

DIMITRIS PAPAILIOPOULOS

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University of Wisconsin-Madison
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ACADEMIC EMPLOYMENT

University of Wisconsin-Madison Assistant Professor Department of Electrical and Computer Engineering Department of Computer Sciences (by courtesy) Grainger Institute for Engineering (fellow) Wisconsin Institute for Discovery (affiliate)	<i>2016 – present</i>
University of California, Berkeley Postdoctoral Researcher Member of the AMPLab and BLISS Supervisors: Prof. Kannan Ramchandran and Prof. Benjamin Recht	<i>2014 – 2016</i>

EDUCATION

Ph.D. in Electrical and Computer Engineering University of Texas at Austin University of Southern California Advisor: Alexandros G. Dimakis	<i>2013 – 2014</i> <i>2009 – 2012</i>
M.Sc. in Electronic and Computer Engineering Technical University of Crete Advisor: George N. Karystinos	<i>2007 – 2009</i>
Diploma in Electronic and Computer Engineering Technical University of Crete (5-year degree) Advisor: George N. Karystinos	<i>2002 – 2007</i>

RESEARCH INTERESTS

Machine Learning, Coding Theory for Distributed Storage and Computation, Parallel and Distributed Algorithms

AWARDS & DISTINCTIONS

- IEEE Signal Processing Society, Young Author Best Paper Award, 2015.
- Gerondelis Foundation Fellowship, 2012.
- Myronis Fellowship, 2011 – 2012.
- Annenberg Graduate Fellowship, 2009 – 2011.
- Graduate Studies Fellowship Award, Technical University of Crete, 2008.
- Graduated 2nd in a class of 155 ECE undergraduate students, 2007.
- Undergraduate Studies Fellowship Award, 2004.

JOURNAL PUBLICATIONS

11. H. Mania, X. Pan, D. Papailiopoulos, B. Recht, K. Ramchandran, M. I. Jordan, "Perturbed Iterate Analysis for Asynchronous Stochastic Optimization," (second round of minor revision) in *SIAM Journal on Optimization (SIOPT)*, 2016.
10. A. S. Rawat, D. Papailiopoulos, A. G. Dimakis, S. Vishwanath, "Locality and Availability in Distributed Storage," *accepted for publication in IEEE Transactions on Information Theory*, 2015.
9. I. Tamo, D. Papailiopoulos, A. G. Dimakis, "Optimal Locally Repairable Codes and Connections to Matroid Theory," *accepted for publication in IEEE Transactions on Information Theory*, 2015.
8. D. Papailiopoulos and A. G. Dimakis, "Locally Repairable Codes," *IEEE Transactions on Information Theory*, Vol. 60, pp. 5843 – 5855, May 2014.
7. M. Asteris, D. Papailiopoulos, G. N. Karystinos "The Sparse Principal Component of a Constant-rank Matrix," *IEEE Transactions on Information Theory*, Vol. 60, pp. 2281 – 2290, April 2014.
6. K. Shanmugam, D. Papailiopoulos, A. G. Dimakis, G. Caire "A Repair Framework for Scalar MDS Codes," *IEEE Journal on Selected Areas in Communications (JSAC)*, special issue on Communication Methodologies for the Next-Generation Storage Systems, Vol. 32, pp. 998 – 1007, May 2014.
5. M. Sathiamoorthy, M. Asteris, D. Papailiopoulos, A.G. Dimakis, R. Vadali, S. Chen, D. Borthakur, "XORing Elephants: Novel Erasure Codes for Big Data," *Proceedings of the VLDB Endowment* 2013.
4. D. Papailiopoulos, A. G. Dimakis, V. R. Cadambe, "Repair Optimal Erasure Codes through Hadamard Designs," *IEEE Transactions on Information Theory*, Vol. 58, pp. 3021 – 3037, May 2013.
3. D. Papailiopoulos, G. A.-Elkheir, G. N. Karystinos, "Maximum-Likelihood Noncoherent PAM Detection," *IEEE Transactions on Communications*, Vol. 61, pp. 1152 – 1159, Mar. 2013.
2. D. Papailiopoulos and A. G. Dimakis, "Interference Alignment as a Rank Constrained Rank Minimization," *IEEE Transactions on Signal Processing*, vol. 60, pp. 4278 – 4288, Aug. 2012.
1. D. Papailiopoulos and G. N. Karystinos, "Maximum-likelihood noncoherent OSTBC detection with polynomial complexity," *IEEE Transactions on Wireless Communications*, Vol. 6, pp. 1935 – 1945, June 2010.

CONFERENCE PUBLICATIONS

40. X. Pan, M. Lam, S. Tu, D. Papailiopoulos, C. Zhang, M. I. Jordan, K. Ramchandran, C. Re, B. Recht "Cyclades: Lifting the Curse of Coordination in Parallel Machine Learning," *Neural Information Processing Systems (NIPS)*, 2016.
39. S. O. Chan, D. Papailiopoulos, A. Rubinstein "On the Worst-Case Approximability of Sparse PCA," *Conference on Learning Theory (COLT)*, 2016.
38. K. Lee, M. Lam, R. Pedarsani, D. Papailiopoulos, K. Ramchandran, "Speeding Up Distributed Machine Learning using Codes," *International Symposium of Information Theory (ISIT)*, 2016.
37. M. Asteris, D. Papailiopoulos, A. Kyrillidis, A. G. Dimakis, "Bipartite Correlation Clustering - Maximizing Agreements," *Artificial Intelligence and Statistics Conference (AISTATS)*, 2016.
36. H. Mania, X. Pan, D. Papailiopoulos, B. Recht, K. Ramchandran, M. I. Jordan, "Perturbed Iterate Analysis for Asynchronous Stochastic Optimization," *Workshop on Optimization, Neural Information Processing Systems (NIPS)*, 2015.
35. K. Lee, M. Lam, R. Pedarsani, D. Papailiopoulos, K. Ramchandran, "Speeding Up Distributed Machine Learning using Codes," *Workshop on Learning Systems, Neural Information Processing Systems (NIPS)*, 2015.
34. X. Pan, D. Papailiopoulos, S. Oymak, B. Recht, K. Ramchandran, M. I. Jordan, "Parallel Correlation Clustering on Big Graphs," *Neural Information Processing Systems (NIPS)*, 2015.
33. M Asteris, D Papailiopoulos, A. Kyrillidis, A. G. Dimakis, "Sparse PCA via Bipartite Matchings," *Neural Information Processing Systems (NIPS)*, 2015.

32. M Asteris, D Papailiopoulos, A. Kyrillidis, A. G. Dimakis, "Orthogonal NMF through Subspace Exploration," Neural Information Processing Systems (NIPS), 2015.
31. X. Pan, D. Papailiopoulos, B. Recht, K. Ramchandran, M. I. Jordan, "Scaling up Correlation Clustering through Parallelism and Concurrency Control," NIPS Workshop on Discrete and Combinatorial Problems in Machine Learning (DISCML), 2014.
30. D. Papailiopoulos, A. Kyrillidis, C. Boutsidis, "Provable Deterministic Leverage Score Sampling," ACM Conference on Knowledge, Discovery, and Data Mining (KDD), 2014.
29. D. Papailiopoulos, I. Mitlagkas, A. G. Dimakis, C. Caramanis, "Finding Dense Subgraphs via Low-Rank Bilinear Optimization," International Conference on Machine Learning (ICML), 2014.
28. M. Asteris, D. Papailiopoulos, A. G. Dimakis, "Nonnegative Sparse PCA with Provable Guarantees," International Conference on Machine Learning (ICML), 2014.
27. A. S. Rawat, D. Papailiopoulos, A. G. Dimakis, S. Vishwanath, "Locality and Availability in Distributed Storage," IEEE International Symposium on Information Theory (ISIT), 2014.
26. D. Papailiopoulos, I. Mitlagkas, A. G. Dimakis, C. Caramanis, "Big Graph Analytics through Low-rank Approximations" Graduation talk at Information Theory and Applications Workshop (ITA), 2014.
25. A. S. Rawat, D. Papailiopoulos, A. G. Dimakis, S. Vishwanath, "Locality and Availability in Distributed Storage," Allerton Conference on Communication, Control, and Computing, 2013.
24. M. Sathiamoorthy, M. Asteris, D. Papailiopoulos, A. G. Dimakis, R. Vadali, S. Chen, and D. Borthakur, "XORing Elephants: Novel Erasure Codes for Big Data," International conference on Very Large Data Bases (VLDB), 2013.
23. D. Papailiopoulos, A. G. Dimakis, and S. Korokythakis, "Sparse PCA through Low-rank Approximations," International Conference on Machine Learning (ICML), 2013.
22. I. Tamo, D. Papailiopoulos, and A. G. Dimakis "Optimal Locally Repairable Codes and Connections to Matroid Theory," IEEE International Symposium on Information Theory (ISIT), 2013.
21. A. G. Dimakis and D. Papailiopoulos, "Locality in Erasure Codes for Hadoop Mapreduce," Allerton Conference on Communication, Control, and Computing, 2012.
20. K. Shanmugam, D. Papailiopoulos, A. G. Dimakis, and G. Caire, "A Repair Framework for Scalar MDS Codes," Allerton Conference on Communication, Control, and Computing, 2012.
19. D. Papailiopoulos and Alexandros G. Dimakis, "Locally Repairable Codes," IEEE International Symposium on Information Theory (ISIT), 2012.
18. D. Papailiopoulos, Changho Suh, Alexandros G. Dimakis, "Feedback in the K -user Interference channel," IEEE International Symposium on Information Theory (ISIT), 2012.
17. D. Papailiopoulos and Alexandros G. Dimakis, "Local distributed storage codes for Hadoop" Information Theory and Applications Workshop (ITA), 2012.
16. D. Papailiopoulos, J. Luo, A. G. Dimakis, C. Huang, and J. Li, "Simple Regenerating Codes: Network Coding for Cloud Storage," IEEE International Conference on Computer Communications – Miniconference (INFOCOM), 2012.
15. D. Papailiopoulos, G. N. Karystinos, "Maximum-likelihood Blind PAM Detection," International Conference on Communications (ICC), 2012.
14. D. Papailiopoulos, A. G. Dimakis, and V. R. Cadambe, "Repair Optimal Erasure Codes through Hadamard Designs," Allerton Conference on Communication, Control, and Computing, 2011.
13. D. Papailiopoulos and A. G. Dimakis, "Distributed Storage Codes through Hadamard Designs," IEEE International Symposium on Information Theory (ISIT), 2011.
12. M. Asteris, D. Papailiopoulos, G. N. Karystinos, "Sparse Principal Component of a Rank-deficient Matrix," IEEE International Symposium on Information Theory (ISIT), 2011.
11. D. 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.

10. A. G. Dimakis and D. Papailiopoulos, "Network coding, distributed storage and interference alignment," *Information Theory and Applications Workshop (ITA)*, 2011.
9. D. Papailiopoulos and A. G. Dimakis, "Distributed Storage Codes Meet Multiple-Access Wiretap Channels," *Allerton Conference on Communication, Control, and Computing*, 2010.
8. B. Hassibi, A. G. Dimakis, and D. Papailiopoulos, "MCMC Methods for Integer Least-Squares Problems," *Allerton Conference on Communication, Control, and Computing*, 2010.
7. D. Papailiopoulos and A. G. Dimakis, "Connecting Interference Alignment and Distributed Storage Through Rank Minimization," *Asilomar Conference on Signals, Systems, and Computers*, 2010.
6. D. Papailiopoulos and A. G. Dimakis, "Interference Alignment as a Rank Constrained Rank Minimization," *IEEE Global Telecommunications Conference (GLOBECOM)*, 2010.
5. D. Papailiopoulos and G. N. Karystinos, "Optimal OSTBC Sequence Detection over Unknown Correlated Fading Channels," *Asilomar Conference on Signals, Systems, and Computers*, 2009.
4. D. Papailiopoulos and G. N. Karystinos, "Efficient maximum-likelihood noncoherent orthogonal STBC detection," *Allerton Conference on Communication, Control, and Computing*, 2008.
3. D. Papailiopoulos and G. N. Karystinos, "Polynomial-complexity maximum-likelihood block noncoherent MPSK detection," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2008.
2. D. Papailiopoulos and G. N. Karystinos, "Efficient computation of the M-phase vector that maximizes a rank-deficient quadratic form," *Conference in Information Sciences and Systems (CISS)*, 2008.
1. D. Papailiopoulos and G. N. Karystinos, "Near ML detection of nonlinearly distorted OFDM signals," *Asilomar Conference on Signals, Systems, and Computers*, 2007.

INVITED TALKS

21. Information Theory and Applications Workshop	2017
20. SILO Seminar, UW-Madison	2016
19. Asilomar Conference on Signals, Systems, and Computers	2016
18. Computer Science Colloquium, Cornell University	2016
17. Computer Science Colloquium, Cornell Tech	2016
16. Computer Science and Electrical Engineering Colloquium, University of Washington-Seattle	2016
15. Electrical Engineering Colloquium, University of Pennsylvania	2016
14. Computer Science Colloquium, ETH-Zurich	2016
13. Computer Science and Electrical Engineering Colloquium, Princeton University	2016
12. Electrical Engineering Colloquium, University of Southern California	2016
11. Frontiers in Computing and Mathematical Sciences, Caltech	2016
10. Computer Science Colloquium, EPFL	2016
9. Electrical and Computer Engineering Colloquium, University of Wisconsin-Madison	2016
8. Information Theory and Applications Workshop	2016
7. The Berkeley Vision & Learning Center Retreat	2015
6. Allerton Conference on Communication, Control, and Computing	2015
5. AMPLab Summer Retreat	2015
4. Information Theory and Applications Workshop	2015
3. AMPLab Winter Retreat	2015
2. Milibo Information Services Webinar Series	2015
1. Information Theory and Applications Workshop	2014

TEACHING EXPERIENCE

University of Wisconsin-Madison

2016 – present

(F'16) ECE901: Large-scale Machine Learning and Optimization
(S'17) ECE330: Signals and Systems (shadowing Barry Van Veen)

Technical University of Crete

2007 – 2009

Teaching Assistant for Information Theory, and Signals and Systems.

PROFESSIONAL ACTIVITIES AND SERVICE

– Reviewer for:

IEEE Transactions on Information Theory / Signal Processing / Wireless Communications / Communications / Knowledge and Data Engineering / Computers, IEEE/ACM Transactions on Networking, Neural Information Processing Systems (NIPS), International Conference on Machine Learning (ICML), Artificial Intelligence and Statistics Conference (AISTATS), IEEE International Symposium on Information Theory (ISIT), IEEE International Conference on Communications (ICC), IEEE International Symposium on Network Coding (NetCod).

STUDENT ADVISING

Graduates:

- **Xinghao Pan** (UC Berkeley, Advisor: Michael I. Jordan)
Working on the parallelization of sparse iterative machine learning and graph algorithms.
- **Horia Mania** (UC Berkeley, Advisors: Benjamin Recht and Michael I. Jordan)
Studying the effects of asynchrony on parallel stochastic optimization algorithms.
- **Kangwook Lee** (UC Berkeley, Advisor: Kannan Ramchandran)
Exploring the use of erasure codes to speed-up parallel computation.
- **Dong Yin** (UC Berkeley, Advisor: Kannan Ramchandran)
Studying the effects of multiple memberships in community detection.

Undergraduates:

- **Maximilian Lam** (UC Berkeley)