

# SANJEEV ARORA

Curriculum Vitae, November 2011.

Born in January 1968, in India. US Citizen

## Career

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|--------------------|---|
| June'11–           | Charles Fitzmorris Professor of Computer Science  |
| July'03–           | Professor of Computer Science, Princeton University.  |
| Feb.'99–June'03    | Associate Professor of Computer Science, Princeton University.  |
| Sept.'94–Jan.'99   | Assistant Professor of Computer Science, Princeton University.  |
| Other appointments | Visiting Professor, Weizmann Institute (Feb'07–June'07) Visiting researcher, Microsoft Research (Sept'06–Jan'07) Visiting Associate Professor, UC Berkeley (Sept'01–June'02). |

## Education

Ph.D., Computer Science, UC Berkeley, 1994. Advisor: U.V. Vazirani  
S.B., Math with CS, MIT, 1990.

## Professional Activities and Honors

- Best paper award, IEEE Foundations of Computer Science, 2010.
- EATCS-SIGACT Gödel prize (cowinner), 2010.
- Elected ACM Fellow, 2009.
- Founding director and lead PI, Center for Computational Intractability, 2008. (Funded in part by an NSF Expeditions in Computing grant.)
- Engineering Council (Princeton University) teaching award for Fall 2008.
- SIGACT Committee for Advancement of Theoretical CS. Member 2005-07, Chair 2007 —2010.
- Graduate mentoring award from Princeton University, 2005.
- Best paper award (cowinner), ACM Symposium on Theory of Computing, 2004.
- Invited speaker, International Symposium on Math Programming 2003.
- Distinguished Alumnus Award from UC Berkeley Computer Science Dept., 2003.
- Invited speaker, International Congress of Mathematicians, 2002.
- EATCS-SIGACT Gödel prize (cowinner), 2001.
- Codirector of DIMACS, 2000-2001 (1 term)

- Invited speaker, ACM Symposium on Theory of Computing, 1998.
- David and Lucile Packard Foundation Fellowship, 1997–2002.
- Alfred P. Sloan Fellowship, 1996.
- NSF CAREER Award for junior faculty, 1995.
- ACM Doctoral Dissertation Award (cowinner), 1995.
- IBM Graduate Fellowship, 1993.
- Ranked first in India, IIT Joint Entrance Exam, 1986.
- Member of editorial board, *Computational Complexity*, *Theory of Computing*, *SIAM J. Disc. Math*, *Journal of Combinatorial Optimization*, *Information and Computation*, *Electronic Colloquium on Computational Complexity*.
- Program Chair for *APPROX 2003* and *IEEE FOCS 2006*. Program committee member for: *ACM Symposium on Theory of Computing*, 1996, 2003, *International Computing and Combinatorics Conference*, 1997, *IEEE Foundations of Computer Science*, 2000, 2009, *Computational Complexity 2010*, *FSTCS 2010*.
- Invited speaker at *Logic Colloquium'94*, McGill Workshop on Complexity Theory, 1996, *CUNY Logic Day 1996*, *Dimacs Workshop on Networks Design*, 1997, *NYU Geometry Day*, 1997, Lecturer at IAS-Park City *Summer school in Complexity Theory*, 2000, *Bay Area Theory Day 2001*, *Foundations of Software Technology and Theoretical CS 2001*, *Dimacs workshop on Geometric Algorithms 2003*, *Foundations of Computation Theory 2003*, *NYU/Columbia Theory Day*, 2004, *CS2020 (Sept 2009)*, *SWAT 2010*, *Georgia Tech Theory Day 2010*, *Simons Science Series 2011*, *ADFOCS'11*.
- Distinguished/Colloquium speaker at: Cornell (2009) Duke (2009), U. Toronto (2008), MIT (2007), UI Urbana Champaign (2006), UW Madison (2006) TTI Chicago (2006), U. Rochester (2006), U. Pittsburgh (2005).

**Book:** *Computational Complexity: A Modern Approach*. S. Arora and B. Barak, Cambridge University Press, 2009.

#### **Selected Papers (chronological order by first publication)**

1. S. Arora, T. Leighton and B. Maggs. Online Algorithms for Path Selection in a Nonblocking Network. *SIAM J. Comp.* **25**(3):600–625, 1996. (Prelim. version in ACM STOC 1990.)
2. S. Arora and S. Safra. Probabilistic Checking of Proofs: A New Characterization of NP. *Journal of the ACM* **45**(1):70–122, 1998. (Prelim. Version IEEE FOCS 1992.)
3. S. Arora, C. Lund, R. Motwani, M. Sudan, and M. Szegedy. Proof verification and intractability of approximation problems. *JACM* **45**(3):501–555, 1998. (Prelim. Version IEEE FOCS 1992.)
4. S. Arora, L. Babai, J. Stern, and Z. Sweedyk. The hardness of approximate optima in lattices, codes, and systems of linear equations. *JCSS*, 54(2):317-331, 1997. (Prelim. version in *IEEE FOCS* 1993.)

5. S. Arora, D. Karger, and M. Karpinski. Polynomial Time Approximation Schemes for Dense Instances of  $\mathcal{NP}$ -Hard Problems. *JCSS* **58** 1999. (Prelim. version in STOC 1995.)
6. S. Arora and M. Sudan. Improved low degree testing and its applications. *Combinatorica*, 2004. (Prelim version in ACM STOC 1997.)
7. S. Arora. Polynomial-time approximation schemes for Euclidean TSP and other geometric problems. *JACM* **45**(5):753–782, 1998. (Based on papers in IEEE FOCS 1996 and 1997.)
8. S. Arora, S. Rao, and P. Raghavan. Polynomial-time approximation schemes for Euclidean facility location and k-median. *Proc. ACM STOC*, 106–113, 1998.
9. S. Arora and R. Kannan. Learning mixtures of separated non-spherical gaussians. *Annals of Applied Probability*, 2005. (Prelim version in *Proc. ACM STOC* 2001.)
10. S. Arora, B. Bollobás, L. Lovász, and I. Tourlakis. Proving integrality gaps without knowing the linear program. *Theory of Computing*, 2006. (Prelim version IEEE FOCS 2001.)
11. S. Arora, S. Rao, and U. Vazirani. Expander flows, geometric embeddings, and graph partitioning. *JACM* 2008. (Prelim version *ACM STOC*, 2004.)
12. M. Alekhovich, S. Arora and I. Tourlakis. Towards strong nonapproximability results in the Lovász-Schrijver hierarchy. *Proc. ACM STOC* 2005.
13. S. Arora, J. Lee, and A. Naor. Euclidean distortion and Sparsest Cut. *Journal of the American Math Soc.*, 2007. (Prelim. version ACM STOC 2005.)
14. S. Arora and S. Kale. A combinatorial, primal-dual approach to semidefinite relaxations. *Proc. ACM STOC*, 2007.
15. S. Arora and B. Chazelle. The thrill is gone? *Comm. ACM*, Aug 2005.
16. S. Arora, C. Daskalakis, D. Steurer: Message passing algorithms and improved LP decoding. *Proc. ACM STOC 2009*: 3-12.
17. S. Arora, M. Brunnermeier, R. Ge: Computational Complexity and Information Asymmetry in Financial Products. *Proc. Innovations in Computer Science*, 2010.
18. S. Arora, B. Barak, and D. Steurer. Subexponential problems for unique games and related problems. *Proc. IEEE FOCS* 2010.

### Ph.D. Students

Graduated: George Karakostas (McMaster University), Subhash Khot (NYU), Elad Hazan (Technion), Iannis Tourlakis (U. Toronto, postdoc), Satyen Kale (IBM Research), Eden Chlamtac (Weizmann, postdoc), David Steurer (Microsoft, postdoc).

Current: V. Anuradha, Chris Beck, Rong Ge Rajsekar Manokaran,, Sushant Sachdeva.