

Madhu Sudan
Principal Researcher, Microsoft Research

Areas of Special Interests

Theory of Computer Science, Algorithms, Computational Complexity, Reliable Communication, Optimization.

Ph.D. Title

Efficient Checking of Polynomials and Proofs and the Hardness of Approximations.

Supervisor: Umesh Vazirani

Educational Background

Ph.D.	Computer Science; University of California at Berkeley, 1992
B.Tech.	Computer Science; Indian Institute of Technology at New Delhi, 1987

Work Experience

1992-1997	Research Staff Member, IBM Thomas J. Watson Research Center Mathematical Sciences Department
Sept. 1997 - Dec. 2002	Associate Professor, Massachusetts Institute of Technology Department of Electrical Engineering and Computer Science
Jan. 2003 - Jan. 2005	Professor, MIT EECS.
Feb. 2005 - June 2011	Fujitsu Chair Professor, MIT EECS (on leave since June 2009)
July 2005 - June 2011	Danny Lewin Outstanding Professor, MIT EECS (on leave since June 2009)
July 2007 - June 2009	Associate Director, MIT CSAIL
June 2009 - present	Principal Researcher, Microsoft Research
December 2011 - present	Adjunct Professor, MIT EECS

Awards

Sakrison Memorial Award (Ph.D. Thesis, EECS, Berkeley)	1993
ACM Doctoral Dissertation Award	1993
Sloan Foundation Fellowship	1998
NSF Career Award	1999
Information Theory Paper Award	2000
Gödel Prize	2001
Nevanlinna Prize	2002
Felicitaton, Indian Assoc. Computing Research	2002
Distinguished Alumnus Award, University of California at Berkeley, CS Division	2003
Radcliffe Fellowship	2003-2004
Distinguished Alumnus Award, Indian Institute of Technology at New Delhi	2004
Guggenheim Fellowship	2005-2006
ACM Fellow	2009
IEEE Fellow	2010
American Academy of Arts and Sciences Member	2010
AMS Fellow	2013

Current Organization Membership: ACM, IEEE, SIAM, AMS

Journal Editorial Boards SIAM Journal on Discrete Mathematics (1997-2003), Information and Computation (2000-2006), SIAM Journal on Computing (2000-present), Journal of the ACM (2003-2008),

Springer LNCS Series (2004-present), Foundations & Trends in Theoretical Comp. Sc. (Chief Editor, 2004-present), IEEE Transactions on Information Theory (2005-2006).

Conference Program Committees ACM STOC '95, IEEE FOCS '97, ACM-SIAM SODA '98, RANDOM '98, COCOON '99, FCT '99, CCC '01 (Chair), FOCS '01, FSTTCS '01, FOCS '03 (Chair), STOC '06, CCC '06, ISIT '06, RANDOM '06, EuroComb '07, FOCS '08, ITCS 2012, CCC 2013, FOCS 2013.

Steering committees Electronic Colloquium on Computational Complexity (Scientific Board Member, 1994-present), IEEE Conference on Computational Complexity (Conference Committee Member, 1999-2002), Claude Shannon Institute in Ireland (Scientific Advisory Board, 2005-2012), Mathematisches Forschungsinstitut Oberwolfach (Scientific Advisory Board, 2007-present).

Selected Publications

- Ronitt Rubinfeld and Madhu Sudan, “Robust characterizations of polynomials with applications to program testing,” SIAM Journal on Computing, 25(2):252–271, April 1996.
- Madhu Sudan, “Decoding of Reed Solomon codes beyond the error-correction bound,” Journal of Complexity, special issue dedicated to Shmuel Winograd, 13(1): 180–193, March 1997.
- Sanjeev Arora, Carsten Lund, Rajeev Motwani, Madhu Sudan, and Mario Szegedy, “Proof verification and the hardness of approximation problems,” Journal of the ACM, 45(3): 501–555, May 1998.
- Venkatesan Guruswami and Madhu Sudan, “Improved decoding of Reed-Solomon codes and algebraic-geometric codes,” IEEE Transactions on Information Theory, 45(6): 1757–1767, September 1999.
- Brendan Juba and Madhu Sudan, “Universal Semantic Communication I,” Proceedings of the 40th Annual ACM Symposium on Theory of Computing, pages 123–132, Victoria, British Columbia, Canada, May 17-20, 2008.

Principal lectures

- Nevanlinna Prize Lecture, International Congress of Mathematicians, Beijing, August 2002.
- Erdős Memorial Lecture Series, Hebrew University, Jerusalem, 14-20 March 2002.
- Invited speaker at Applied Algebra, Algebraic Algorithms, and Error-correcting codes (AAECC'01), Melbourne, 26-30 November, 2001.
- Invited Tutorial on *Coding theory* at IEEE Symposium on Foundations of Computer Science, Las Vegas, 14-17 October, 2001.
- Keynote plenary invited speaker at the International Conference IFIP TCS 2000, Sendai, Japan, August 2000.
- Invited speaker, International Congress of Mathematicians, Berlin, August 1998.

Ph.D. Students

Yevgeniy Dodis (2000, currently at NYU), Venkatesan Guruswami (2001, currently at CMU), Eric Lehman (2002, currently at Google), Mikhail Alekhnovitch (2003, died in a tragic accident on August 5, 2006), Ryan William O'Donnell (2003, currently at CMU), Prahladh Harsha (2004, currently at TIFR), Adam Davison Smith (2004, currently at Penn. State), April Rasala Lehman (2005, currently at Google), Jon Kelner (acting advisor on behalf of Dan Spielman, 2006, currently at MIT), Sergey Yekhanin (2006, currently at Microsoft Research), Victor Chen (2009, currently at Google), Elena Grigorescu (2010, currently at Purdue), Brendan Juba (2010, currently at Washington U., St. Louis), Swastik Kopparty (2010, currently at Rutgers), Benjamin Rossman, (2010, currently at NII, Tokyo), Shubhangi Saraf (2011, currently at Rutgers).

(Last Updated: November 22, 2014)