

Alexandros G. Dimakis

EEB 532, USC Dept. of Electrical Engineering, 3740 McClintock Ave. Los Angeles, CA 90089-2564.
Phone: 510-388-1905 dimakis@usc.edu <http://www-rcf.usc.edu/~dimakis>

Education

University of California, Berkeley

September 2005-2008: Ph.D in Electrical engineering and Computer Sciences.

University of California, Berkeley

September 2003-2005: MSc in Electrical engineering and Computer Sciences.

National Technical University of Athens

September 1998- June 2003: Diploma in Electrical and Computer Engineering (5 year degree)

Work Experience

- Assistant Professor, Electrical Engineering Department, University of Southern California. May 2009-Present.
- California Institute of Technology, Center for the Mathematics of Information (CMI) Postdoctoral Scholar.
- Microsoft Research Communication and Collaboration systems group, Project: Coding for storage in data centers.
- Ecole Polytechnique Federale de Lausanne (EPFL) Audiovisual Communications Laboratory - LCAV School of Computer and Communication Sciences (Summer 2005).
Project: Gossip Algorithms for Distributed Signal Processing.

Awards and Recognition

- IEEE ComSoc Data Storage Committee Best Paper Award, 2010
- NSF Career Award, 2011.
- Keynote speaker, 2010 IEEE Int. Symposium on Network Coding.
- 2008 Eli Jury Dissertation Award.
- Microsoft Research Fellowship for 2007-2008.
- Best Paper award in IEEE/ACM Symposium on Information Processing in Sensor Networks (IPSN '05).
- Gold medal in Greek National Olympiad in Informatics, 1995.

Publications

Peer-Reviewed Journal Articles

1. A. G. Dimakis, R. Smarandache, P. O. Vontobel "LDPC Codes for Compressed Sensing," IEEE Transactions on Information Theory, (to appear).
2. A.D. Sarwate, A. G. Dimakis, "The Impact of Mobility on Gossip Algorithms," IEEE Transactions on Information Theory, (to appear).
3. D. Leong, A. G. Dimakis, T. Ho "Distributed Storage Allocations," IEEE Transactions on Information Theory, (under minor revision).
4. D. S. Papailiopoulos and A. G. Dimakis, "Interference Alignment as a Rank Constrained Rank Minimization," IEEE Transactions on Signal Processing, (under minor revision).

5. A. G. Dimakis, K. Ramchandran, Y. Wu, C. Suh, "A Survey on Network Codes for Distributed Storage," the Proceedings of the IEEE. Vol 99, No 3, March 2011.
6. C. Daskalakis, A. G. Dimakis and E. Mossel, "Connectivity and Equilibrium in Random Games," *Annals of Applied Probability*, 21(3):987-1016, 2011.
7. A. S. Tehrani, A.G. Dimakis, M. J. Neely, "SigSag: Iterative Detection through Soft Message-Passing", *IEEE Journal of Selected Topics in Signal Processing*, (Special Issue on Soft Detection for Wireless Transmission), December 2011.
8. B. Nazer, A. G. Dimakis and M. Gastpar, "Local Interference can Accelerate Gossip Algorithms," *IEEE Journal of Selected Topics in Signal Processing*, Special Issue on Gossiping Algorithms Design and Application, vol. 5, no. 5, pp. 876-887, August 2011.
9. M. A. Khajehnejad, A.G. Dimakis, W. Xu, B. Hassibi, "Sparse Recovery of Nonnegative Signals with Minimal Expansion," *IEEE Transactions on Signal Processing*, Vol. 59 Issue 1, January 2011.
10. A. G. Dimakis, S. Kar, J. M.F. Moura, M. G. Rabbat, A. Scaglione, "Gossip Algorithms for Distributed Signal Processing," the Proceedings of the IEEE. Vol. 98, no. 11, pp. 1847-1864, November 2010.
11. A. G. Dimakis, P. B. Godfrey, Y. Wu, M. J. Wainwright and K. Ramchandran "Network Coding for Distributed Storage Systems," *IEEE Transactions on Information Theory*, Vol. 56, Issue 9, Sept. 2010.
IEEE ComSoc Data Storage Best paper award for 2010.
12. F. Benezit, A. G. Dimakis, P. Thiran, and M. Vetterli. "Gossip along the way: Order-optimal consensus through randomized path averaging," *IEEE Transactions on Information Theory*, Vol. 56, Issue 10, Oct. 2010.
13. A. G. Dimakis, A. A. Gohari and M. Wainwright, "Guessing Facets: Polytope Structure and Improved LP Decoding," *IEEE Transactions on Information Theory*, Volume: 55 Issue 8, Aug. 2009.
14. C. Daskalakis, A. G. Dimakis, R. Karp and M. J. Wainwright, "Probabilistic Analysis of Linear Programming Decoding," *IEEE Transactions on Information Theory* 54(8), August 2008.
15. A. G. Dimakis, A.D. Sarwate, and M.J. Wainwright, "Geographic Gossip: Efficient Averaging for Sensor Networks," *IEEE Transactions on Signal Processing*, Volume 56, Issue 3, March 2008.
16. A. G. Dimakis V. Prabhakaran, K. Ramchandran, "Decentralized Erasure Codes for Distributed Networked Storage," Joint special issue, *IEEE Transactions on Information Theory and IEEE/ACM Transactions on Networking*, June 2006.
17. A. G. Dimakis, P. Maragos, "Phase Modulated Resonances by Self-Similar Processes With Application to Turbulent Sounds," *IEEE Transactions on Signal Processing*, Nov 2005, Vol 53.

Book Chapter

18. A. G. Dimakis and K. Ramchandran, "Network Coding for Distributed Storage in Wireless Networks," in V. Saligrama, editor, *Networked Sensing Information and Control*, Signals and Communication series, Springer

Verlag, October 2007.

Submitted

19. D. Papailiopoulos, A.G. Dimakis, “Distributed Storage Codes Meet Multiple-Access Wiretap Channels,” *IEEE Transactions on Information Theory*, (under review).
20. M. J. Neely, A. S. Tehrani, A. G. Dimakis “Efficient Algorithms for Renewable Energy Allocation to Delay Tolerant Consumers,” *IEEE Transactions on Automatic Control*, (under review).
21. A. Khajehnejad, A. G. Dimakis, B. Hassibi, B. Vigoda, W. Bradley “Reweighted LP Decoding for LDPC Codes,” *IEEE Transactions on Information Theory*, (under revision).

Publications in Peer-Reviewed Conference Proceedings

22. N. Golrezaei, K. Shanmugam, A.G. Dimakis, A.F. Molisch and G. Caire, “FemtoCaching: wireless video content delivery through distributed caching helpers,” *IEEE Conference on Computer Communications. (INFOCOM)*, April 2012.
23. D. S. Papailiopoulos, J. Luo, A. G. Dimakis, C. Huang and J. Li “Simple Regenerating Codes: Network Coding for Cloud Storage,” *IEEE Conference on Computer Communications Mini-conference. (INFOCOM)*, April 2012.
24. M. Sathiamoorthy, A. G. Dimakis, B. Krishnamachari and F. Bai, “Distributed Storage Codes Reduce Latency in Vehicular Networks,” *IEEE Conference on Computer Communications Mini-conference. (INFOCOM)*, April 2012.
25. D. S. Papailiopoulos, A. G. Dimakis, and V. R. Cadambe, “Repair Optimal Erasure Codes through Hadamard Designs,” *Allerton 2011*.
26. A. Khajehnejad, A. S. Tehrani, A.G. Dimakis, “Explicit Matrices for Sparse Approximation,” *IEEE International Symposium on Information Theory (ISIT 2011)*.
27. D. Leong, A.G. Dimakis, T. Ho, “Distributed Storage Allocations for Optimal Delay,” *IEEE International Symposium on Information Theory (ISIT 2011)*.
28. D. Papailiopoulos, A.G. Dimakis, “Distributed Storage Codes Through Hadamard Designs,” *IEEE International Symposium on Information Theory (ISIT 2011)*.
29. D. S. Papailiopoulos and A. G. Dimakis, “Repairing Erasure Codes,” *Refereed Work-In-Progress (WiP) and Poster at USENIX Conference on File and Storage Technologies (FAST) 2011*.
30. A. S. Tehrani, A.G. Dimakis, M. J. Neely, “SigSag: Iterative Detection through Soft Message-Passing,” *IEEE Conference on Computer Communications. (INFOCOM)*, 2011.
31. D. Papailiopoulos, A.G. Dimakis, “Distributed Storage Codes Meet Multiple-Access Wiretap Channels,” *Proceedings of the 47th Annual Allerton Conference on Communication, Control and Computation*, September 2010.
32. A. Khajehnejad, A.G. Dimakis, B. Hassibi, “Iterative Reweighted LP Decoding,” *Proceedings of the 47th Annual Allerton Conference on Communication, Control and Computation*, September 2010.

33. B. Hassibi, A.G. Dimakis, D. Papailiopoulos, "MCMC Methods for Integer Least-Squares Problems," Proceedings of the 47th Annual Allerton Conference on Communication, Control and Computation, September 2010.
34. D. Papailiopoulos and A.G. Dimakis, "Interference Alignment as a Rank Constrained Rank Minimization," IEEE Global Telecommunications Conference (GLOBECOM) 2010.
35. D. Leong, A.G. Dimakis, T. Ho, "Symmetric Allocations for Distributed Storage," IEEE Global Telecommunications Conference (GLOBECOM) 2010.
36. Z. Wang, A.G. Dimakis, J. Bruck, "Rebuilding for Array Codes in Distributed Storage Systems," Workshop on the Application of Communication Theory to Emerging Memory Technologies (ACTEMT) (in conjunction with GLOBECOM), 2010.
37. Y. Lin, A. Ortega, A. G. Dimakis, "Sparse Recovery for Discrete Tomography," IEEE International Conference on Image Processing (ICIP), 2010.
38. M. J. Neely, A. S. Tehrani, A. G. Dimakis "Efficient Algorithms for Renewable Energy Allocation to Delay Tolerant Consumers," First IEEE International Conference on Smart Grid Communications. (SmartGridComm), 2010.
39. T.K. Dikaliotis, A.G. Dimakis, T. Ho, M. Effros, "On the Delay Advantage of Coding in Packet Erasure Networks," IEEE Information Theory Workshop, Dublin (ITW 2010).
40. T.K. Dikaliotis, A.G. Dimakis, T. Ho, "Security in Distributed Storage Systems by Communicating a Logarithmic Number of Bits," IEEE International Symposium on Information Theory (ISIT 2010).
41. D. Leong, A.G. Dimakis, T. Ho, "Distributed Storage Allocation for High Reliability," IEEE International Conference on Communications (ICC) 2010.
42. A.G. Dimakis, R. Smarandache, P.O. Vontobel, "Channel coding LP decoding and compressed sensing LP decoding: further connections," Proc. 2010 International Zurich Seminar on Communications, 2010.
43. Z. Wang, R. Matescu, A.G. Dimakis, J. Bruck "Array Codes for Distributed Storage: Results and Open problems," Information Theory and Applications (ITA) 2010.
44. A. G. Dimakis and P.O. Vontobel, "LP Decoding Meets LP Decoding: A Connection between Channel Coding and Compressed Sensing," Proceedings of the 47th Annual Allerton Conference on Communication, Control and Computation, September 2009.
45. T.C. Aysal, A.D. Sarwate, A. G. Dimakis , "Reaching Consensus in Wireless Networks with Probabilistic Broadcast," Proceedings of the 47th Annual Allerton Conference on Communication, Control and Computation, September 2009.
46. D. Cullina, A. G. Dimakis, T. Ho, "Searching for Minimum Storage Regenerating Codes," Proceedings of the 47th Annual Allerton Conference on Communication, Control and Computation, September 2009.
47. A.D. Sarwate, A.G. Dimakis, "Gossip and consensus in mobile networks," Proc. of the Third International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP) 2009.

48. M. Hansen, B. Hassibi, A. G. Dimakis, W. Xu “Near-Optimal Detection in MIMO Systems using Gibbs Sampling,” IEEE Global Communications Conference (GLOBECOM), 2009.
49. Y. Wu and A. G. Dimakis “Reducing Repair Traffic for Erasure Coding-Based Storage via Interference Alignment,” IEEE International Symposium on Information Theory (ISIT), 2009
50. T. Dikaliotis, A.G. Dimakis, T. Ho, M. Effros, “On the Delay of Network Coding over Line Networks,” IEEE International Symposium on Information Theory (ISIT), 2009
51. D. Leong A. G. Dimakis, T. Ho “Distributed Storage Allocation Problems,” Network Coding Workshop (NETCOD), 2009.
52. M. A. Khajehnejad A.G. Dimakis, B. Hassibi, “Nonnegative Compressed Sensing with Minimal Perturbed Expanders,” Digital Signal Processing Workshop 2009.
53. B. Nazer, A. G. Dimakis, and M. Gastpar, “Neighborhood Gossip: Concurrent Averaging through Local Interference,” Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), Taipei, Taiwan, April 2009.
54. A.D. Sarwate and A. G. Dimakis, “The Impact of Mobility on Gossip Algorithms,” IEEE Conference on Computer Communications. (INFOCOM), April 2009.
55. B. Nazer, A. G. Dimakis, and M. Gastpar, “Local Interference Can Accelerate Gossip Algorithms,” Proceedings of the 46th Annual Allerton Conference on Communication, Control and Computation, September 2008.
56. F. Benezit, P. Denantes, A. G. Dimakis, P. Thiran, and M. Vetterli. “Reaching Consensus about Gossip: Convergence Times and Costs,” Information Theory and Applications (ITA) January 2008.
57. A. G. Dimakis, J. Wang and K. Ramchandran, “Unequal Growth Codes: Intermediate Performance and Unequal Error Protection for Video Streaming,” International workshop on Multimedia Signal Processing. (MMSP) October 2007. **Best student paper runner-up**
58. Y. Wu, A. G. Dimakis and K. Ramchandran, “Deterministic Regenerating Codes for Distributed Storage,” Forty-Fifth Annual Allerton Conference, September 2007.
59. F. Benezit, A. G. Dimakis, P. Thiran and M. Vetterli, “Gossip Along the Way: Order-Optimal Consensus through Randomized Path Averaging,” Forty-Fifth Annual Allerton Conference, September 2007.
60. A. G. Dimakis, M. J. Wainwright and K. Ramchandran, “Lower bounds on the rate-distortion function of LDGM codes,” Information Theory workshop (ITW) 2007.
61. A. G. Dimakis, P. B. Godfrey, M. J. Wainwright and K. Ramchandran “Network Coding for Distributed Storage Systems,” IEEE Conference on Computer Communications. (INFOCOM), May 2007.
62. J. Schiff, D. Antonelli, A. G. Dimakis, D. Chu and M. Wainwright “Robust Message-Passing for Statistical Inference in Sensor Networks,” ACM/IEEE Symposium on Information Processing in Sensor Networks (IPSN) 2007.

63. C. Daskalakis, A. G. Dimakis, R. Karp and M. J. Wainwright, "Probabilistic Analysis of Linear Programming Decoding". SIAM Symposium on Discrete Algorithms (SODA), January 2007.
64. A. G. Dimakis, P. B. Godfrey, M. J. Wainwright and K. Ramchandran "On the benefits of Network coding for peer-to-peer storage," Third Workshop on Network Coding, Theory, and Applications (NETCOD), January 2007.
65. A. G. Dimakis, A.D. Sarwate, and M.J. Wainwright, "Geographic Gossip: Efficient Aggregation for Sensor Networks". ACM/IEEE Symposium on Information Processing in Sensor Networks (IPSN). 2006.
66. A.G. Dimakis, M.J. Wainwright, "Guessing Facets: Improved LP decoding and Polytope structure," IEEE International Symposium on Information Theory (ISIT) , 2006.
67. A. G. Dimakis, D. Petrovic, K. Ramchandran, "From Dumb Wireless Sensors to Smart Networks using Network Coding," Information Theory and Applications (ITA) San Diego, 2006.
68. A. G. Dimakis V. Prabhakaran K. Ramchandran "Distributed Fountain Codes for Networked Storage," IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) May 2006.
69. A. G. Dimakis, V. Prabhakaran, K. Ramchandran, "Ubiquitous Access to Distributed Data in Large-Scale Sensor Networks Through Decentralized Erasure Codes," IEEE/ACM Symposium on Information Processing in Sensor Networks (IPSN). 2005
Best Paper Award.
70. A. G. Dimakis, V. Prabhakaran, K. Ramchandran, "Distributed Data Storage in Sensor Networks using Decentralized Erasure Codes," Asilomar Conference on Signals, Systems, and Computers, November 2004.
71. A. G. Dimakis, P. Maragos, "Modeling Resonances with Phase Modulated Self-Similar Processes," IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) May 2004.
72. P. Maragos, A. G. Dimakis, I. Kokkinos, "Some advances in nonlinear Speech Modeling using Modulations, Fractals and Chaos," IEEE International Conference on Digital Signal Processing (DSP), July 2002.

Professional Service

Reviewer for: IEEE Transactions on Signal processing, IEEE Transactions on Information Theory, Random Structures and Algorithms, ACM Transactions on Sensor Networks, ACM/SIAM Symposium on Discrete Algorithms (SODA), ACM Symposium on Theory of Computing (STOC), Information Processing in Sensor Networks (IPSN), IEEE International Conference on Acoustics Speech and Signal Processing (ICASSP), IEEE International Conference on Image Processing (ICIP), International symposium on Information Theory (ISIT).

Technical Program Committee:

- IEEE Int. Symp. on Information Theory (ISIT) 2013.
- Thirteenth ACM SIGMOBILE International Symposium on Mobile Ad Hoc Networking and Computing (MobiHoc) 2012.
- International Conference on Signal Processing and Communications (SP-COM) 2012. Member of the Technical Program Committee.
- IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP '11).

- **Workshop Co-Chair**, Emerging Data Storage Technologies at IEEE Int. Conference on Communications (ICC) 2012.
- **Data storage track chair**, IEEE Globecom 2011, Selected Areas in Communications Symposium.
- IEEE Int. Conference on Computer Communications (Infocom) 2011.
- IEEE Int. Conference on Communications (ICC) 2012.
- IEEE International Symposium on Network Coding (NetCod' 2010, 2011, 2012).
- IEEE SmartGridComm (Architectures and Models for the Smart Grid) 2011.
- Information Theory Summer School, 2010 Organizing Committee.
- IEEE International Conference on Distributed Computing in Sensor Systems (DCOSS '09, DCOSS '10).
- IEEE Third International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP '09). Co-organizer (with Prof. Anna Scaglione) of special session on gossip algorithms for wireless networks.

Patents

Two patents on Coded Storage for Data centers, in collaboration with Microsoft Research (pending).