

## Anand D. Sarwate

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### CONTACT INFORMATION

Postdoctoral Researcher  
Information Theory and Applications Center  
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### RESEARCH INTERESTS

Information theory, distributed signal processing, robust communication, and machine learning, with applications to sensor networks, ad-hoc networks, security and privacy, and cognitive radio.

### EDUCATION

#### **University of California, Berkeley**, (Berkeley, California USA)

Ph.D., Electrical Engineering and Computer Sciences, July 2008  
Thesis: *Robust and adaptive communication under uncertain interference*

- Advisor: Prof. Michael Gastpar

Graduate Student, Electrical Engineering and Computer Sciences, August 2002–present  
M.S., Electrical Engineering and Computer Sciences, December 2005  
Thesis: *Observation uncertainty in Gaussian sensor networks*

- Advisor: Prof. Michael Gastpar

#### **Massachusetts Institute of Technology**, (Cambridge, Massachusetts USA)

S.B., Electrical Engineering and Computer Science, June 2002

S.B., Mathematics, June 2002

Minors in Music and Theater Arts

### EMPLOYMENT

#### **University of California, San Diego**, (La Jolla, California USA)

*Postdoctoral Researcher* (**September 2008 – present**)

- Research on computational learning, estimation, and networked control.
- Supervisor: Prof. Alon Orlitsky

#### **University of California, Berkeley**, (Berkeley, California USA)

*Graduate Student Researcher* (**November, 2003 – present**)

- Research on information theory for communication in unknown and adversarial environments and decentralized estimation algorithms for sensor networks.

*Graduate Student Instructor* (**January – May, 2005**)

- Teaching assistant for upper-division undergraduate course in communications (EE 121). Taught two discussion sections of 25 students each, held office hours, and wrote solutions.

### JOURNAL PAPERS

A.D. Sarwate and M. Gastpar, *A little feedback can simplify sensor network cooperation*, accepted to the IEEE Journal of Selected Areas in Communication, Special Issue on Simple Wireless Sensor Networking Solutions.

A.D. Sarwate and M. Gastpar, *Rateless codes for AVC Models*, to appear in the IEEE Transactions on Information Theory, arXiv:0711.3926v4 [cs.IT].

K. Eswaran, A.D. Sarwate, A. Sahai, and M. Gastpar, *Zero-rate feedback can achieve the empirical capacity*, to appear in the IEEE Transactions on Information Theory, arXiv:0711.0237v2 [cs.IT].

T.C. Aysal, M. Yildiz, A.D. Sarwate, and A. Scaglione, *Broadcast Gossip Algorithms for Consensus*, IEEE Transactions on Signal Processing, 57 (7), July 2009, pp.2748–2761.

A.G. Dimakis, A.D. Sarwate, and M. Wainwright, *Geographic Gossip : Efficient Averaging for Sensor Networks*, IEEE Transactions on Signal Processing, 56 (3), March 2008, pp.1205–1216.

A.D. Sarwate and V. Anantharam, *Exact emulation of a priority queue with a switch and delay lines*, Queueing Systems : Theory and Applications, 53 (3), July 2006.

PREPRINTS

A.D. Sarwate and A.D. Dimakis, *The Impact of Mobility on Gossip Algorithms*, submitted to the IEEE Transactions on Information Theory, October 2009.

A.D. Sarwate and M. Gastpar, *State constraints and list decoding for the AVC*, submitted to the IEEE Transactions on Information Theory, October 2009.

CONFERENCE PAPERS

A.D. Sarwate and A.D. Dimakis, *Gossip and consensus in mobile networks*, Proceedings of the Third International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP 2009), Aruba, Dutch Antilles, December 2009. [Invited]

T.C. Aysal, A.D. Sarwate and A. Dimakis, *Reaching consensus in wireless networks with probabilistic broadcast*, Proceedings of the 47th Annual Allerton Conference on Communication, Control and Computation, Monticello, IL, September-October 2009.

A.D. Sarwate and M. Gastpar, *Some observations on limited feedback for multiaccess channels*, Proceedings of the IEEE International Symposium on Information Theory (ISIT 2009), Seoul, South Korea, June-July 2009.

A.D. Sarwate and A.D. Dimakis, *The Impact of Mobility on Gossip Algorithms*, Proceedings of the 28th Annual International Conference on Computer Communications (INFOCOM), Rio de Janeiro, Brazil, April 2009.

T.C. Aysal, M.E. Yildiz, A.D. Sarwate, and A. Scaglione, *Broadcast Gossip Algorithms: Design and Analysis for Consensus*. Proceedings of the 47th IEEE Conference on Decision and Control (CDC 2008), Cancun, Mexico, December 2008.

A.D. Sarwate and M. Gastpar, *Arbitrarily dirty paper coding and applications*, Proceedings of the IEEE International Symposium on Information Theory (ISIT 2008), Toronto, Canada, July 2008.

A.D. Sarwate and M. Gastpar, *Adversarial interference models for multiantenna cooperative systems*. Proceedings of the 42nd Conference on Information Sciences and Systems (CISS 2008), Princeton, NJ, March 2008. [Invited]

A.D. Sarwate and M. Gastpar, *Rateless coding with partial CSI at the decoder*, Proceedings of the 2007 Information Theory Workshop (ITW 2007), Lake Tahoe, CA, September 2007.

A.D. Sarwate, B. Nazer, and M. Gastpar, *Spatial Filtering in Sensor Networks with Computation Codes*, Proceedings of the 2007 Statistical Signal Processing Workshop (SSP 2007), Madison, WI, August 2007.

A.D. Sarwate, K. Eswaran, A. Sahai, and M. Gastpar, *Using zero-rate feedback on binary additive channels with individual noise sequences*, Proceedings of the 2007 International Symposium on Information Theory (ISIT 2007), Nice, France, June 2007.

A.D. Sarwate and M. Gastpar, *Channels with nosy “noise”*, Proceedings of the 2007 International Symposium on Information Theory (ISIT 2007), Nice, France, June 2007.

A.D. Sarwate and M. Gastpar, *Randomization for robust communication in networks, or “Brother, can you spare a bit?”*, Proceedings of the 44th Annual Allerton Conference on Communication, Control and Computation, Monticello, IL, September 2006.

A.D. Sarwate and M. Gastpar, *Randomization bounds on Gaussian arbitrarily varying channels*, Proceedings of the 2006 International Symposium on Information Theory (ISIT 2006), Seattle, WA, July 2006.

A.G. Dimakis, A.D. Sarwate and M. Wainwright, *Geographic Gossip : Efficient Aggregation for Sensor Networks*, Proceedings of the 5th International Symposium on Information Processing in Sensor Networks (IPSN '06), Nashville, TN, April 2006. ArXiv cs.IT/0602071.

A.D. Sarwate and M. Gastpar, *Fading observation alignment via feedback*. Proceedings of the 4th International Symposium on Information Processing in Sensor Networks (IPSN 2005), Los Angeles, CA, April 2005.

A.D. Sarwate and M. Gastpar, *Estimation from Misaligned Observations with Limited Feedback*. Proceedings of the 39th Conference on Information Sciences and Systems (CISS 2005), Baltimore, MD, March 2005.

INVITED TALKS,  
WORKSHOPS

- Nov. 2006 – University of Wisconsin – *Fooling the middleman : randomized coding against malicious adversaries*
- Mar. 2008 – Cornell University – *Robust and adaptive coding strategies for uncertain environments*
- Mar. 2008 – Rutgers University – *Robust and adaptive coding strategies for uncertain environments*
- May 2008 – MIT – *Robust and adaptive coding strategies for uncertain environments*
- Mar. 2009 – Chinese University of Hong Kong – *Distributed signal processing in networks using gossip*
- Jul. 2009 – University of Washington – *Distributed signal processing in networks using gossip*
- Aug. 2009 – American Institute of Mathematics Workshop on Permanents and modeling probability distributions
- Sep. 2009 – University of California, Davis – *The impact of networking on distributed consensus*

PEER REVIEWING

- IEEE Transactions on Information Theory
- IEEE Transactions on Signal Processing
- IEEE Transactions on Communications
- IEEE Journal of Selected Areas in Communication
- ACM Transactions on Sensor Networks
- IEEE Transactions on Wireless Communications
- IEEE Transactions on Vehicular Technology
- EURASIP Journal on Wireless Communications and Networking
- Queueing Systems : Theory and Applications
- *Conferences* : ISIT 2007–2009, Globecom 2007, 2009, PIMRC 2007, ITW 2008, CDC 2009

SERVICE

- Online Associate Editor, IEEE Information Theory Society
- IEEE Information Theory Society Ad Hoc Committee on Online Content and Services
- IEEE Information Theory Society Student Committee
- Program committee, Information Theory and Applications Workshop 2009
- Session chair: ITA 2009, ISIT 2009

- UCSD Information Theory and Applications Seminar organizer: Fall 2008–present
- UC Berkeley Networking, Communications, and DSP Seminar organizer : Fall 2005–Fall 2007
- UC Berkeley Graduate Admissions Reviewer : 2005–2008 (4 years)

HONORS AND  
AWARDS

Demetri Angelakos Memorial Achievement Award, UC Berkeley Department of EECS, 2008

Samuel Silver Memorial Scholarship Award, UC Berkeley Department of EECS, 2007

National Defence Science and Engineering Graduate Fellowship, 2002–2005

MIT : Laya and Jerome B. Wiesner Student Art Award, Joseph Everingham Award (Theater),  
Philip Lowe Memorial Award (Music)

MEMBERSHIPS

IEEE, Phi Beta Kappa, Eta Kappa Nu, American Mathematical Society (AMS), Engineers for a  
Sustainable World