Ayfer Ozgur
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A. Academic History

EPFL, Switzerland, Information & Communication Sciences		PhD, October 30, 2009
Middle East Technical University, Turkey	Electrical Engineering	MS, August 2004
Middle East Technical University, Turkey	Electrical Engineering	BS, June 2001
Middle East Technical University, Turkey	Physics	BS, June 2001

B. Employment History

2019-	Associate Professor, Stanford University
2012- 2019	Assistant Professor, Stanford University
2010-2011	Post-Doctoral Researcher, EPFL, Switzerland
2004-2009	Research and Teaching Assistant, EPFL Switzerland
2001-2004	Hardware Engineer/ FPGA Design Group Leader, Defense Industries Research and Development Institute, Turkey

C. Professional Activities

2016-2018 IEEE Information Theory Society (ITSOC) Student Subcommittee Chair:

- Co-organizer, Interview with Shannon Awardee, ISIT 2018.
- Co-organizer, Round-table Mentoring Event for Students and Postdocs, ISIT 2018.
- Co-organizer, Round-table Mentoring Event for Students and Postdocs, ITA 2018.
- Co-organizer, Interview with Shannon Awardee, ISIT 2017
- Co-organizer, Panel: You and Your Research, ITA 2017.

2015-2018 Workshop Organization:

- Co-chair, Second Workshop on Energy Harvesting and Remotely Powered Communications for Sustainable Future Networks and IoT, WCNC 2018
- Co-chair, Energy Harvesting and Remotely Powered Wireless Communication for the IoT, WCNC, 2017.
- Poster Co-Chair, IEEE Communication Theory Workshop, 2015

2018 Co-organizer invited session on Geometry and Information Theory, CISS 2018.

2011-2018 Technical Program Committee:

- IEEE International Symp. on Information Theory (ISIT) 2018, 2017, 2015
- IEEE Information Theory Workshop (ITW) 2018, 2015,
- IEEE GLOBECOM Communication Theory 2019, 2017, 2016, 2015, 2014,
- IEEE International Conference on Communication (ICC) 2019, 2018, 2017, 2013,
- IEEE Wireless Communications and Networking Conference (WCNC) 2019
- IEEE WiOpt GREENNET/WiNMee /SpaSWIN 2017, 2016, 2011

2013-2018 Panelist and Proposal Reviewer (multiple years) for

- NSF Communications and Cyber Systems (ECCS)
- NSF Computing and Communication Foundations (CCF)
- NSF Research Initiation Initiative (CRII)
- European Research Council (ERC) Starting Grant
- Research Grants Council (RGC) of Hong Kong

D. Awards and Honors

2018 IEEE Communication Theory Technical Committee CTTC Early Achievement Award

2018 Okawa Foundation Award in Information and Telecommunications

2013 NSF Career Award

2012 Hoover Faculty Fellow

2012 Gabilan Faculty Fellow

2010 EPFL Best PhD Thesis Award (across all disciplines)

E. BIBLIOGRAPHICAL INFORMATION

Student names appear in bold face and Postdoc names appear italicized. The authors are ordered based on contribution.

Refereed Journal Publications

Published:

1. **H. Inan**, *P. Kairouz*, A. Ozgur, M. Wootters, On the Optimality of the Kautz-Singleton Construction in Probabilistic Group Testing, accepted to *IEEE Transactions on Information Theory*, IEEE Early Access 2019.

2. I. Gattegno, H Permuter, S. Shamai, Ayfer Ozgur, Cooperative Binning for Semi-deterministic Channels with Non-causal State Information, accepted to *IEEE Transactions on Information Theory*, IEEE Early Access 2019.

3. *X. Wu*, **L. Barnes**, A. Ozgur, "The Capacity of the Relay Channel": Solution to Cover's Problem in the Gaussian case, *IEEE Transactions on Information Theory* 65(1), January 2019

4. **D. Shaviv**, A. Ozgur, A. Arbabian, Communication with Crystal-Free Radios, *IEEE Transactions on Communication*, 66(10), 4513 - 4520, November 2018.

5. **D. Shaviv** and A. Ozgur, Online Power Control for Block i.i.d. Energy Harvesting Channels, *IEEE Transactions on Information Theory*, 64(8), 5920 - 5937, August 2018.

6. S. L. Fong, V. Y. F. Tan, A. Ozgur, On Achievable Rates of AWGN Energy-Harvesting Channels with Block Energy Arrival and Non-Vanishing Error Probabilities, *IEEE Transactions on Information Theory*, 64(3), 2038 - 2064, March 2018.

7. **H. A. Inan**, **D. Shaviv**, A. Ozgur, Capacity of the Energy Harvesting Gaussian MAC, *IEEE Transactions on Information Theory*, 64(4), 2347 - 2360, April 2018.

8. *X. Wu*, and A. Ozgur, Cut-Set Bound Is Loose for Gaussian Relay Networks, *IEEE Transactions on Information Theory*, 64(2), 1023 - 1037, February 2018.

9. **D. Shaviv**, A. Ozgur, and H. Permuter, A Communication Channel with Random Battery Recharges, *IEEE Transactions on Information Theory*, 64(1), 38-56, January 2018.

10. *X. Wu*, A. Ozgur and L.-L. Xie, Improving on the Cutset Bound via a Geometric Analysis of Typical Sets, *IEEE Transactions on Information Theory*, 63(4), 2254- 2277, April 2017.

11. **D. Shaviv**, A. Ozgur, and H. Permuter, Capacity of Remotely Powered Communications, *IEEE Transactions on Information Theory*, 63(3), 1364 – 1391, March 2017.

12. *X. Wu*, S. Zhang and A. Ozgur, STAC: Simultaneous Transmitting and Air Computing in Wireless Data Center Networks, in *IEEE Journal on Selected Areas in Communications*, vol. 34, no. 12, pp. 4024-4034, Dec. 2016.

13. **D. Shaviv** and A. Ozgur, Universally Near Optimal Online Power Control for Energy Harvesting Nodes, in *IEEE Journal on Selected Areas in Communications*, vol. 34, no. 12, pp. 3620-3631, Dec. 2016.

14. **R. Kolte**, A. Ozgur, and H. Permuter, Multicoding Schemes for Interference Channels, *IEEE Transactions on Information Theory*, 62(9), 4936 - 4952, September 2016.

15. **D. Shaviv**, **P.-M. Nguyen**, and A. Ozgur, Capacity of the Energy Harvesting Channel with a Finite Battery, *IEEE Transactions on Information Theory*, 62(11), 6436 -6458, November 2016.

16. J. Chen, S. Yang, A. Ozgur and A. Goldsmith, Achieving Full DoF in Heterogeneous Parallel Broadcast Channels with Outdated CSIT, *IEEE Transactions on Information Theory*, 62(7), 4154-4171, July 2016.

17. S. Brahma, A. Ozgur and C. Fragouli, On the Complexity of Scheduling in Half-Duplex Diamond Networks, *IEEE Transactions on Information Theory*, 62(5), 2557 -2572, May 2016.

18. **C T. Li**, and A. Ozgur, Channel Diversity needed for Vector Interference Alignment, *IEEE Transactions on Information Theory*, 62(4), 1942-1956, April 2016.

19. **R. Kolte**, A. Ozgur, and H. Permuter, Cooperative Binning for Semideterministic Channels, *IEEE Transactions on Information Theory*, 62(3), 1231-1249, March 2016.

20. **R. Kolte**, A. Ozgur, and A. El Gamal, Capacity Approximations for Gaussian Relay Networks, *IEEE Transactions on Information Theory*, 61(9):4721 - 4734, September 2015.

21. **B. Chern, F. Farnia**, and A. Ozgur, On feedback in Gaussian multi-hop networks, *IEEE Transactions on Information Theory*, 61(7): 3763 - 3772, July 2015.

22. **R. Kolte**, A. Ozgur, and S. Diggavi, When are dynamic relaying strategies necessary in half-duplex wireless networks?, *IEEE Transactions on Information Theory*, 61(4): 1720-1738, April 2015.

23. **Y. Dong**, **F. Farnia**, and A. Ozgur, Near Optimal Energy Control and Approximate Capacity of Energy Harvesting Communication, *IEEE JSAC Special Issue on Wireless Communications Powered by Energy Harvesting and Wireless Energy Transfer*, 33(3):540-557, March 2015.

24. **B. Chern** and A. Ozgur, Achieving the Capacity of the N-Relay Gaussian Diamond Network Within log N Bits, *IEEE Transactions on Information Theory*, 60(12): 7708-7718, 2014.

25. C. Nazaroglu, A. Ozgur, C. Fragouli, Wireless Network Simplification: The Gaussian N-Relay Diamond Network, *IEEE Transactions on Information Theory*, 60(10):6329-6341, 2014.

26. A. Ozgur, S. Diggavi, Approximately Achieving Gaussian Relay Network Capacity with Lattice-Based QMF Codes, *IEEE Transactions on Information Theory*, 59(12):8275 - 8294, 2013.

27. A. Ozgur, O. Leveque and D. Tse, Spatial Degrees of Freedom of Large Distributed MIMO Systems and Wireless Ad hoc Networks, *IEEE Journal on Selected Areas in Communications*, 31(2):202-214, February 2013.

28. A. Ozgur and O. Leveque, Throughput-Delay Tradeoff for Hierarchical Cooperation in Ad Hoc Wireless Networks, *IEEE Transactions on Information Theory*, 56(3):1369-1377, 2010.

29. A. Ozgur, R. Johari, D. Tse, and O. Leveque, Information Theoretic Operating Regimes of Large Wireless Networks, *IEEE Transactions on Information Theory*, 56(1):427-437, 2010.

30. A. Ozgur, O. Leveque, and D. Tse, Hierarchical Cooperation Achieves Optimal Capacity Scaling in Ad Hoc Networks, *IEEE Transactions on Information Theory*, 53(10):3549-3572, 2007.

31. A. Ozgur, O. Leveque, and E. Preissmann, Scaling Laws for One and Two-Dimensional Random Wireless Networks in the Low Attenuation Regime, *IEEE Transactions on Information Theory*, 53(10):3573-3586, 2007.

In Press/Accepted:

1. *X. Wu*, **L. Barnes**, A. Ozgur, "The Capacity of the Relay Channel": Solution to Cover's Problem in the Gaussian case, accepted to *IEEE Transactions on Information Theory*, IEEE Early Access 2018.

Referred Conference/Symposia Proceedings

Published:

1. **L. Barnes**, Y. Han, A. Ozgur, A Geometric Characterization of Fisher Information from Quantized Samples with Applications to Distributed Statistical Estimation, Proc. IEEE Allerton Conference on Communication, Control, and Computing (Allerton), 2018.

2. **H. Inan**, *P. Kairouz*, A. Ozgur, M. Wootters, On the Optimality of the Kautz-Singleton Construction in Probabilistic Group Testing, Proc. IEEE Allerton Conference on Communication, Control, and Computing (Allerton), 2018.

3. Y. Han, A. Ozgur, T. Weissman, Geometric Lower Bounds for Distributed Parameter Estimation under Communication Constraints, Proceedings of Machine Learning Research, Conference on Learning Theory, 2018.

4. **H. Inan**, *P. Kairouz*, A. Ozgur, Energy-limited Massive Random Access via Noisy Group Testing, Proc. IEEE International Symposium on Information Theory (ISIT), 2018.

5. Cheuk Ting Li, *Xiugang Wu*, Ayfer Ozgur, Abbas El Gamal, Minimax Learning for Remote Prediction, Proc. International Symposium on Information Theory (ISIT), 2018.

6. Y. Han, *P. Mukharjee*, A. Ozgur, T. Weissman, Distributed Statistical Estimation of High-Dimensional and Non-parametric Distributions, Proc. IEEE International Symposium on Information Theory (ISIT), 2018.

7. **D. Shaviv**, A. Ozgur, A. Arbabian, Communication with Crystal-free Radios, Proc. IEEE Globecom Singapore, December 2017.

8. **D. Shaviv**, A. Ozgur, Online Power Control for Block i.i.d. Energy Harvesting Channels, Proc. IEEE Globecom, Singapore, December 2017.

9. **L. Barnes**, *X. Wu*, A. Ozgur, A solution to cover's problem for the binary symmetric relay channel: Geometry of sets on the hamming sphere, Proc. IEEE 55th Annual Allerton Conference on Communication, Control, and Computing (Allerton), October 2017.

10. I. Gattegno, H Permuter, S. Shamai, Ayfer Ozgur, Cooperative Binning for Semi-deterministic Channels with Non-causal State Information, Proc. IEEE International Symposium on Information Theory, Aachen, Germany, June 2017.

11. S. L. Fong, V. Y. F. Tan and A. Ozgur, On Achievable Rates of AWGN Energy-Harvesting Channels with Block Energy Arrival and Non-Vanishing Error Probabilities, Proc. IEEE International Symposium on Information Theory, Aachen, Germany, June 2017.

12. S. Haddad, A. Ozgur, E. Telatar, Can Full-Duplex More than Double the Capacity of Wireless Networks?, Proc. IEEE International Symposium on Information Theory, Aachen, Germany, June 2017.

13. *X. Wu*, **L. Barnes**, A. Ozgur, Geometry of the Relay Channel, Proc. IEEE International Symposium on Information Theory, Aachen, Germany, June 2017.

14. **D. Shaviv** and A. Ozgur, Approximately Optimal Policies for a Class of Markov Decision Problems with Applications to Energy Harvesting, Proc. IEEE International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt) Workshops, Paris, France, May 19, 2017.

15. **D. Shaviv** and A. Ozgur, Online Power Control for Block i.i.d. Bernoulli Energy Harvesting Channels, Proc. IEEE Wireless Communications and Networking Conference Workshops (WCNCW), San Francisco, CA, March 2017.

16. I. Gattegno, H. Permuter, S. Shamai and A. Ozgur, Semi-deterministic relay channels with non-causal states only at the transmitter and receiver, Proc. IEEE International Conference on the Science of Electrical Engineering (ICSEE), November 2016.

17. *X. Wu*, A. Ozgur, Improving on The Cut-Set Bound for General Primitive Relay Channels, Proc. IEEE International Symposium on Information Theory, Barcelona, Spain, Jul. 2016.

18. **D. Shaviv**, A. Ozgur, and H. Permuter, Capacity of Remotely Powered Communication, Proc. IEEE Int. Symposium on Information Theory, Barcelona, Spain, July 2016, pp. 1979-1983.

19. **H. Inan**, **D. Shaviv**, and A. Ozgur, Capacity of the Energy Harvesting Gaussian MAC, Proc. IEEE Int. Symposium on Information Theory, Barcelona, Spain, July 2016, pp. 2744-2748.

20. **R. Kolte**, A. Ozgur, Phase retrieval via incremental truncated Wirtinger flow, Proc. ICML Workshop on Optimization for Machine Learning, June 2016.

21. **D. Shaviv** and A. Ozgur, Universally Near-Optimal Online Power Control for Energy Harvesting Nodes, Proc. IEEE Int. Conference on Communications, Kuala Lumpur, Malaysia, May 2016, pp. 1-6.

22. *X. Wu*, A. Ozgur, Improving on The Cut-Set Bound via Geometric Analysis of Typical Sets, Proc. 2016 International Zurich Seminar on Communications, Zurich, Mar. 2016.

23. **R. Kolte**, A. Ozgur, H. Permuter The Capacity of the State-Dependent Semideterministic Relay Channel, Proc. 2016 International Zurich Seminar on Communications, Zurich, Mar. 2016.

24. **R. Kolte**, M. Erdogdu, A. Ozgur, Accelarating SVRG via second-order information, Proc. NIPS Workshop on Optimization for Machine Learning, December 2015.

25. *X. Wu*, S. Zhang, A. Ozgur, STAC: Simultaneous Transmitting and Air Computing in Wireless Data Center Networks, Proc. IEEE/CIC International Conference on Communications in China, Shenzhen, China, 2015, November 2015.

26. *X. Wu*, A. Ozgur, Cutset Bound is Loose for Gaussian Relay Networks, Proc. IEEE Allerton Conference on Communication, Control and Computing, September 2015.

27. **D. Shaviv, P. M. Nguyen**, and A. Ozgur, Capacity of the Energy Harvesting Channel with a Finite Battery, Proc. IEEE Int. Symposium on Information Theory, Hong Kong, 2015.

28. **D. Shaviv** and A. Ozgur, Capacity of the AWGN channel with Random Battery Recharges, Proc. IEEE Int. Symposium on Information Theory, Hong Kong, 2015.

29. **R. Kolte,** A. Ozgur and Haim Permuter, State-Dependent Multiple-Access Channels with Partially Cribbing Encoders, Proc. IEEE Int. Symposium on Information Theory, Hong Kong, 2015.

30. *X. Wu*, L.-L. Xie, A. Ozgur, Upper Bounds on the Capacity of Symmetric Primitive Relays, Proc. IEEE Int. Symposium on Information Theory, Hong Kong, 2015.

31. J. Chen, A. Goldsmith, A. Ozgur, and S. Yang, Degrees of Freedom of the MIMO Interference Channel with Parallel Multicasting, Proc. IEEE Int. Symposium on Information Theory, Hong Kong, 2015.

32. T. Courtade and A. Ozgur, Approximate Capacity of Relay Networks: Sublinear Gap is as Hard as Exact Capacity, Proc. IEEE Int. Symposium on Information Theory, Hong Kong, 2015.

33. **A. Kazerouni** and A. Ozgur, Optimal Online Strategies for an Energy Harvesting System with Bernoulli Energy Recharges, Proc. IEEE Wiopt, May 2015.

34. **R. Kolte** and A. Ozgur, Fast near-optimal subnetwork selection in layered relay networks, in Proc. IEEE Allerton Conference on Communication, Control and Computing, October 2014.

35. J. Chen, A. Ozgur, and S. Diggavi, Feedback through Overhearing, in Proc. Allerton Conference on Communication, Control and Computing, October 2014.

36. J. Chen, S. Yang, A. Ozgur, and A. Goldsmith, Outdated CSIT can achieve full DoF in heterogeneous parallel channels, in Proc. IEEE Int. Symposium on Information Theory, July 2014.

37. **Y. Dong**, A. Ozgur, Approximate capacity of energy harvesting communication with finite battery, in Proc. IEEE Int. Symposium on Information Theory, July 2014.

38. **C. T. Li**, A. Ozgur, Channel Diversity needed for Vector Interference Alignment, in Proc. IEEE Int. Symposium on Information Theory, July 2014.

39. **R. Kolte**, A. Ozgur, H. Permuter, The capacity region of a class of deterministic state-dependent z-interference channels, in Proc. IEEE Int. Symposium on Information Theory, July 2014.
40. **R. Kolte**, A. Ozgur, A. El Gamal, Optimized Noisy Network Coding for Gaussian Relay Networks, in Proc. International Zurich Seminar on Communications, February 2014.

41. S. Brahma, C. Fragouli, A. Ozgur, On the Structure of Approximately Optimal Schedules for Half-Duplex Diamond Networks, in Proc. of IEEE Allerton Conference on Communication, Control and Computing, October 2013.

42. **R. Kolte**, A. Ozgur, Improved Capacity Approximations for Gaussian Relay Networks, in Proc. IEEE Information Theory Workshop, Seville, Spain, 2013.

43. **B. Chern**, A. Ozgur, On Information Flow and Feedback in Relay Networks, in Proc. IEEE Information Theory Workshop, Seville, Spain, 2013.

44. A. Merzakreeva, A. Ozgur, O. Leveque, Telescopic beamforming for large wireless networks, in Proc. IEEE Int. Symposium on Information Theory, Istanbul, July 2013.

45. **R. Kolte**, A. Ozgur, Generalized Diversity-Multiplexing Tradeoff of Half-Duplex Relay Networks, in Proc. IEEE Int. Symposium on Information Theory, Istanbul, July 2013.

46. A. Ozgur, S. Diggavi, Dynamic QMF for Half-Duplex Relay Networks, in Proc. IEEE Int. Symposium on Information Theory, Boston, July 2012.

47. S. Brahma, A. Ozgur, C. Fragouli, Simple schedules for half-duplex networks, in Proc. IEEE Int. Symposium on Information Theory, Boston, July 2012.

48. A. Merzakreeva, A. Ozgur, O. Leveque, Hierarchical Beamforming for Large One-Dimensional Wireless Networks, in Proc. IEEE Int. Symposium on Information Theory, Boston, July 2011.

49. A. Sengupta, S. Brahma, A. Ozgur, C. Fragouli, S. Diggavi, Graph-based codes for quantize-map-and-forward relaying, in Proc. IEEE International Information Theory Workshop (ITW 2011), Paraty, Brazil, October 16-20, 2011.

50. C. Nazaroglu, A. Ozgur, C. Fragouli, Wireless Network Simplification: the Gaussian N-Relay Diamond Network, in Proc. IEEE Int. Symposium on Information Theory, St. Petersburg, July 2011.

51. C. Nazaroglu, A. Ozgur, J. Ebrahimi, C. Fragouli, Network simplification: the Gaussian diamond network with multiple antennas, in Proc. IEEE Int. Symposium on Information Theory, St.Petersburg, July 2011.

52. A. Ozgur, S. Diggavi, Approximately Achieving Gaussian Relay Network Capacity with Lattice Codes, Proc. IEEE Int. Symposium on Information Theory, Austin, June 2010.

53. A. Ozgur, D. Tse, Achieving Linear Scaling with Interference Alignment, Proc. IEEE Int. Symposium on Information Theory, Seoul, July 2009.

54. A. Ozgur, R. Johari, D. Tse, O. Leveque, Information Theoretic Operating Regimes of Large Wireless Networks, Proc. IEEE Int. Symposium on Information Theory, Toronto, July 2008.

55. A. Ozgur, O. Leveque, Throughput-Delay Tradeoff for Hierarchical Cooperation in Ad Hoc Wireless Networks, Proc. Int. Conference on Telecommunications, St Petersburg, June 2008.

56. A. Ozgur, O. Leveque and D. Tse, Exact Capacity Scaling of Extended Wireless Networks, Proc. IEEE Int. Symposium on Information Theory, Nice, July 2007.

57. A. Ozgur, O. Leveque and D. Tse, Hierarchical Cooperation Achieves Linear Capacity Scaling in Ad Hoc Networks, Proc. IEEE Infocom Conference, May 2007.

58. A. Ozgur and O. Leveque, Scaling Laws for Two-Dimensional Random Ad-Hoc Wireless Networks, Proc. IEEE Int. Zurich Seminar on Communications, Zurich 2006.

Invited Conference Publications

1. **H. Inan**, *P. Kairouz*, A. Ozgur, Sparse Combinatorial Group Testing for Low-energy Massive Random access, invited paper in Proc. IEEE 55th Annual Allerton Conference on Communication, Control, and Computing (Allerton), 2017.

2. *X. Wu*, **Leighton Barnes**, A. Ozgur, Cover's Open Problem: The Capacity of the Relay Channel, Proc. IEEE Allerton Conference on Communication, Control and Computing, September 2016.

3. **H. Inan**, and A. Ozgur, Online power control for the energy harvesting multiple access channel, invited paper in Proc. IEEE 14th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt), May 2016.

4. **D. Shaviv**, A. Ozgur and H. Permuter, Can feedback increase the capacity of energy harvesting communication?, invited paper at the IEEE Information Theory Workshop, Jerusalem, April 2015.

5. **R. Kolte**, A. Ozgur, H. Permuter, Deterministic Z-interference channels with unidirectional partial cribbing, invited paper in Proc. IEEE 48th Annual Conference on Information Sciences and Systems (CISS), March 2014.

6. **F. Farnia**, A. Ozgur, On feedback in Gaussian multi-hop networks, invited paper in Proc. IEEE Information Theory and Applications Workshop, San Diego, February 2014.

7. A. Ozgur, A Scaling Law Approach to Wireless Relay Networks, invited paper in Proc. IEEE Information Theory and Applications Workshop, San Diego, February 2013.

8. **B. Chern**, A. Ozgur, Achieving the Capacity of the N-Relay Gaussian Diamond Network Within log N Bits, invited paper in Proc. IEEE Information Theory Workshop (ITW), Lausanne, September 2012.

9. A. Ozgur, O. Leveque and D. Tse, Beyond Multi-hop: Optimal Cooperation in Large Wireless Networks, invited paper in Proc. Int. Conference on Computer Communications and Networks (ICCCN 2010), Zurich, August 2010.

10. A. Ozgur, O. Leveque and D. Tse, Linear Capacity Scaling in Wireless Networks: Beyond Physical Limits?, invited paper in Proc. IEEE Information Theory and Applications Workshop, San Diego, Feb 2010.

11. A. Ozgur, O. Leveque and D. Tse, How does the Information Capacity of Ad Hoc Networks Scale?, invited paper in Proc. Allerton Conference on Communication, Control and Computing, October 2006.

Book Chapters

In Press/Accepted:

D. Shaviv and A. Ozgur, Communication with Energy Harvesting and Remotely Powered Radios, to appear in *Information-Theoretic Perspectives on 5G Systems and Beyond*, Cambridge University Press.

Books

Published:

A. Ozgur, O. Leveque, D. Tse, Operating Regimes of Wireless Networks, *Foundations and Trends Networking*, Now Publishers, Vol. 5: No 1, pp 1-107. ISBN-10: 1601985029.

Major Presentations:

1. "Learning Distributions from their Samples Under Communication Constraints", Plenary Session on Distributed Learning, ITA 2019.

2. "Distributed Learning under Communication Constraints", invited talk as the winner of the CTTC Early Achievement Award, CTW 2019.

3. "Energy Harvesting and Remotely Powered Communication Systems", co-delivered half-day tutorial at the IEEE Int. Symposium on Information Theory, Barcelona, Spain, 2016.

4. "Improving on the Cutset Bound via a Geometric Analysis of Typical Sets", invited seminar at the Bombay Information Theory Seminar, held to commemorate the birth centenary of Claude Shannon, Mumbai, January 2016.

5. "The Geometry of the Relay Channel", invited seminar at the Shannon Workshop, held to commemorate the birth centenary of Claude Shannon, Shanghai, December 2016.

Invited Presentations at Conferences, Workshops and Symposia:

1. "A Statistical Estimation Approach to Federated Learning", invited talk at Google Workshop on Federated Learning, Google, Seatttle, June 2019.

2. “Distributed Learning under Communication Constraints”, invited talk at the London Symposium on Information Theory, London, May 2019.

3. “Distributed Learning under Communication Constraints”, invited talk at the IEEE Conference on Information Sciences and Systems (*CISS*), March 2019.

4. “Battery and Crystal Free Radios: A New Frontier for Communication and Information Theory”, invited talk at the Communications Theory Workshop, Miramar Beach, Florida, May 2018.

5. “The Geometry of the Relay Channel”, invited talk at the IEEE Conference on Information Sciences and Systems (*CISS*), March 2018.

6. “Distributed Statistical Estimation of High-Dimensional and Non-parametric Distributions under Communication Constraints”, invited talk at the IEEE Information Theory and Applications Workshop, San Diego, February 2018.

7. “Sparse Group Testing Codes for Low-Energy Massive Random Access”, invited talk at the NSF Workshop on Low-latency Wireless Random Access, MIT, October 2017.

8. “Sparse Group Testing Codes for Low-Energy Massive Random Access”, invited talk at the Allerton Conference on Communication, Control, and Computing (Allerton), October 2017.

9. “Capacity of the Relay Channel”, Mini-symposium on Trends in Information Theory, ETH, Zurich, August 2017.

10. “Online Power Control for Block i.i.d. Bernoulli Energy Harvesting Channels”, invited talk at the IEEE WCNC workshop on Energy Harvesting and Remotely Powered Wireless Communication for the IoT, March 2017.

11. “Energy Harvesting and Remotely Powered Communication Systems”, invited talk at the Workshop on Emerging Wireless Networks, IPAM, UCLA, February 2017.

12. “Cover’s Open Problem: The Capacity of the Relay Channel”, invited talk at the IEEE Information Theory and Applications Workshop, San Diego, February 2017.

13. “Cover’s Open Problem: The Capacity of the Relay Channel”, invited talk at the Allerton Conference on Communication, Control and Computing, September 2016.

14. “Capacity of Remotely Powered Communication”, invited talk at SPCOM, Bangalore, June 2016.

15. “Cutset Bound is Loose for the Gaussian Relay Channel”, invited talk at the Simons Institute, Berkeley, June 2016.

16. “Capacity of Remotely Powered Communication”, invited talk System X Spring Conference, May 2016.

17. “Online Power Control for the Energy Harvesting Multiple Access Channel”, invited talk at Greennet Workshop, Wiopt, May 2016.

18. “Improving on the Cutset Bound via a Geometric Analysis of Typical Sets”, invited talk at the Nexus of Information and Computation Theories, IHP, Paris, March 2016.

19. “Remotely Powered Communications”, invited talk at the Stanford Compression Forum, February 2016.

20. “Capacity of Remotely Powered Communication”, invited talk at the IEEE Information Theory and Applications Workshop, San Diego, February 2016.

21. “Fundamental Limits of Communication with Energy Harvesting Wireless Devices”, invited talk at the System X Fall Conference 2015.

22. “Approximate Capacity of Energy Harvesting Communications”, invited talk at the Communications Theory Workshop, Dana Point, May 2015.

23. “Can feedback increase the capacity of the energy-harvesting channel?”, invited talk at the Information Theory Workshop, Jerusalem, April 2015.

24. “Information-Theoretic Capacity of the Energy-Harvesting Communication Channel with Finite Battery”, invited talk at the IEEE Information Theory and Applications Workshop, San Diego, February 2015

25. “On Feedback in Gaussian Multi-hop Networks”, invited talk at the IEEE Information Theory and Applications Workshop, San Diego, February 2014.

26. “A Scaling Law Approach to Wireless Relay Networks”, invited talk at the IEEE Information Theory and Applications Workshop, San Diego, February 2013.

27. “Cooperation in Wireless Networks: Promises and Challenges”, invited talk at the CIS Fall Meeting, Stanford, 2012.

28. “Achieving the capacity of the N-relay diamond network within log N bits”, invited talk at the IEEE Information Theory Workshop, Lausanne Switzerland, September 2012.

29. “The DMT of Half-Duplex Relay Networks: Fixed or Dynamic Schedules?”, invited talk IEEE Information Theory and Applications Workshop, San Diego, February 2012.

30. “Wireless Network Simplification: the Gaussian N-relay Diamond Network”, invited talk at the IEEE Information Theory and Applications Workshop, San Diego, February 2011.

31. “Beyond Multi-hop: Optimal Cooperation in Large Wireless Networks”, invited talk at the Int. Conference on Computer Communications and Networks (ICCCN 2010), Zurich, 2010.

32. “Rethinking Scaling Laws for Wireless Networks”, invited talk at the Workshop on Spatial Stochastic Models for Wireless Networks (SpaSWiN), IEEE Wiopt Conference, Seoul, June 2009.

33. “Hierarchical Cooperation achieves Optimal Capacity Scaling in Wireless Adhoc Networks”, invited talk at WiOpt, Limassol, Cyprus, 2007.

Contributed Conference Presentations:

1. “Communication with Crystal-free Radios”, IEEE Globecom Singapore, 2017.

2. “Online Power Control for Block i.i.d. Energy Harvesting Channels”, IEEE Globecom, Singapore 2017.

3. “Can Full-Duplex More than Double the Capacity of Wireless Networks?”, IEEE International Symposium on Information Theory, Aachen, Germany, June 2017.

4. “Improving on the Cutset Bound via a Geometric Analysis of Typical Sets”, International Zurich Seminar, Zurich, March 2016.

5. “The Capacity of the State-Dependent Semi-Deterministic Relay Channel”, International Zurich Seminar, Zurich, March 2016.

6. “Universally Near-Optimal Online Power Control for Energy Harvesting Nodes”, IEEE Int. Conference on Communications, Kuala Lumpur, Malaysia, May 2016.

7. “Fast near-optimal subnetwork selection in layered relay networks”, Allerton Conference on Communication, Control and Computing, October 2014.

8. “On Information Flow and Feedback in Relay Networks”, IEEE Information Theory Workshop, Seville, Spain, 2013.

9. “Improved Capacity Approximations for Gaussian Relay Networks”, IEEE Information Theory Workshop, Seville, Spain, 2013.

10. “Dynamic QMF for Half-Duplex Relay Networks”, Int. Symposium on Information Theory, Boston, July 2012.

11. “Approximately Achieving Gaussian Relay Network Capacity with Lattice Codes”, IEEE Int. Symposium on Information Theory, Austin, June 2010.

12. “Achieving Linear Scaling with Interference Alignment,” IEEE Int. Symposium on Information Theory, Seoul, July 2009.

13. “Information Theoretic Operating Regimes of Large Wireless Networks”, IEEE Int. Symposium on Information Theory, Toronto, July 2008.

14. “Throughput-Delay Tradeoff for Hierarchical Cooperation in Ad Hoc Wireless Networks”, Int. Conference on Telecommunications, St Petersburg, June 2008.

15. “Capacity Scaling of Extended Wireless Networks”, IEEE Int. Symposium on Information Theory, Nice, July 2007.

16. “Hierarchical Cooperation Achieves Linear Capacity Scaling in Ad Hoc Networks”, IEEE Infocom Conference, May 2007.

17. “Scaling Laws for Two-Dimensional Random Ad-Hoc Wireless Networks”, IEEE Int. Zurich Seminar on Communications, Zurich 2006.

Invited Talks at Department Seminars:

1. “Distributed Learning under Communication Constraints”, IPG Seminar, EPFL, Switzerland, July 2019.

2. “Distributed Statistical Estimation of High-Dimensional Distributions and Parameters under Communication Constraints”, LIDS Seminar Series, MIT, October 2018.

3. “The Capacity of the Relay Channel: Solution to Cover’s Open Problem”, CINCS Seminar Series, MIT, October 2018

4. “A Geometric Approach to Two Problems in Networks: Learning High-Dimensional Distributions and Communication with Relays”, EE Departmental Seminars, Princeton University, October 2018.

5. “A Communication-Theoretic Perspective on the IoT”, CS/NetSys Seminar Series, UCI, April 2018.

6. “Geometry of Information in Networks: Communication and Estimation”, Probability Seminar, Stanford, March 2018.

7. “The Capacity of the Relay Channel”, LTN Seminar, TUM, Munich, August 2017.

8. “The Capacity of the Relay Channel”, Institute for Telecommunications Systems, TUB, Berlin, August 2017.

9. “Cover’s Open Problem: The Capacity of the Relay Channel”, Graduate Seminar in Communication Theory and Systems, UCLA, May 2017.

10. “Cover’s Open Problem: The Capacity of the Relay Channel”, Networking, Communications, and DSP Seminar, University of California, Berkeley, April 2017.

11. “Cover’s Open Problem: The Capacity of the Relay Channel”, EE Systems Seminar, Caltech April 2017.

12. “Cover’s Open Problem: The Capacity of the Relay Channel”, ECE Seminar, UCSD, April 2017.

13. “Cover’s Open Problem: The Capacity of the Relay Channel”, Advanced Networks Colloquia Series, University of Maryland, March 2017.

14. “Improving on the Cutset Bound via a Geometric Analysis of Typical Sets”, IPG Seminar, EPFL, Lausanne, March 2016.

15. “Improving on the Cutset Bound via a Geometric Analysis of Typical Sets”, Institute of Network Coding, CUHK, Hong Kong, May 2016.

16. “Energy Harvesting and Rechargeable Wireless Networks”, Graduate Seminar in Communication Theory and Systems, UCLA, November 2015.

17. “Energy Harvesting and Rechargeable Wireless Networks”, CommNetS Seminar, Viterbi School of Engineering, USC, October 2015.

18. “Capacity of Energy Harvesting Communication”, Information Theory Forum, Stanford, May 2015.

19. “Capacity of the Energy Harvesting Communication Channel”, EE Systems Seminar, Caltech March 2015.

20. “Capacity of the Energy Harvesting Channel”, Networking, Communications, and DSP Seminar, University of California, Berkeley, February 2015.

21. “Approximate Capacity of the Energy Harvesting Communication Channel”, Communications Theory and Systems Seminar, UCSD, October 2014.

22. “Capacity approximations for relay networks: the good, the bad and the ugly”, IT Forum, Stanford, 2013.

23. “Wireless Network Simplification”, ISL Colloquium, Stanford, 2012.

24. “Scaling Laws for Wireless Networks”, LNT Seminarraum, Technische Universitt Munchen, Munich, 2011.

25. “Scalable Wireless Networks”, EE Departmental Seminar, Stanford, April 2011.

26. “Scalable Wireless Networks”, EE Department, UCLA, October 2010.

Other Invited Talks:

1. "Foundations of Energy Harvesting and Remotely Powered Communication Systems", invited talk at the IEEE Information Theory Society's Santa Clara Valley (IEEE SCV ITS) chapter, March 2017.

2. "Energy Harvesting and Rechargeable Wireless Networks", Ericsson, Santa Clara, April 2015.

3. "Wireless Network Simplification", Qualcomm, San Diego, 2012.

4. "Wireless Network Simplification", HP Labs, Palo Alto, 2012.

Supervised Students and Postdoctoral Researchers:

PhD Students (Former and Current):

Former PhD Student
Ritesh Kolte
Thesis: "An Information-Theoretic Study of Problems in Wireless Relaying "
Graduated: 2016

Former PhD Student
Dor Shaviv
Thesis: "Fundamental Limits of Energy-Harvesting and Remotely Powered Communication Systems"
Graduated: 2018

Current PhD Student
Huseyin A. Inan
Anticipated date of Graduation: 2019

Current PhD Student
Leighton P. Barnes
Anticipated date of Graduation: 2020

Current PhD Student
Chuan-Zheng Lee
Anticipated date of Graduation: 2020

Current PhD Student
Daria Reshetova

Anticipated date of Graduation: 2021

Current PhD Student
Cem Kalkanli
Anticipated date of Graduation: 2021

Current PhD Student
Surin Ahn
Anticipated date of Graduation: 2023

Current PhD Student
Kfir Dolev
Anticipated date of Graduation: 2023

Post-doctoral Researchers:

Former Post-doctoral Researcher
Xiugang Wu
Appointment Dates: 2015-2018
Current Position: Assistant Professor, University of Delaware

Former Post-doctoral Researcher
Peter Kairouz
Appointment Dates: 2016-2018
Current Position: Research Scientist, Google AI

Former Post-doctoral Researcher
Pritam Mukherjee
Appointment Dates: 2017
Current Position: Post-doctoral Researcher, Department of Medicine, Stanford University