. Klivans and A. Shpilka,
“Learning Restricted Models of Arithmetic Circuits,” *Theory of Computing*, Vol. 2(10):185–206, 2006.
10. A. R. Klivans and R. Servedio,
“Toward Attribute Efficient Learning of Decision Lists and Parities,” *Journal of Machine Learning Research*, 7(Apr):587–602, 2006.
11. A. R. Klivans, R. O’Donnell, and R. Servedio,
“Learning Intersections and Thresholds of Halfspaces,” *Journal of Computer and System Sciences*, Vol. 68(4):808–840, 2004 (Special Issue for Selected Papers of FOCS 2002).
12. A. R. Klivans and R. Servedio,
“Learning DNF in Time $2^{\tilde{O}(n^{1/3})}$,” *Journal of Computer and System Sciences*, Vol. 68(2):303–318, 2004 (Special Issue for Selected Papers of STOC 2001).
13. A. R. Klivans and R. Servedio,
“Boosting and Hard-Core Sets,” *Machine Learning Journal*, Vol. 51(3):217–238, 2003 (Special Issue for Selected Papers in Learning Theory).
14. A. R. Klivans and D. van Melkebeek,
“Graph Nonisomorphism has Subexponential Size Proofs Unless the Polynomial-Time Hierarchy Collapses,” *SIAM Journal on Computing*, Vol. 31(5):1501–1526, 2002.

Refereed Articles in Conference Proceedings

15. A. R. Klivans, H. Lee, and A. Wan, “Mansour’s Conjecture is True for Random DNF Formulas,” *Proceedings of the 23rd International Conference on Learning Theory (COLT)*, June 2010.
16. P. Harsha, A. R. Klivans, and R. Meka, “An Invariance Principle for Polytopes,” *Proceedings of the 42nd Symposium on Theory of Computing (STOC)*, June 2010.
17. P. Harsha, A. R. Klivans, and R. Meka, “Bounding the Sensitivity of Polynomial Threshold Functions,” *Proceedings of the 42nd Symposium on Theory of Computing (STOC)*, June 2010. (Paper merged with work by Diakonikolas, Raghavendra, Servedio, and Tan).
18. A. R. Klivans, P. Long, and A. Tang,
“Baum’s Algorithm Learns Intersections of Halfspaces with respect to Log-Concave Distributions,” *Proceedings of the 13th International Workshop on Randomization and Computation (RANDOM)*, pages 588–600 August, 2009.
19. A. R. Klivans, P. Long, and R. Servedio,
“Learning Halfspaces with Malicious Noise,” *Proceedings of the 36th International Colloquium on Automata, Languages, and Programming (ICALP)*, 2009.
20. A. R. Klivans, R. O’Donnell, and R. Servedio,
“Learning Geometric Concepts via Gaussian Surface Area,” *Proceedings of the 49th Foundations of Computer Science (FOCS)*, pages 541–550, October, 2008.
21. P. Gopalan, A. Kalai, and A. R. Klivans,
“A Query Algorithm for Agnostically Learning DNF?,” (a 2-page open problem), *Proceedings of the 21st Conference on Learning Theory (COLT)*, pages 515–516, July, 2008.
22. P. Gopalan, A. Kalai, and A. R. Klivans,
“Agnostically Learning Decision Trees,” *Proceedings of the 40th Symposium on Theory of Computing (STOC)*, pages 527–536, May, 2008.
23. P. Gopalan, A. Klivans, and D. Zuckerman,
“List-Decoding Reed-Muller Codes over Small Fields,” *Proceedings of the 40th Symposium on Theory of Computing (STOC)*, pages 265–274, May, 2008.
24. A. R. Klivans and A. Sherstov,
“A Lower Bound for Agnostically Learning Disjunctions,” *Proceedings of the 20th Conference on Learning Theory (COLT)*, pages 409–423, June, 2007.
25. A. R. Klivans and A. Sherstov,
“Cryptographic Hardness for Learning Intersections of Halfspaces,” *Proceedings of the 47th Foundations of Computer Science (FOCS)*, pages 553–562, October, 2006.
26. A. R. Klivans and A. Sherstov,
“Improved Lower Bounds for Learning Intersections of Halfspaces,” *Proceedings of the 19th Conference on Learning Theory (COLT)*, pages 335–349, June 2006. — **Best Student Paper Award.**
27. L. Fortnow and A. R. Klivans,
“Efficient Learning Algorithms Yield Circuit Lower Bounds,” *Proceedings of the 19th Conference on Learning Theory (COLT)*, pages 350–363, June, 2006.
28. L. Fortnow and A. R. Klivans,
“Linear Advice for Randomized Logarithmic Space,” *Proceedings of the 23rd International Symposium on Theoretical Aspects of Computer Science (STACS)*, pages 469–476, February, 2006.

29. A. Kalai, A. R. Klivans, Y. Mansour, and R. Servedio,
 “Agnostically Learning Halfspaces,” *Proceedings of the 46th Foundations of Computer Science (FOCS)*, pages 11–20, October, 2005.
30. L. Fortnow and A. R. Klivans,
 “NP with Small Advice,” *Proceedings of the 20th Annual Conference on Computational Complexity (CCC)*, pages 228–234, June, 2005.
31. M. Alekhnovich, M. Braverman, V. Feldman, A. R. Klivans, and T. Pitassi,
 “Learnability and Automatizability,” *Proceedings of the 45th Foundations of Computer Science (FOCS)*, pages 621–630, October, 2004.
32. A. R. Klivans and R. Servedio,
 “Learning Intersections of Halfspaces with a Margin,” *Proceedings of the 17th Annual Conference on Learning Theory (COLT)*, pages 348–362, July, 2004.
33. A. R. Klivans and R. Servedio,
 “Toward Attribute Efficient Learning of Decision Lists and Parities,” *Proceedings of the 17th Annual Conference on Learning Theory (COLT)*, pages 224–238, July, 2004.
34. A. R. Klivans and R. Servedio,
 “Perceptron-Like Performance for Learning Intersections of Halfspaces,” a 2-page open problem, *Proceedings of the 17th Annual Conference on Learning Theory (COLT)*, pages 639–640, July, 2004.
35. A. R. Klivans and A. Shpilka,
 “Learning Arithmetic Circuits via Partial Derivatives,” *Proceedings of the 16th Annual Conference on Learning Theory (COLT)*, pages 463–476, August, 2003.
36. A. R. Klivans, R. O’Donnell, and R. Servedio,
 “Learning Intersections and Thresholds of Halfspaces,” *Proceedings of the 43rd Foundations of Computer Science (FOCS)*, pages 177–186, November, 2002.
37. J. Jackson, A. R. Klivans, and R. Servedio,
 “Learnability Beyond AC^0 ,” *Proceedings of the 34th Symposium on Theory of Computing (STOC)*, pages 776–784, May, 2002. — Also appeared in the 17th Annual IEEE Conference on Computational Complexity (CCC) (joint session with STOC 2002).
38. A. R. Klivans
 “On the Derandomization of Constant Depth Circuits,” *Proceedings of the 5th International Workshop on Randomization and Approximation (RANDOM)*, pages 249–260, August, 2001.
39. A. R. Klivans and R. Servedio,
 “Learning DNF in Time $2^{\tilde{O}(n^{1/3})}$,” *Proceedings of the 33rd Symposium on Theory of Computing (STOC)*, pages 258–265, July, 2001. — **Best Student Paper**.
40. A. R. Klivans and D. Spielman,
 “Randomness Efficient Identity Testing,” *Proceedings of the 33rd Symposium on Theory of Computing (STOC)*, pages 216–223, July, 2001.
41. A. R. Klivans and R. Servedio,
 “Boosting and Hard-Core Sets,” *Proceedings of the 40th Foundations of Computer Science (FOCS)*, pages 624–633, October, 1999.
42. A. R. Klivans and D. van Melkebeek,
 “Graph Nonisomorphism has Subexponential Size Proofs Unless the Polynomial-Time Hierarchy Collapses,” *Proceedings of the 31st annual Symposium on Theory of Computing (STOC)*, pages 659–667, May, 1999.

Grant Proposal Reviewing

National Science Foundation, CCF Theoretical Foundations Panel, 2008.

Reviewed proposal for US-Israel Binational Science Foundation, 2009.