ERTEM TUNCEL

Professor

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EDUCATION

Ph.D., Electrical & Computer Engineering, December 2002
University of California, Santa Barbara, California
Scalable Source Coding Bounds: Analysis, Computation, and Applications

M.S., Electrical and Electronics Engineering, August 1997
Bilkent University, Ankara, Turkey
Utilization of Improved Recursive-Shortest-Spanning-Tree Method in Video Object Segmentation

B.S., Electrical and Electronics Engineering, July 1995
Middle East Technical University, Ankara, Turkey

EXPERIENCE

April 2017–Present	**Associate Dean of the Graduate Division,** University of California, Riverside.
Jul 2013–Present	**Professor,** University of California, Riverside.
Jul 2009–Jun 2013	**Associate Professor,** University of California, Riverside.
Jul 2003–Jun 2009	**Assistant Professor,** University of California, Riverside.
Jan 2003–Jun 2003	**Postgraduate Researcher,** University of California, Santa Barbara.
Jul 1998–Dec 2002	**Graduate Student Researcher,** University of California, Santa Barbara.
Jul 2000–Sep 2000	**Summer Intern,** Digital Media Division of Microsoft at Santa Barbara, California. Designed and implemented with C the linear spectral frequency quantization module for a variable bit-rate low-memory speech coder.
Sep 1997–Jul 1998	**Teaching Assistant,** University of California, Santa Barbara.

RESEARCH INTERESTS

Joint source-channel coding
- Distortion-energy tradeoff
- Low-delay scenarios
- Multi-terminal communications
- Hybrid digital/analog coding
- Robustness against varying source and/or channel parameters

Fundamental tradeoffs in data identification systems
- Identification capacity versus storage and/or search complexity constraints
- Relation to other source-channel problems

Distributed source coding

Zero-error information theory

Rate-distortion theory

Multi-resolution source coding

JOURNAL PUBLICATIONS

[J33] E. Koken and E. Tuncel, "*Joint source-channel coding for broadcasting correlated sources,*" to appear in IEEE Transactions on Communications Theory.

[J32] E. Koken, D. Gunduz, and E. Tuncel, *"Energy-distortion exponents in lossy transmission of Gaussian sources over Gaussian channels,"* IEEE Transactions on Information Theory, pp. 1227-1236, February 2017.

[J31] M. Varasteh, D. Gunduz, and E. Tuncel, *"Zero-delay joint source-channel coding in the presence of interference known at the encoder,"* IEEE Transactions on Communications Theory, pp. 3311-3322, August 2016.

[J30] Y. Li, J. Chen, E. Tuncel, W. Su, *"MIMO control over additive white noise channels: Stabilization and tracking by LTI controllers,"* IEEE Transactions on Automatic Control, pp. 1281-1296, May 2016.

[J29] E. Koken and E. Tuncel, *"On robustness of hybrid digital/analog source-channel coding with bandwidth mismatch,"* IEEE Transactions on Information Theory, pp. 4968-4983, September 2015.

[J28] X. Chen and E. Tuncel, *"Zero-delay joint source-channel coding using hybrid digital-analog schemes in the Wyner-Ziv setting,"* IEEE Transactions on Communications Theory, pp. 726-735, February 2014.

[J27] E. Tuncel and D. Gunduz, *"Identification and lossy reconstruction in noisy databases,"* IEEE Transactions on Information Theory, pp. 822-831, February 2014.

[J26] Y. Gao and E. Tuncel, *"Separate source-channel coding for transmitting correlated Gaussian sources over degraded broadcast channels,"* IEEE Transactions on Information Theory, pp. 3619-3634, June 2013.

[J25] Y. Gao and E. Tuncel, *"Wyner-Ziv coding over broadcast channels: Hybrid digital/analog schemes,"* IEEE Transactions on Information Theory, pp. 5660-5672, September 2011.

[J24] X. Chen and E. Tuncel, *"Low-delay prediction- and transform-based Wyner-Ziv coding,"* IEEE Transactions on Signal Processing, pp. 653-666, February 2011.

[J23] Y. Gao and E. Tuncel, *"New hybrid digital/analog schemes for transmission of a Gaussian source over a Gaussian channel,"* IEEE Transactions on Information Theory, pp. 6014-6019, December 2010.

[J22] J. Nayak, E. Tuncel, D. Gunduz, and E. Erkip, *"Successive refinement of vector sources under individual distortion criteria,"* IEEE Transactions on Information Theory, pp. 1769-1781, April 2010.

[J21] J. Nayak, E. Tuncel, and D. Gunduz, *"Wyner-Ziv coding over broadcast channels: Digital schemes,"* IEEE Transactions on Information Theory, pp. 1782-1799, April 2010.

[J20] J. Nayak and E. Tuncel, *"Successive coding of correlated sources,"* IEEE Transactions on Information Theory, pp. 4286-4298, September 2009.

[J19] E. Tuncel, J. Nayak, P. Koulgi, and K. Rose, *"On complementary graph entropy,"* IEEE Transactions on Information Theory, pp. 2537-2546, June 2009.

[J18] E. Tuncel, *"Capacity/storage tradeoff in high-dimensional identification systems,"* IEEE Transactions on Information Theory, pp. 2097-2106, May 2009.

[J17] F. Altiparmak, E. Tuncel, H. Ferhatosmanoglu, "*Incremental maintenance of online summaries over multiple streams,"* IEEE Transactions on Knowledge and Data Engineering, pp. 216-229, February 2008.

[J16] E. Tuncel, *"Kraft inequality and zero-error source coding with decoder side information,"* IEEE Transactions on Information Theory, pp. 4810-4816, December 2007.

[J15] B. Song, E. Tuncel, A. K. Roy-Chowdhury *"Towards a multi-terminal video compression algorithm by integrating distributed source coding with geometrical constraints,"* Journal of Multimedia, pp. 9-16, June 2007.

[J14] J. Nayak, E. Tuncel, and K. Rose, *"Zero-error source-channel coding with side information,"* IEEE Transactions on Information Theory, pp. 4626-4629, October 2006.

[J13] H. Ferhatosmanoglu, E. Tuncel, D. Agrawal, and A. El Abbadi, *"High dimensional nearest neighbor searching,"* Elsevier Information Systems Journal, pp. 512-540, September 2006.

[J12] E. Tuncel, *"Slepian-Wolf coding over broadcast channels,"* IEEE Transactions on Information Theory, pp. 1469-1482, April 2006.

[J11] S. Prasad, E. Tuncel, M. Ozkan, *"Association of different prediction methods for determination of the efficiency and selectivity on neuron-based sensors,"* Elsevier Biosensors and Bioelectronics, pp. 1045-1058, January 2006.

[J10] E. Tuncel, J. Nayak, and K. Rose, *"On hierarchical type covering,"* IEEE Transactions on Information Theory, pp. 4405-4417, December 2005.

[J9] E. Tuncel, *"On error exponents in hypothesis testing,"* IEEE Transactions on Information Theory, pp. 2945-2950, August 2005.

[J8] E. Tuncel, P. Koulgi, and K. Rose, *"Rate-distortion approach to databases: Storage and content-based retrieval,"* IEEE Transactions on Information Theory, pp. 953-967, June 2004.

[J7] P. Koulgi, E. Tuncel, S. Regunathan, and K. Rose, *"On zero-error coding of correlated sources,"* IEEE Transactions on Information Theory, pp. 2856-2873, November 2003.

[J6] E. Tuncel and K. Rose, *"Additive successive refinement,"* IEEE Transactions on Information Theory, pp. 1983-1991, August 2003.

[J5] E. Tuncel and K. Rose, *"Computation and analysis of the N-layer scalable rate-distortion function,"* IEEE Transactions on Information Theory, pp. 1218-1230, May 2003.

[J4] E. Tuncel and K. Rose, *"Error exponents in scalable source coding,"* IEEE Transactions on Information Theory, pp. 289-296, January 2003.

[J3] P. Koulgi, E. Tuncel, S. Regunathan, and K. Rose, *"On zero-error source coding with decoder side information,"* IEEE Transactions on Information Theory, pp. 99-111, January 2003.

[J2] E. Tuncel and L. Onural, *"Utilization of the recursive-shortest-spanning-tree algorithm for video object segmentation by 2-D affine motion modeling,"* IEEE Transactions on Circuits and Systems for Video Technology, pp. 776-781, August 2000.

[J1] A. A. Alatan, L. Onural, M. Wollborn, R. Mech, E. Tuncel, and T. Sikora, *"Image sequence analysis for emerging interactive multimedia services– the European COST 211 framework,"* IEEE Transactions on Circuits and Systems for Video Technology, pp. 802-813, November 1998.

BOOK CHAPTERS

[B2] E. Tuncel, J. Nayak, P. Koulgi, and K. Rose, "*Zero-error distributed source coding*," Distributed Source Coding: Theory, Algorithms, and Applications, edited by Pier Luigi Dragotti and Michael Gastpar, Academic Press, 2009.

[B1] J. Nayak, Bi Song, E. Tuncel, and A. K. Roy-Chowdhury, "*Model-based multi-view video compression using distributed source coding principles*" Distributed Source Coding: Theory, Algorithms, and Applications, edited by Pier Luigi Dragotti and Michael Gastpar, Academic Press, 2009.

PATENTS

[P1] L. Onural, A. A. Alatan, and E. Tuncel, *"Rule-based moving object segmentation,"* Patent No: 6,337,917. Issued: January 8, 2002.

CONFERENCE PUBLICATIONS

[C71] J. H. Bappy, S. Paul, E. Tuncel, and A. Roy-Chowdhury, "*The impact of typicality for informative representative selection,*" Computer Vision and Pattern Recognition, Honolulu, HI, July 2017.

[C70] V. Kostina and E. Tuncel, "*The rate-distortion function for successive refinement of abstract sources,*" IEEE International Symposium on Information Theory, Aachen, Germany, June 2017.

[C69] E. Koken and E. Tuncel, "*On minimum energy for robust Gaussian joint source-channel coding with a distortion-noise profile,*" IEEE International Symposium on Information Theory, Aachen, Germany, June 2017.

[C68] E. Koken and E. Tuncel, *"On the energy-distortion tradeoff for the Gaussian broadcast problem,"* IEEE International Symposium on Information Theory, Barcelona, Spain, July 2016.

[C67] E. Koken and E. Tuncel, *"Joint source-channel coding for broadcasting correlated sources,"* IEEE International Symposium on Information Theory, Barcelona, Spain, July 2016.

[C66] E. Koken, E. Tuncel, and D. Gunduz, *"On the asymptotic distortion-energy tradeoff for zero-delay transmission of a Gaussian source over the AWGN channel,"* IEEE International Symposium on Information Theory, Hong Kong, June 2015.

[C65] M. Varasteh, D. Gunduz, E, Tuncel, *"Delay limited transmission of a uniform source over an AWGN channel,"* IEEE International Symposium on Information Theory, Hong Kong, June 2015.

[C64] M. Varasteh, D. Gunduz, E, Tuncel, *"Zero-delay joint source-channel coding in the presence of interference known at the encoder,"* IEEE International Communication Conference, London, UK, June 2015.

[C63] J. Chen, Y. Li, E. Tuncel, and W. Su, *"Optimal tracking by LTI controllers over scaled MIMO additive white noise channels,"* Asian Control Conference, Kota Kinabalu, Malaysia, June 2015.

[C62] E. Koken, E. Tuncel, and D. Gunduz, *"On the distortion-energy tradeoff for zero-delay transmission of a Gaussian source over the AWGN channel,"* IEEE Information Theory Workshop, Jerusalem, Israel, April 2015.

[C61] E. Koken and E. Tuncel, *"On robustness of hybrid digital/analog source-channel coding with bandwidth mismatch,"* IEEE International Symposium on Information Theory, Honolulu, HI, July 2014.

[C60] E. Akyol, U. Mitra, E. Tuncel, K. Rose, *"On scalable coding in the presence of side information,"* IEEE International Symposium on Information Theory, Honolulu, HI, July 2014.

[C59] E. Akyol, U. Mitra, E. Tuncel, K. Rose, *"Source coding in the presence of exploration-exploitation tradeoff,"* IEEE International Symposium on Information Theory, Honolulu, HI, July 2014.

[C58] E. Koken and E. Tuncel, *"Gaussian HDA coding with bandwidth expansion and side information at the decoder,"* IEEE International Symposium on Information Theory, Istanbul, Turkey, July 2013.

[C57] E. Tuncel, *"Recognition capacity versus search speed in noisy databases,"* IEEE International Symposium on Information Theory, Cambridge, MA, July 2012.

[C56] Y. Gao and E. Tuncel, *"Separate source-channel coding for broadcasting correlated Gaussians,"* IEEE International Symposium on Information Theory, St Petersburg, Russia, August 2011.

[C55] X. Chen and E. Tuncel, *"Zero-delay joint source-channel coding for the Gaussian Wyner-Ziv problem,"* IEEE International Symposium on Information Theory, St Petersburg, Russia, August 2011

[C54] Y. Li, E. Tuncel, and J. Chen, *"Stabilization over additive white noise forward and feedback channels,"* 8th World Congress on Intelligent Control and Automation, Jinan, China, July 2010, pp. 1251-1256.

[C53] E. Tuncel and D. Gunduz, *"Identification and lossy reconstruction in noisy databases,"* IEEE International Symposium on Information Theory, Austin, TX, June 2010, pp. 191-195.

[C52] Y. Gao and E. Tuncel, *"On optimality of a hybrid digital/analog scheme for Wyner-Ziv coding over broadcast channels,"* IEEE International Symposium on Information Theory, Austin, TX, June 2010, pp 141-145.

[C51] Y. Li, E. Tuncel, J. Chen, and W. Su, *"Optimal tracking performance of discrete-time systems over an additive white noise channel,"* Decision and Control, Shanghai, China, December 2009, pp. 2070-2075.

[C50] Y. Li, E. Tuncel, and J. Chen, "*Optimal tracking and power allocation over an additive white noise channel,"* IEEE International Conference on Control and Automation, Christchurch, New Zealand, December 2009, pp. 1541-1546.

[C49] U. Celikcan and E. Tuncel, *"Bimodal leaky prediction for error resilient video streaming,"* 43rd Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, November 2009, pp. 583-587.

[C48] Y. Li, E. Tuncel, and J. Chen, "*Optimal tracking over an additive white noise feedback channel,"* Asian Control Conference, Hong Kong, August 2009, pp. 501-506.

[C47] D. Gunduz, E. Tuncel, A. Goldsmith, and H. V. Poor, *"Identification over multiple databases,"* IEEE International Symposium on Information Theory, Seoul, S. Korea, July 2009.

[C46] E. Tuncel, *"The rate transfer argument in two-stage scenarios: When does it matter?"* IEEE International Symposium on Information Theory, Seoul, S. Korea, July 2009.

[C45] X. Chen and E. Tuncel, *"High-resolution predictive Wyner-Ziv coding of Gaussian sources,"* IEEE International Symposium on Information Theory, Seoul, S. Korea, July 2009.

[C44] Y. Li, E. Tuncel, and J. Chen, *"Optimal tracking over additive white Gaussian channel,"* American Control Conference, St. Louis, MO, June 2009, pp. 4026-4031.

[C43] U. Celikcan and E. Tuncel, *"Optimized source-channel coding of video signals in packet loss environments,"* Data Compression Conference, Snowbird, UT, March 2009, p. 437.

[C42] D. Gunduz, E. Tuncel, and J. Nayak, *"Rate regions for the separated two-way relay channel,"* 46th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, September 2008.

[C41] J. Nayak, L. Gonzalez-Argueta, B. Song, A. Roy-Chowdhury, E. Tuncel, *"Multi-target tracking through opportunistic camera control in a resource constrained multimodal sensor network,"* ACM/IEEE International Conference on Distributed Smart Cameras, Stanford, CA, September 2008.

[C40] D. Gunduz, J. Nayak, and E. Tuncel, *"Wyner-Ziv coding over broadcast channels using hybrid digital/analog transmission,"* IEEE International Symposium on Information Theory, Toronto, CA, July 2008.

[C39] J. Nayak and E. Tuncel, *"Low-delay quantization for source coding with side information,"* IEEE International Symposium on Information Theory, Toronto, CA, July 2008.

[C38] J. Nayak and E. Tuncel, *"Successive improvement of capacity with power constraints,"* IEEE International Symposium on Information Theory, Toronto, CA, July 2008.

[C37] J. Nayak, E. Tuncel, and D. Gunduz, *"Wyner-Ziv coding over broadcast channels,"* IEEE Information Theory Workshop, Porto, Portugal, May 2008.

[C36] J. Nayak, E. Tuncel, D. Gunduz, and Elza Erkip, *"Successive refinement of vector sources under individual distortion criteria,"* (invited paper) IEEE Information Theory Workshop, Lake Tahoe, CA, September 2007.

[C35] J. Nayak and E. Tuncel, *"Successive coding of correlated sources,"* IEEE International Symposium on Information Theory, Nice, France, June 2007, pp. 1471-1475.

[C34] E. Tuncel, *"Kraft inequality and zero-error source coding with decoder side information,"* IEEE International Symposium on Information Theory, Nice, France, June 2007, pp. 446-450.

[C33] E. Tuncel, *"Successive refinement for high-dimensional identification systems,"* IEEE International Symposium on Information Theory, Nice, France, June 2007, pp. 296-300.

[C32] B. Song, A. K. Roy-Chowdhury, and E. Tuncel, *"A multi-terminal model-based video compression algorithm,"* IEEE International Conference on Image Processing, Atlanta, GA, October 2006.

[C31] E. Tuncel, *"Capacity/storage tradeoff in high-dimensional identification systems,"* IEEE International Symposium on Information Theory, Seattle, WA, July 2006, pp. 1929-1933.

[C30] B. Song, O. Bursalioglu, A. K. Roy-Chowdhury, and E. Tuncel, *"Towards a multi-terminal video compression algorithm using epipolar geometry,"* IEEE International Conference on Acoustics, Speech, and Signal Processing, Toulouse, France, May 2006, vol. II, pp. 49-52 (Best Student Paper Award).

[C29] O. Bursalioglu and E. Tuncel, *"Low-delay distributed source coding: Bounds and performance of practical codes,"* (invited paper) 43rd Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, September 2005, pp. 804-813.

[C28] E. Tuncel, *"Extensions of error exponent analysis in hypothesis testing,"* IEEE International Symposium on Information Theory, Adelaide, Australia, September 2005, pp. 835-839.

[C27] E. Tuncel, *"Lossless joint source-channel coding across broadcast channels with decoder side information,"* IEEE International Symposium on Information Theory, Adelaide, Australia, September 2005, pp. 641-645.

[C26] O. Bursalioglu and E. Tuncel, *"On optimal transforms and quantization schemes in Gaussian distributed source coding,"* IEEE International Symposium on Information Theory, Adelaide, Australia, September 2005, pp. 1411-1415.

[C25] E. Tuncel, *"Predictive coding of correlated sources,"* IEEE Information Theory Workshop, San Antonio, TX, October 2004, pp. 111-116.

[C24] E. Tuncel, *"Predictive coding of correlated sources,"* (invited paper) 42nd Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL, September 2004, pp. 644-653.

[C23] E. Tuncel, *"On optimal multiresolution source-channel coding across degraded broadcast channels,"* IEEE International Symposium on Information Theory, Chicago, IL, June 2004, p. 32.

[C22] E. Tuncel, J. Nayak, and K. Rose, *"On hierarchical type covering,"* IEEE International Symposium on Information Theory, Chicago, IL, June 2004, p. 221.

[C21] J. Nayak, E. Tuncel, and K. Rose, *"Lossy source coding under a maximum distortion constraint with decoder side-information,"* IEEE International Symposium on Information Theory, Chicago, IL, June 2004, p. 331.

[C20] E. Tuncel, *"On optimal multiresolution source-channel coding across degraded broadcast channels,"* Data Compression Conference, Snowbird, UT, March 2004, pp. 122-131.

[C19] E. Tuncel and K. Rose, *"On the extreme cases of the rate-distortion function for robust descriptions,"* IEEE International Symposium on Information Theory, Yokohama, Japan, July 2003, p. 196.

[C18] E. Tuncel and K. Rose, *"On variable-length coding of sources with side information at multiple decoders,"* IEEE International Symposium on Information Theory, Yokohama, Japan, July 2003, p. 140.

[C17] J. Nayak, E. Tuncel, and K. Rose, *"Zero-error source-channel coding with source side information at the decoder,"* IEEE International Symposium on Information Theory, Yokohama, Japan, July 2003, p. 141.

[C16] E. Tuncel, H. Ferhatosmanoglu, and K. Rose, *"VQ-index: An index structure for similarity searching in multimedia databases,"* ACM Multimedia, Juan-les-Pins, France, December 2002, pp. 543-552.

[C15] E. Tuncel and K. Rose, *"Towards optimal clustering for approximate similarity searching,"* IEEE International Conference on Multimedia and Expo, Lausanne, Switzerland, August 2002, pp. 497-500.

[C14] E. Tuncel, P. Koulgi, and K. Rose, *"Rate-distortion approach to databases: Storage and content-based retrieval,"* IEEE International Symposium on Information Theory, Lausanne, Switzerland, July 2002, p. 348.

[C13] P. Koulgi, E. Tuncel, and K. Rose, *"On zero-error coding of correlated sources,"* IEEE International Symposium on Information Theory, Lausanne, Switzerland, July 2002, p. 62.

[C12] E. Tuncel, P. Koulgi, S. Regunathan, and K. Rose, *"Zero-error source coding with maximum distortion criterion,"* Data Compression Conference, Snowbird, UT, April 2002, pp. 92-101.

[C11] E. Tuncel and K. Rose, *"Additive successive refinement,"* IEEE International Symposium on Information Theory, Washington, DC, June 2001, p. 31.

[C10] P. Koulgi, E. Tuncel, S. Regunathan, and K. Rose, *"Minimum redundancy zero-error source coding with side information,"* IEEE International Symposium on Information Theory, Washington, DC, June 2001, p. 282.

[C9] E. Tuncel and K. Rose, *"Error exponents in scalable source coding,"* Canadian Workshop on Information Theory, Vancouver, BC, June 2001, pp. 36-39.

[C8] P. Koulgi, E. Tuncel, S. Regunathan, and K. Rose, *"Graph-entropic characterization of optimal zero-error coding rate with side information,"* Canadian Workshop on Information Theory, Vancouver, BC, Canada, June 2001, pp. 44-47.

[C7] H. Ferhatosmanoglu, E. Tuncel, D. Agrawal, and A. El Abbadi, *"Approximate nearest neighbor searching in multimedia databases,"* IEEE International Conference on Data Engineering, Heidelberg, Germany, April 2001, pp. 503-511.

[C6] H. Ferhatosmanoglu, E. Tuncel, D. Agrawal, and A. El Abbadi, *"Vector approximation based indexing for non-uniform high dimensional data sets,"* in Proceedings of the 9th ACM International Conference on Information and Knowledge Management, Washington, DC, USA, November 2000, pp. 202-209.

[C5] E. Tuncel and K. Rose, *"Iterative computation of rate-distortion bounds for scalable source coding,"* IEEE International Symposium on Information Theory, Sorrento, Italy, June 2000, p. 234.

[C4] E. Tuncel and K. Rose, *"Nearest-prototype classifier design by deterministic annealing with random class labels,"* IEEE International Workshop on Neural Networks for Signal Processing, Madison, Wisconsin, August 1999, pp. 235-242.

[C3] E. Tuncel and L. Onural, *"Video object segmentation by extended recursive-shortest-spanning-tree method,"* IEEE & EURASIP International Workshop on Nonlinear Signal and Image Processing, Antalya, Turkey, June 1999, pp. 23-27.

[C2] A. A. Alatan, E. Tuncel, and L. Onural, *"A rule-based method for object segmentation in video sequences,"* IEEE International Conference on Image Processing, Santa Barbara, California, October 1997, pp. 522-525.

[C1] A. A. Alatan, E. Tuncel, and L. Onural*, "Object segmentation via rule-based data fusion,"* Workshop on Image Analysis for Multimedia Interactive Services, Louvain-la-Neuve, Belgium, June 1997.

HONORS & AWARDS

- 2007 NSF CAREER Award: Low-delay communication in sensor networks via prediction- and transform-based distributed source coding.
- Ranked 2nd in the Department of Electrical and Electronics Engineering, Middle East Technical University, and 3rd among the class of 1995 (over 2500 students).
- Ranked 97th in the nation among over a million students in Turkish national university entrance examinations.

PROFESSIONAL ACTIVITIES

- Associate Editor for IEEE Transactions on Information Theory, May 2014-July 2017.
- Technical Program Committee member for IEEE International Conference on Communications, 2005, for IEEE GLOBECOM, 2007, and for IEEE International Symposium on Information Theory, 2009, 2013, 2014, 2015, 2016, 2017, and 2018.