

CURRICULUM VITAE
Ioannis Kontoyiannis

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EDUCATION

STANFORD UNIVERSITY, **Ph.D. Electrical Engineering.** June 1998.

Recurrence and Waiting Times in Stationary Processes, and their Applications in Data Compression.
Advisor: Thomas M. Cover. Associate Advisor: Amir Dembo.

STANFORD UNIVERSITY, **M.S. Statistics.** June 1997.

CAMBRIDGE UNIVERSITY, **M.S. Pure Mathematics.** June 1993.

Distinction in Part III of the Cambridge Mathematics Tripos.

IMPERIAL COLLEGE, UNIVERSITY OF LONDON, **B.S. Mathematics.** June 1992.

First Class Honors.

ACADEMIC APPOINTMENTS

ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS (Greece) *March 2010 – present*
Professor, Department of Informatics.

FOUNDATION FOR RESEARCH AND TECHNOLOGY – HELLAS (Greece) *June 2017 – present*
Collaborating researcher, Institute of Applied & Computational Mathematics.

ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS (Greece) *March 2004 – March 2010*
Associate Professor, Department of Informatics.

BROWN UNIVERSITY (USA) *July 2004 – July 2005*
Associate Professor (with tenure), Division of Applied Mathematics and (jointly) Department of Computer Science.

BROWN UNIVERSITY (USA) *Oct. 2002 – July 2004*
Manning Assistant Professor, Division of Applied Mathematics and (jointly) Department of Computer Science.

BROWN UNIVERSITY (USA) *Aug. 2001 – July 2004*
Assistant Professor, Division of Applied Mathematics and (jointly) Department of Computer Science.

PURDUE UNIVERSITY (USA) *Aug. 1998 – Aug. 2001*
Assistant Professor, Department of Statistics, and (by courtesy) Department of Mathematics, and the School of Electrical and Computer Engineering.

RESEARCH INTERESTS

Probability and stochastic processes, information theory, data compression, statistics, simulation, communications and signal processing, mathematical biology

PROFESSIONAL APPOINTMENTS

- POSIMARK ASSOCIATES S.L. (SPAIN) *Sept. 2016 – Dec. 2016*
Consultant, Statistical analysis of financial data for prediction and investment.
- CASPIDA (USA) *March 2014 – Dec. 2014*
Consultant, Statistical analysis of “Big Data” for online security: www.caspida.com
- IBM T.J. WATSON RESEARCH CENTER (USA) *June 1995 – Dec. 1995*
Research Co-op. Worked on the IBM-NASA Satellite Image Explorer Project. Research in image processing, classification and compression algorithms.

VISITING POSITIONS

- COLUMBIA UNIVERSITY *Jan. 2008 – Dec. 2008*
Visiting Associate Professor, Department of Statistics.
- BROWN UNIVERSITY *July 2005 – July 2007*
Visiting Associate Professor (Research), Division of Applied Mathematics.
- BROWN UNIVERSITY *Sept. 2002 – July 2007*
Visiting Research Associate,
 Computation and Mathematics of Mind (under NSF’s IGERT Program),
 Department of Neuroscience.
- ATHENS UNIVERSITY OF ECONOMICS AND BUSINESS *Sept. 2004 – Feb. 2005*
Visiting Associate Professor, Department of Informatics.
- BROWN UNIVERSITY *Aug. 2000 – July 2001*
Visiting Assistant Professor, Division of Applied Mathematics.
- CAMBRIDGE UNIVERSITY *July '99, June '98, June '97, Aug. '96, June '95, Sept. '93*
Visiting Scholar, Statistical Laboratory
 (Dept of Pure Mathematics and Mathematical Statistics).

PUBLICATIONS

JOURNAL PAPERS

Submitted

1. M. Madiman and I. Kontoyiannis. “Entropy bounds on abelian groups and the Ruzsa divergence.” To appear, *IEEE Transactions on Information Theory*.
2. I. Kontoyiannis and S.P. Meyn. “Approximating a diffusion by a hidden Markov model.” To appear, *Stochastic Processes and their Applications*.

Published or in press

3. I. Kontoyiannis and S.P. Meyn. “On the f -norm ergodicity of Markov processes in continuous time.” *Electronic Communications in Probability*, **21**, paper 77, pp. 1–10, November 2016.
4. I. Kontoyiannis and M. Skoularidou. “Estimating the directed information and testing for causality.” *IEEE Transactions on Information Theory*, **62**, no. 11, pp. 6053–6067, November 2016.
5. I. Kontoyiannis and M. Madiman. “Sunset and inverse sunset inequalities for differential entropy and mutual information.” *IEEE Transactions on Information Theory*, **60**, no. 8, pp. 4503–4514, August 2014.
6. I. Kontoyiannis and S. Verdú. “Optimal lossless data compression: Non-asymptotics and asymptotics.” *IEEE Transactions on Information Theory*, **60**, no. 2, pp. 777–795, February 2014.
7. O. Johnson, I. Kontoyiannis and M. Madiman. “Log-concavity, ultra-log-concavity and a maximum entropy property of discrete compound Poisson measures.” *Discrete Applied Mathematics*, (Special issue, Proceedings of the Jubilee Conference on Discrete Mathematics JCDM 2009, D.J. Kleitman, A. Shastri, V.T. So’s, eds.) **161**, no. 9, pp. 1232–1250, June 2013.
8. C. Gioran and I. Kontoyiannis. “Complexity-compression tradeoffs in lossy compression via efficient random codebooks and databases.” *Problems of Information Transmission*, **48**, Issue 4, pp. 376–394, October 2012.
9. I. Kontoyiannis and S.P. Meyn. “Geometric ergodicity and the spectral gap of non-reversible Markov chains.” *Probability Theory and Related Fields*, **154**, Issue 1–2, pp. 327–339, October 2012.
10. V. Anantharam, G. Caire, M. Costa, I. Kontoyiannis, G. Kramer, R. Yeung, and S. Verdú. “Panel on *New Perspectives on Information Theory*.” (Invited discussion.) *IEEE Information Theory Society Newsletter*, pp. 21–27, March 2012.
11. P. Dellaportas and I. Kontoyiannis. “Control variates for estimation based on reversible Markov chain Monte Carlo samplers.” *Journal of the Royal Statistical Society: Series B*, **74**, Issue 1, pp. 133–161, January 2012.
12. P. Harremoës, O. Johnson and I. Kontoyiannis. “Thinning, entropy and the law of thin numbers.” *IEEE Transactions on Information Theory*, **56**, no. 9, pp. 4228–4244, September 2010.
13. A.D. Barbour, O. Johnson, I. Kontoyiannis and M. Madiman. “Compound Poisson approximation via information functionals.” *Electronic Journal of Probability*, **15**, paper 42, pp. 1344–1369, August 2010.
14. I. Kontoyiannis. “Book review: “*Information and complexity in statistical modeling*,” by J. Rissanen, Springer, NY, 2007.” *Amer. Math. Monthly*, **115**, no. 10, pp. 956–960, December 2008.
15. I. Kontoyiannis and S.P. Meyn. “Computable exponential bounds for screened estimation and simulation.” *Annals of Applied Probability*, **18**, no. 4, pp. 1491–1518, August 2008.

16. M. Harrison and I. Kontoyiannis. “Estimation of the rate-distortion function.” *IEEE Transactions on Information Theory*, **54**, no. 8, pp. 3757–3763, August 2008.
17. Y. Gao, I. Kontoyiannis and E. Bienenstock. “Estimating the entropy of binary time series: Methodology, some theory and a simulation study.” *Entropy*, **10**, issue 2, pp. 71–99, June 2008.
18. I. Kontoyiannis. “Counting the primes using entropy.” *IEEE Information Theory Newsletter*, **58**, no. 2, pp. 6–9, June 2008.
19. H.M. Aktulga, I. Kontoyiannis, L.A. Lyznik, L. Szpankowski, A.Y. Grama and W. Szpankowski. “Identifying statistical dependence in genomic sequences via mutual information estimates.” In *EURASIP Journal on Bioinformatics and Systems Biology*, **vol. 2007**, article ID 14741, November 2007.
20. I. Kontoyiannis and M. Madiman. “Measure concentration for compound Poisson distributions.” *Electronic Communications in Probability*, **11**, paper 5, pp. 45–57, May 2006.
21. I. Kontoyiannis and R. Zamir. “Mismatched codebooks and the role of entropy-coding in lossy data compression.” *IEEE Transactions on Information Theory*, **52**, pp. 1922–1938, May 2006.
22. A. Anagnostopoulos, I. Kontoyiannis, and E. Upfal. “Steady state analysis of balanced-allocation routing,” *Random Structures & Algorithms*, **26**, pp. 446–467, July 2005.
23. I. Kontoyiannis and S.P. Meyn. “Large deviations asymptotics and the spectral theory of multiplicatively regular Markov processes,” *Electronic Journal of Probability*, **10**, paper 3, pp. 61–123, February 2005.
24. I. Kontoyiannis, P. Harremoës and O. Johnson. “Entropy and the law of small numbers,” *IEEE Transactions on Information Theory*, **51**, pp. 466–472, February 2005.
25. I. Kontoyiannis. “Pattern matching and lossy data compression on random fields,” *IEEE Transactions on Information Theory*, **49**, pp. 1047–1051, April 2003.
26. N. Merhav and I. Kontoyiannis. “Source coding exponents for zero-delay coding with finite memory,” *IEEE Transactions on Information Theory*, **49**, pp. 609–625, March 2003.
27. I. Kontoyiannis and S.P. Meyn. “Spectral theory and limit theorems for geometrically ergodic Markov processes,” *Annals of Applied Probability*, **13**, pp. 304–362, February 2003.
28. I. Kontoyiannis and J. Zhang. “Arbitrary source models and Bayesian codebooks in rate-distortion theory,” *IEEE Transactions on Information Theory*, **48**, pp. 2276–2290, August 2002.
29. A. Dembo and I. Kontoyiannis. “Source coding, large deviations, and approximate pattern matching.” Invited paper in the special issue of the *IEEE Transactions on Information Theory* on Shannon Theory, dedicated to A.D. Wyner, **48**, pp. 1590–1615, June 2002.
30. A. Antos and I. Kontoyiannis. “Convergence properties of functional estimates for discrete distributions,” *Random Structures & Algorithms*, **9**, pp. 163–193, October 2001, special issue in honor of D.E. Knuth’s 64th birthday.
31. J. Zhang, E.K.P. Chong and I. Kontoyiannis. “Unified spatial diversity combining and power allocation schemes for CDMA systems,” *IEEE Journal on Selected Areas in Communications*, **19**, pp. 1276–1288, July 2001.
32. I. Kontoyiannis. “Sphere-covering, measure concentration, and source coding,” *IEEE Transactions on Information Theory*, **46**, pp. 1544–1552, May 2001.
33. A. Dembo and I. Kontoyiannis. “Critical behavior in lossy source coding,” *IEEE Transactions on Information Theory*, **46**, pp. 1230–1236, March 2001.

34. I. Kontoyiannis. "Pointwise redundancy in lossy data compression and universal lossy data compression," *IEEE Transactions on Information Theory*, **46**, pp. 136–152, January 2000.
35. I. Kontoyiannis. "An implementable lossy version of the Lempel-Ziv algorithm – Part I: Optimality for memoryless sources," *IEEE Transactions on Information Theory*, **45**, pp. 2293–2305, November 1999.
36. A. Dembo and I. Kontoyiannis. "The asymptotics of waiting times between stationary processes, allowing distortion," *Annals of Applied Probability*, **9**, pp. 413–429, May 1999.
37. I. Kontoyiannis. "Asymptotic recurrence and waiting times for stationary processes," *Journal of Theoretical Probability*, **11**, pp. 795–811, July 1998.
38. I. Kontoyiannis, P.H. Algoet, Yu.M. Suhov and A.J. Wyner. "Nonparametric entropy estimation for stationary processes and random fields, with applications to English text," *IEEE Transactions on Information Theory*, **44**, pp. 1319–1327, May 1998.
39. V. Castelli, L. Bergman, I. Kontoyiannis, C.-S. Li, J. Robinson and J. Turek. "Progressive search and retrieval in large image archives," *IBM Journal of Research and Development*, **42**, pp. 253–268, March 1998.
40. I. Kontoyiannis. "Second-order noiseless source coding theorems," *IEEE Transactions on Information Theory*, **43**, pp. 1339–1341, July 1997.

BOOK CHAPTERS

41. I. Kontoyiannis. "Some information-theoretic computations related to the distribution of prime numbers," In *Festschrift in Honor of Jorma Rissanen*, (P. Grunwald, P. Myllymaki, I. Tabus, M. Weinberger, B. Yu, eds.), pp. 135–143, Tampere University Press, May 2008.
42. I. Kontoyiannis and Yu.M. Suhov. "Prefixes and the entropy rate for long-range sources," Chapter 6 in *Probability Statistics and Optimization: A Tribute to Peter Whittle*, (F.P. Kelly, editor), pp. 89–98, Wiley, Chichester, 1994.

PATENTS

43. V. Castelli, I. Kontoyiannis, J. Robinson and J.J. Turek. U.S. Patent No. 6,021,224. "Multiresolution lossless/lossy compression and storage of data for efficient processing thereof." Oct 2000.
44. V. Castelli, I. Kontoyiannis, J. Robinson and J.J. Turek. U.S. Patent No. 6,141,445. "Multiresolution lossless/lossy compression and storage of data for efficient processing thereof." Feb 2000.

UNPUBLISHED MANUSCRIPTS

- U1. A. Anagnostopoulos, C. Dombry, N. Guillotin-Plantard, I. Kontoyiannis and E. Upfal. "Probabilistic analysis of the k -server problem on the circle." *arXiv online manuscript*, May 2010.
- U2. P. Dellaportas and I. Kontoyiannis "Notes on using control variates for estimation with reversible MCMC samplers," *arXiv online manuscript*, July 2009.
- U3. V. Castelli and I. Kontoyiannis. "An efficient recursive partitioning algorithm for classification, using wavelets," *APPTS Technical Report #02-7, Brown University*, September 2002.
- U4. I. Kontoyiannis. "The complexity and entropy of literary styles." *NSF Technical Report no. 97, Department of Statistics, Stanford University*, June 1996.
- U5. I. Kontoyiannis, J. Turek, V. Castelli and J. Robinson. "Multiresolution lossless image compression." Unpublished manuscript, December 1995.

BOOK

Elements of Probability: With Applications in Statistics and Computer Science. Textbook (in Greek), with S. Toumpis. Hellenic Academic Libraries Link, Ministry of Education, Athens, 2015. ISBN: 978-960-603-182-3.

EDITED VOLUMES

- Vol1. *IEEE 2016 International Symposium on Information Theory*. Proceedings. Edited by V. Anantharam, I. Kontoyiannis, Y. Steinberg and P. Vontobel. IEEE Press, July 2016. ISBN: 978-1-5090-1806-2.
- Vol2. *Third Workshop on Information Theoretic Methods in Science and Engineering*. Proceedings. Edited by J. Heikkonen, I. Kontoyiannis, E.P. Liski, P. Myllymaki, J. Rissanen and I. Tabus. Tampere University Press, August 2010. ISBN 978-952-15-2000-6.
- Vol3. *IEEE 2009 Information Theory Workshop on Networking and Information Theory*. Proceedings. Edited by V. Anantharam and I. Kontoyiannis. IEEE Press, June 2009. ISBN: 978-1-4244-4536-3.
- Vol4. *Second Workshop on Information Theoretic Methods in Science and Engineering*. Proceedings. Edited by J. Heikkonen, I. Kontoyiannis, E.P. Liski, P. Myllymaki, J. Rissanen and I. Tabus. Tampere University Press, August 2009. ISBN 978-952-15-2207-9.
- Vol5. *First Workshop on Information Theoretic Methods in Science and Engineering*. Proceedings. Edited by K. Yamanishi, I. Kontoyiannis, E.P. Liski, P. Myllymaki, J. Rissanen and I. Tabus. Tampere University Press, August 2008. ISBN 978-952-15-2420-2.

CONFERENCES (papers/talks)

- C1. “Bayesian suffix trees and context tree weighting.” **Plenary talk**, *International Zurich Seminar on Communications*, Zurich, Switzerland, February 2018.
- C2. “Simulated convergence rates with application to an intractable α -stable inference problem,” with M. Riabiz, T. Ardeshiri and S. Godsill. **Invited paper**, *2017 IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing*, Curaçao, Dutch Antilles, December 2017.
- C3. “Exact speed and transmission cost in a simple one-dimensional wireless delay-tolerant network,” with D. Cheliotis, M. Loulakis and S. Toumpis. *2017 IEEE International Symposium on Information Theory*, Aachen, Germany, June 2017.
- C4. “Context trees and model selection for discrete time series.” **Invited talk**, *2016 IEEE Information Theory Workshop*, Cambridge, UK, September 2016.
- C5. “Model selection algorithms for discrete time series.” **Keynote lecture**, *11th Athens Colloquium on Algorithms & Complexity*, Athens, Greece, August 2016.
- C6. “Testing temporal causality and estimating directed information.” **Invited talk**, *Nexus of Information and Computation Theories*, Institut Henri Poincaré, Paris, France, March 2016.
- C7. “Entropy bounds on abelian groups and the Ruzsa divergence,” with M. Madiman. **Invited talk**, *2016 Information Theory and Applications Workshop*, University of California, San Diego, February 2016.
- C8. “Finding structure in data: Bayesian inference for discrete time series.” **Invited talk**, *Stochastic Methods in Finance and Physics Workshop*, Heraklion, Greece, July 2015.
- C9. “Small trees & long memory: Bayesian inference for discrete time series.” **Plenary talk**, *16th Conference of the ASMDA Intern’al Society*, Piraeus, Greece, July 2015.
- C10. “The Ruzsa divergence on groups,” with M. Madiman. **Invited paper**, *2015 Workshop on Information Theoretic Methods in Science and Engineering*, Copenhagen, Denmark, June 2015.

- C11. “Causality and directed information estimation as a hypothesis test,” with M. Skoularidou. **Invited paper**, *2015 Workshop on Information Theoretic Methods in Science and Engineering*, Copenhagen, Denmark, June 2015.
- C12. “The entropy of sums and Rusza’s divergence on abelian groups,” with M. Madiman. **Invited paper**, *2013 IEEE Information Theory Workshop*, Sevilla, Spain, September 2013.
- C13. “Optimal lossless compression: Source varentropy and dispersion,” with S. Verdú. *2013 IEEE International Symposium on Information Theory*, Istanbul, Turkey, July 2013.
- C14. “Lossless compression with moderate error probability,” with Y. Altuğ and A.B. Wagner. *2013 IEEE International Symposium on Information Theory*, Istanbul, Turkey, July 2013.
- C15. “Bayesian model selection and inference for discrete time series.” **Invited talk**, *1st Workshop on Cognition and Control*, University of Florida, February 2013.
- C16. “Bayesian inference for discrete time series via tree weighting,” with M. Skoularidou and A. Panotopoulou. **Invited paper**, *2012 IEEE Information Theory Workshop*, Lausanne, Switzerland, September 2012.
- C17. “Sunset inequalities for differential entropy and mutual information,” with M. Madiman. *2012 IEEE International Symposium on Information Theory*, M.I.T., Cambridge, MA, July 2012.
- C18. “Lossless data compression rate: Asymptotics and non-asymptotics,” with S. Verdú. **Invited paper**, *46th Annual Conference on Information Sciences and Systems*, Princeton, NJ, March 2012.
- C19. “Sunset differential entropy bounds,” with M. Madiman. **Invited talk**, *International Zurich Seminar on Communications*, Zurich, Switzerland, March 2012.
- C20. “Differential entropy sunset bounds.” **Invited talk**, *Fourth EPFL-UMLV International Workshop on Random Matrices, Information Theory and Applications*, Paris, France, December 2010.
- C21. “Markov chains and the spectra of nonlinear operators,” with S.P. Meyn. **Invited talk**, *Young Researchers in Analysis Workshop*, Athens, November 2010.
- C22. “Geometric ergodicity and the spectral gap of non-reversible Markov chains,” with Sean P. Meyn. **Invited talk**, *Fifth International Workshop on Applied Probability*, Madrid, Spain, July 2010.
- C23. “Stochastic analysis of the k -server problem on the circle,” with A. Anagnostopoulos, C. Dombry, N. Guillin-Plantard and E. Upfal. *21st International Meeting on Probabilistic, Combinatorial and Asymptotic Methods for the Analysis of Algorithms (AoFA 2010)*, June-July 2010.
- C24. “The entropies of the sum and the difference of two IID random variables are not too different,” with M. Madiman. *2010 IEEE International Symposium on Information Theory*, Austin, TX, June 2010.
- C25. “Simulating the mean of a skip-free Markov chain,” with K.R. Duffy and S.P. Meyn. *Simulation of Networks Workshop*, Cambridge University, UK, June 2010.
- C26. “Superposition codes for Gaussian vector quantization,” with K. Rahnama Rad and S. Gitzenis. **Invited paper**, *2010 IEEE Information Theory Workshop*, Cairo, Egypt, January 2010.
- C27. “Which spectrum?” with S.P. Meyn. **Invited talk**, *Athens Workshop on MCMC Convergence and Estimation*, Athens, Greece, September 2009.
- C28. “Three non-asymptotic results in source coding and probability.” **Plenary talk**, *2009 Workshop on Information Theoretic Methods in Science and Engineering*, Tampere, Finland, August 2009.
- C29. “Waiting and matching: Patterns and entropy.” **Invited series of talks**, *Greek Stochastics α'* , Lefkada, Greece, August 2009.

- C30. “Control variates for MCMC.” *Greek Stochastics α'* , with P. Dellaportas and Z. Tsourti. Lefkada, Greece, August 2009.
- C31. “A criterion for the compound Poisson distribution to be maximum entropy,” with O. Johnson and M. Madiman. *2009 IEEE International Symposium on Information Theory*, Seoul, Korea, July 2009.
- C32. “Efficient random codebooks and databases for lossy data compression,” with C. Gioran. **Invited paper**, *2009 IEEE Information Theory Workshop*, Volos, Greece, June 2009.
- C33. “Information-theoretic ideas in Poisson approximation and estimation.” **Invited talk**, *Interface between Information Theory and Estimation Theory Workshop*, Princeton University, April 2009.
- C34. “Control variates as screening functions,” with S. Kyriazopoulou-Panagiotopoulou and S.P. Meyn. *Third International Conference on Performance Evaluation Methodologies and Tools*, Athens, Greece, October 2008.
- C35. “An information-theoretic development of compound Poisson approximation,” with A.D. Barbour, O. Johnson and M. Madiman. **Invited talk**, *Second EPFL-UMLV International Workshop on Entropy*, Lausanne, Switzerland, September 2008.
- C36. “Entropy and the ‘compound’ law of small numbers.” with O. Johnson and M. Madiman. **Invited talk**, *2008 Workshop on Information Theoretic Methods in Science and Engineering*, Tampere, Finland, August 2008.
- C37. “Information-theoretic bounds for compound Poisson approximation,” with A.D. Barbour, O. Johnson and M. Madiman. *7th World Congress in Probability and Statistics*, Singapore, July 2008.
- C38. “Thinning and information projections,” with P. Harremöes and O. Johnson. *2008 IEEE International Symposium on Information Theory*, Toronto, Canada, July 2008.
- C39. “Counting the primes using entropy.” **Invited paper**, *2008 IEEE Information Theory Workshop*, Porto, Portugal, May 2008.
- C40. “On the spectral theory of Markov chains.” **Invited paper**, *12th Panhellenic Conference in Mathematical Analysis*, Athens, Greece, May 2008.
- C41. “Statistical dependence in biological sequences,” with H.M. Aktulga, L.A. Lyznik, L. Szpankowski, A.Y. Grama and W. Szpankowski. *2007 IEEE International Symposium on Information Theory*, Nice, France, June 2007.
- C42. “Thinning and the law of small numbers,” with P. Harremoës and O. Johnson. *2007 IEEE International Symposium on Information Theory*, Nice, France, June 2007.
- C43. “Fisher information, compound Poisson approximation, and the Poisson channel,” with M. Madiman and O. Johnson. *2007 IEEE International Symposium on Information Theory*, Nice, France, June 2007.
- C44. “Exponential bounds and stopping rules for MCMC and general Markov chains,” with L.A. Lastras-Montaño and S.P. Meyn. **Invited paper**, *First International Conference on Performance Evaluation Methodologies and Tools*, Pisa, Italy, October 2006.
- C45. “Information-theoretic ideas in Poisson approximation and concentration.” **Invited series of talks**, *LMS/EP SRC Meeting on Stochastic Stability, Large Deviations and Coupling Methods*, Edinburgh, UK, September 2006.
- C46. “On estimating the rate-distortion function,” with M. Harrison. *2006 IEEE International Symposium on Information Theory*, Seattle, WA, July 2006.
- C47. “From the entropy to the statistical structure of spike trains,” with Y. Gao and E. Bienenstock. *2006 IEEE International Symposium on Information Theory*, Seattle, WA, July 2006.
- C48. “Entropy estimation: Simulation, theory and a case study.” **Invited paper**, *2006 IEEE Information Theory Workshop*, Punta del Este, Uruguay, March 2006.

- C49. “From Poisson approximation to compound Poisson concentration via entropy.” **Invited talk**, *First EPFL-UMLV International Workshop on Entropy*, Lausanne, Switzerland, February 2006.
- C50. “Combining information from different sources: Some surprising phenomena,” with B. Lucena. **Invited paper**, *10th Panhellenic Conference on Informatics*, Volos, Greece, November 2005.
- C51. “Filtering: The case for *noisier* data,” with B. Lucena. *2005 IEEE Information Theory Workshop*, Rotorua, New Zealand, September 2005.
- C52. “Mutual information, synergy and some curious phenomena for simple channels,” with B. Lucena. *2005 IEEE International Symposium on Information Theory*, Adelaide, Australia, September 2005.
- C53. “Relative entropy and exponential deviation bounds for general Markov chains,” with L. Lastras-Montaño and S.P. Meyn. *2005 IEEE International Symposium on Information Theory*, Adelaide, Australia, September 2005.
- C54. “Concentration and relative entropy for compound Poisson distributions,” with M. Madiman. *2005 IEEE International Symposium on Information Theory*, Adelaide, Australia, September 2005.
- C55. “Sobolev inequalities, Poisson approximation and concentration.” **Invited paper**, *7th Hellenic European Conference on Computer Mathematics & its Applications*, Athens, Greece, September 2005.
- C56. “Entropy, compound Poisson approximation, log-Sobolev inequalities and measure concentration,” with M. Madiman. *2004 IEEE Information Theory Workshop*, San Antonio, TX, October 2004.
- C57. “Minimum Description Length vs. Maximum Likelihood in lossy data compression,” with M. Harrison and M. Madiman. *IEEE International Symposium on Information Theory*, Chicago, IL, July 2004.
- C58. “Estimating the entropy rate of spike trains,” with Y. Gao and E. Bienenstock. **Invited paper**, *38th Annual Conference on Information Sciences and Systems*, Princeton, NJ, March 2004.
- C59. “Poisson approximation via entropy,” with P. Harremoës and O. Johnson. *Second International Workshop on Applied Probability*, Piraeus, Greece, March 2004.
- C60. “Lempel-Ziv and CTW entropy estimators for spike trains,” with Y. Gao and E. Bienenstock. **Invited paper**, *Estimation of entropy Workshop, 2003 Neural Information Processing Systems Conference*, Vancouver, BC, Canada, December 2003.
- C61. “The advantage of balanced-allocation routing for ATM networks,” with A. Anagnostopoulos and E. Upfal. *2003 IEEE International Symposium on Information Theory*, Yokohama, Japan, July 2003.
- C62. “Mismatched codebooks and the role of entropy-coding in lossy data compression,” with R. Zamir. *2003 IEEE International Symposium on Information Theory*, Yokohama, Japan, July 2003.
- C63. “Entropy and the law of small numbers,” with P. Harremoës. *2003 IEEE International Symposium on Information Theory*, Yokohama, Japan, July 2003.
- C64. “Maximum likelihood estimation for lossy data compression,” with M. Harrison. **Invited paper**, *40th Annual Allerton Conference on Communication, Control, and Computing*, Allerton, IL, October 2002.
- C65. “Source coding exponents for zero-delay coding with finite memory,” with N. Merhav. *2002 IEEE International Symposium on Information Theory*, Lausanne, Switzerland, July 2002.
- C66. “Arbitrary source models and Bayesian codebooks in rate-distortion theory,” with J. Zhang. *2002 IEEE International Symposium on Information Theory*, Lausanne, Switzerland, July 2002.

- C67. “Unified error exponents: Hypothesis testing, data compression, and measure concentration,” with A.D. Sezer. **Invited paper**, *Barcelona Conference on Stochastic Inequalities and Their Applications*, Spain, June 2002; published in *Progress in Probability*, vol. 56, pp. 23–32, Birkhauser Basel/Switzerland, 2003.
- C68. “MDL ideas in lossy data compression.” **Invited talk**, *MSRI Information Theory Workshop*, Berkeley, CA, March 2002.
- C69. “The ODE method and spectral theory of Markov operators,” with J. Huang and S.P. Meyn. **Invited paper**, *Proceedings of the Stochastic Theory and Control Workshop*, Springer, New York, pp. 205–221, B. Pasik-Duncan (Editor), 2002.
- C70. “Precise limit theorems and multiplicative ergodicity for Markov processes,” with S.P. Meyn. *11th INFORMS Applied Probability Society Conference*, New York, NY, July 2001.
- C71. “Limit theorems and some spectral theory for geometrically ergodic Markov chains.” **Ple-nary talk**, *Conference on Stochastic Processes and their Applications*, Cambridge, UK, July 2001.
- C72. “Sphere-covering and measure concentration as source coding theorems.” *2001 IEEE International Symposium on Information Theory*, Washington, D.C., June 2001.
- C73. “Estimating the entropy of discrete distributions,” with A. Antos. *2001 IEEE International Symposium on Information Theory*, Washington, D.C., June 2001.
- C74. “Unified spatial diversity combining and power allocation schemes for CDMA systems,” with J. Zhang and E.K.P. Chong. *GLOBECOM 2000*, San Francisco, CA, December 2000.
- C75. “Critical behavior in source coding,” with A. Dembo. *2000 International Symposium on Information Theory and Its Applications*, Honolulu, Hawaii, November 2000.
- C76. “On rate-distortion theory as a convex selection problem.” **Invited paper**, *38th Annual Allerton Conference on Communication, Control & Computing*, October 2000.
- C77. “Probabilistic phenomena in data compression.” **Invited talk** at the *Sixth International Seminar on the Analysis of Algorithms*, Krynica Morska, Poland, July 2000.
- C78. “Model selection via rate-distortion theory.” **Invited paper**, *34th Annual Conference on Information Sciences and Systems*, Princeton, NJ, March 2000.
- C79. “Probabilistic results for sphere packing in high dimensions.” *1999 Joint Statistical Meetings of IMS-ASA-ENAR/WNAR*, Baltimore, MD, August 1999.
- C80. “How well does the Shannon codebook compress?” *1999 Canadian Information Theory Workshop*, Kingston, Ontario, June 1999.
- C81. “Asymptotically optimal lossy Lempel-Ziv coding.” *1998 IEEE International Symposium on Information Theory*, MIT, Cambridge, MA, August 1998.
- C82. “Generalized waiting times and efficient lossy coding for memoryless sources.” *1998 IEEE Information Theory Workshop*, San Diego, CA, February 1998.
- C83. “Second-order analysis of lossless and lossy versions of Lempel-Ziv codes.” **Invited paper**, *31st Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 1997.
- C84. “The asymptotics of waiting times between stationary processes.” *1997 Joint Statistical Meeting of IMS-ASA-ENAR/WNAR*, Anaheim, CA, August 1997.
- C85. “On the distribution of recurrence times and the exact asymptotics of Lempel-Ziv coding.” *1997 IEEE International Symposium on Information Theory*, Ulm, Germany, June–July 1997.
- C86. “Two refinements to Shannon’s source coding theorem.” *1997 IEEE International Symposium on Information Theory*, Ulm, Germany, June–July 1997.
- C87. “Progressive classification in the compressed domain for large EOS satellite databases,” with V. Castelli, C.S. Li and J.J. Turek. *1996 IEEE International Conference on Acoustics, Speech and Signal Processing*, Atlanta, GA, May 1996.

- C88. “Stationary entropy estimation via string matching,” with Yu.M. Suhov. *The Data Compression Conference DCC 96*, Snowbird, UT, April 1996.
- C89. “Prefixes and the entropy rate for long-range sources,” with Yu.M. Suhov. *1994 IEEE International Symposium on Information Theory*, Trondheim, Norway, June 1994.

SELECTED INVITED TALKS

- “*Bayesian Suffix Trees and Context Tree Weighting.*”
Plenary talk, International Zurich Seminar on Communications, Zurich, Switzerland, Feb 2018.
- “*Context Trees and Model Selection for Discrete Time Series.*”
2016 IEEE Information Theory Workshop, Cambridge, UK, September 2016.
- “*Model Selection Algorithms for Discrete Time Series.*”
Keynote lecture, Athens Colloquium on Algorithms & Complexity, Athens, Greece, Aug 2016.
- “*Testing Temporal Causality and Estimating Directed Information.*”
Nexus of Information and Computation Theories, Paris, France, March 2016.
- “*Small Trees & Long Memory: Bayesian Inference for Discrete Time Series.*”
Plenary talk, 16th Conference of the ASMDA Intern’al Society, Piraeus, Greece, July 2015.
- “*Finding Structure in Data: Bayesian Inference for Discrete Time Series.*”
Stochastic Methods in Finance and Physics Workshop, Heraklion, Greece, July 2015.
- “*Causality and Directed Information Estimation as a Hypothesis Test.*”
Workshop on Information-Theoretic Methods in Science & Engineering, Denmark, June 2015.
- “*Bayesian Model Selection and Inference for Discrete Time Series.*”
1st Workshop on Cognition and Control, University of Florida, February 2013.
- “*Entropy Inequalities via Additive Combinatorics.*”
 Mathematics Colloquium, **University of Athens**, Athens, June 2012.
- “*Sumset Differential Entropy Bounds.*”
International Zurich Seminar on Communications, Zurich, Switzerland, March 2012.
- “*Differential Entropy Sumset Bounds.*”
4th EPFL-UMLV International Workshop on Information Theory, Paris, France, Dec 2010.
- “*Geometric Ergodicity and the Spectral Gap of Non-reversible Markov Chains.*”
Fifth International Workshop on Applied Probability, Madrid, Spain, July 2010.
- “*Sumset Entropy Theory.*”
Information Theory Summer School, Chania, Greece, July 2010.
- “*Non-Asymptotics: Probability, Entropy and Additive Combinatorics.*”
Invited Lecture Series, Statistics Dept., Columbia Univ., June 2010.
- “*Superposition Codes for Gaussian Vector Quantization.*”
2010 IEEE Information Theory Workshop, Cairo, Egypt, January 2010.
- “*Which Spectrum?*”
Athens Workshop on MCMC Convergence and Estimation, Athens, Greece, September 2009.
- “*Three Non-Asymptotic Results in Source Coding and Probability.*”
Plenary talk, Workshop on Info-Theoretic Methods in Sci. & Eng’ng, Finland, Aug 2009.

- “Efficient Random Codebooks for Lossy Compression of Binary Data.”
2009 IEEE Information Theory Workshop, Volos, Greece, June 2009.
- “Waiting and Matching: Patterns and Entropy.”
 Short course at **Greek Stochastics α'** , Lefkada, Greece, August 2009.
- “Variance Reduction via Control Variates in MCMC Estimation.”
 Statistics Seminar, **Yale University**, April 2009.
- Information-Theoretic Ideas in Poisson Approximation and Estimation.*
Interface between Information Theory & Estimation Workshop, Princeton U., April 2009.
- “Control Variates for Reversible MCMC Samplers.”
 Statistics Seminar, **Columbia University**, February 2009.
- “Recurrence, Waiting Times, and Pattern-Matching in Information Theory.”
 Short course at **EURANDOM Workshop**, Eindhoven, The Netherlands, November 2008.
- “An Information-Theoretic Development of Compound Poisson Approximation.”
2nd EPFL-UMLV International Workshop on Entropy, Lausanne, Switzerland, Sept 2008.
- “Entropy and the ‘Compound’ Law of Small Numbers.”
Workshop on Information-Theoretic Methods in Science & Engineering, Finland, Aug 2008.
- “Counting the Primes Using Entropy.”
2008 IEEE Information Theory Workshop, Porto, Portugal, May 2008.
- “Computable Exponential Bounds for Markov Chains and MCMC Simulation.”
 Probability Seminar, **Columbia University**, December 2007.
- “Exponential Bounds and Stopping Rules for MCMC and General Markov Chains.”
First ValueTools Conference, Pisa, Italy, October 2006.
- “Information-Theoretic Ideas in Poisson Approximation and Concentration,”
LMS/EPSRC Meeting on Stochastic Stability, Edinburgh, UK, September 2006.
- “Entropy Estimation: Simulation, Theory and a Case Study.”
2006 IEEE Information Theory Workshop, Punta del Este, Uruguay, March 2006.
- “From Poisson Approximation to Compound Poisson Concentration via Entropy.”
1st EPFL-UMLV International Workshop on Entropy, Lausanne, Switzerland, February 2006.
- “Combining Information from Different Sources: Some Surprising Phenomena.”
10th Panhellenic Conference on Informatics, Volos, Greece, Nov 2005.
- “Sobolev Inequalities, Poisson Approximation and Concentration.”
HERCMA Conference 2005, Athens, Greece, September 2005.
- “A Statistical Foundation for Lossy Data Compression.”
 Telecommunications Forum, **Telecom Research Centre & Vienna Univ of Technology**, Dec 2004.
- “Poisson Approximation and Poisson Concentration Via Entropy.”
Swiss Probability Seminar, Bern, Switzerland, November 2004.
- “Poisson Approximation Via Entropy.”
 Mathematics Seminar, **Univ of Illinois, Urbana-Champaign**, June 2004.
- “Entropy, Compound Poisson Approximation and Log-Sobolev Inequalities.”
 Statistics Seminar, **University of Chicago**, June 2004.

- “*Investment and Data Compression: Universal Portfolios.*”
Summer School on Financial Mathematics, **Athens University**, Nafplio, Greece, July 2004.
- “*Large Deviations, Multiplicative Ergodicity and Spectral Theory for Markov Chains.*”
Joint Probability and Applied Math Seminar, **Stanford University**, October 2003.
- “*Limit Theorems and Some Spectral Theory for Geometrically Ergodic Markov Processes.*”
Statistics Seminar, **University of Chicago**, February 2003.
- “*Unified Error Exponents: Hypothesis Testing, Data Compression & Measure Concentration.*”
Barcelona Conference on Stochastic Inequalities and Their Applications, Spain, June 2002.
- “*Statistical Lossy Data Compression.*”
Symbol Technologies Lecturer, Brooklyn Polytechnic, ECE Department, March 2002.
- “*Limit Theorems and Some Spectral Theory for Geometrically Ergodic Markov Processes.*”
Probability Seminar, **Columbia University**, March 2002.
- “*MDL Ideas in Lossy Data Compression.*”
MSRI Information Theory Workshop, Berkeley, CA, March, 2002.
- “*On the Convergence of Geometrically Ergodic Markov Chains.*”
Joint Statistics Colloquium/Probability Seminar **Stanford University**, February 2002.
Purdue University, October 2001.
- “*Probabilistic Aspects of Pattern Matching in Genetics and in Data Compression.*”
Bioinformatics/Statistical Genomics Seminar, **Purdue University**, October 2001
- “*On the Role of Memory in Data Compression.*”
Communications Seminar, **Univ of Illinois, Urbana-Champaign**, October 2001.
- “*Limit Theorems and Some Spectral Theory for Geometrically Ergodic Markov Processes.*”
Plenary talk, Conference on Stochastic Processes & Applications, Cambridge, UK, July 2001.
- “*On Rate-Distortion Theory as a Convex Selection Problem.*”
38th Annual Conference on Communication, Control & Computing, Allerton, October 2000.
- “*Probabilistic Phenomena in Data Compression.*”
Sixth International Seminar on the Analysis of Algorithms, Poland, July 2000.
- “*Model Selection via Rate-Distortion Theory.*”
34th Annual Conference on Information Sciences and Systems, Princeton, March 2000.
- “*How Well Can We Compress?*”
Network Modeling and Control Seminar, **Univ of Illinois, Urbana-Champaign**, February 2000.
- “*Measure Concentration, Combinatorial Optimization and Data Compression.*”
Statistics Seminar, **Cambridge University**, July 1999.
- “*Combinatorial Optimization, Measure Concentration and Data Compression.*”
Joint IEOR – Management Science Colloquium, **Columbia University**, April 1999.
- “*How Fast Can We compress?*”
Networking and Communications Seminar, **University of California, Berkeley**, February 1999.
- “*Sphere-Packing Questions with Probabilistic Answers.*”
Probability and Stochastic Processes Seminar, **Stanford University**, February 1999.
- “*Waiting Times, String Matching and Data Compression.*”
Statistics Seminar, **Cambridge University**, July 1998.

“An Implementable Version of Lossy Lempel-Ziv Coding that is Compression-Optimal.”

Research Seminar, **Hewlett-Packard Research Laboratories**, Palo Alto, June 1998.

“Pattern Recurrence in Stationary Processes.”

Statistics Colloquium, **University of California, Berkeley**, March 1998.

“Efficient Universal Data Compression.”

Networking and Communications Seminar, **University of California, Berkeley**, February 1998.

“Second-Order Analysis of Lossless and Lossy Versions of Lempel-Ziv Codes.”

31st Asilomar Conference on Signals, Systems and Computers, November 1997.

“Recurrence and the Entropy of Stationary Processes.”

Statistics Seminar, **Cambridge University**, August 1996.

AWARDS, DISTINCTIONS

IEEE FELLOW

Elevated to the grade of Fellow in 2011.
 “*For contributions to data compression*”.

MARIE CURIE FELLOW

International Outgoing Fellowship, Marie Curie Program (EU), entitled *Control Variates for Markov Chain Monte Carlo Variance Reduction*, 2009 – 2011.

HONORARY MASTER OF ARTS DEGREE, AD EUNDEM

Awarded by Brown University, May 2005.

SLOAN RESEARCH FELLOW

By the Sloan Foundation, 2004 – 2006.

MANNING ASSISTANT PROFESSOR

Endowed assistant professorship, awardee by Brown University, October 2002.

PLENARY SPEAKER

International Zurich Seminar on Information and Communication
 Zurich, Switzerland, February 2018.

16th Conference of the ASMDA International Society
 Piraeus, Greece, July 2015.

International Workshop on Information-Theoretic Methods in Science and Engineering
 Tampere, Finland, August 2009.

2002 Symbol Technologies Lecturer
 Brooklyn Polytechnic, ECE Department, March 2002.

Conference on Stochastic Processes and their Applications
 Cambridge, UK, July 2001.

TEACHING FOR TOMORROW AWARD

Received (Spring 2000) the annual Purdue Teaching for Tomorrow Award, which “recognizes young faculty members for their commitment to and accomplishments in teaching and student learning.”

RESEARCH FUNDING, GRANTS

POSIMARK ASSOCIATES GRANT

Research grant awarded by Posimark Associates S.L. (Barcelona, Spain). *An investigation of the applicability of variable-length contexts for use in predictive algorithms in finance*, 2016. [~Euro 6,000].

EU-NSRF GRANTS [THALES]

Investigator in three research grant programs, CROWN, DISCO and SWINCOM, funded by the European Union (European Social Fund ESF) and by Greek national funds through the operational program “Education and Lifelong Learning of the National Strategic Reference Framework (NSRF) Research Funding.” 2012 – 2015. [~Euro 2,000,000].

MARIE CURIE FELLOWSHIP

International Outgoing Fellowship, Marie Curie Program (EU), entitled *Control Variates for Markov Chain Monte Carlo Variance Reduction*, 2009 – 2011. [~Euro 200,000].

AUEB “BASIC RESEARCH” GRANT

AUEB Basic Research (PEVE) grant entitled *Simulation, computational learning and hypothesis testing: Theory and algorithms for efficient statistical computation*, 2009 – 2010. [~Euro 10,000].

EU RESEARCH GRANT

Investigator on European Union research grant entitled *Novel issues and techniques for the analysis of hyperlink structure on the WWW graph*, 2006 – 2008. [~\$20,000].

SLOAN RESEARCH FELLOWSHIP

Awarder by the Sloan Foundation, March 2004. [~\$40,000].

NSF RESEARCH GRANT

PI on NSF research grant entitled *Efficient lossy data compression via statistical model selection*, July 2000 – June 2004, under the Communications Research Program. [~\$100,000].

USDA RESEARCH GRANT

Co-PI with R.W. Doerge and L.M. McIntyre (Genomics, Purdue Univ.) on four-year USDA grant entitled *Development of statistical methodology for agricultural genomics*, beginning October 1, 2000, under the Initiative for Future Agriculture and Food Systems (IFAFS) Program. [~\$1,000,000].

SUMMER FACULTY GRANT

Awarded by the Purdue Research Foundation. Summer support for 1999.

PURDUE GLOBAL INITIATIVE FACULTY GRANT

Miscellaneous research support for the “Purdue Mini-Seminar on Information Theory,” held in April–May 1999. Awarded by the Purdue Research Foundation. [\$10,000].

RESEARCH GRANT

Student support from the Purdue Research Foundation, for a research student for two years. [~\$25,000].

PROFESSIONAL ACTIVITIES

ASSOCIATE EDITOR *IEEE Transactions on Information Theory*, At Large, 2017–present

EDITORIAL ADVISORY BOARD *Lecture Notes in Mathematics* series, Springer, 2013–present

LABORATORY DIRECTOR *Theory, Economics and Systems Lab*, Department of Informatics, Athens University of Economics & Business, 2013–present

ASSOCIATE EDITOR *Acta Applicandae Mathematicae*, published by Springer, 2010–present

ASSOCIATE EDITOR *IEEE Transactions on Information Theory*, At Large, 2011–2013

EDITORIAL BOARD *Foundations and Trends in Communications and Information Theory*, 2012–present

EDITOR-IN-CHIEF (interim) *IEEE Transactions on Information Theory*, June–November 2013

ASSOCIATE EDITOR *IEEE Transactions on Information Theory*, Shannon Theory, 2007–2010

EDITORIAL COMMITTEE *Quarterly of Applied Mathematics*, published by the American Mathematical Society, 2004–present

EDITORIAL BOARD *Entropy* Journal (Electronic) ISSN 1099-4300, 1999–2008.

URL: www.mdpi.org/entropy

IEEE INFORMATION THEORY T.M. COVER DISSERTATION AWARD

Member of the committee, which is responsible for this annual award to the author of an outstanding doctoral dissertation (2016-17)

IEEE INFORMATION THEORY SOCIETY BOARD OF GOVERNORS

Board of Governors Member (2013)

IEEE INFORMATION THEORY SOCIETY AWARDS COMMITTEE

Member of the committee, which is responsible, among others, for the *Information Theory Society Best Paper Award*, the *Joint Information Theory-Communications Society Best Paper Award* and the *ISIT Student Paper Award* (2009-10, 2010-11)

CONFERENCE TECHNICAL PROGRAM CO-CHAIR

IEEE International Symposium on Information Theory (2016)

IEEE Workshop on Information Theoretic Methods in Science and Engineering (2008, 2009, 2010)

IEEE Information Theory Workshop (2009)

CONFERENCE GENERAL CO-CHAIR

Entropy Power Inequalities, American Institute of Mathematics Workshop (2017)

Athens Probability Colloquium (2012, 2014, 2015, 2016, 2017, 2018)

Greek Stochastics (α' 2009, β' 2010)

Athens Workshop on MCMC Convergence and Estimation (2009)

Purdue Mini-Seminar on Analytic Information Theory (1999)

CONFERENCE PROGRAM COMMITTEE

IEEE Communication Theory Symposium of the *IEEE Int. Conference on Communications* (2010)

IEEE International Symposium on Information Theory (2008, 2009, 2010, 2011, 2012, 2013, 2018)

IEEE Int. Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (2009)

IEEE Information Theory Workshop (2005, 2006, 2007, 2008, 2010, 2012, 2015, 2016)

Int. Conference on Performance Evaluation Methodologies & Tools (ValueTools 2006, 2007, 2008)

Information Theory and Statistical Learning Conference (2008)

INVITED SESSION ORGANIZER at various IEEE Information Theory Workshops (IEEE ITW), the Conference on Information Sciences and Systems (CISS), and the International Zurich Seminar on Communications (IZS)

FELLOW of the Institute of Electrical and Electronic Engineers (IEEE)

MEMBER of the American Mathematical Society (AMS); Institute of Electrical and Electronic Engineers (IEEE) – Information Theory Society; Institute of Mathematical Statistics (IMS); London Mathematical Society (LMS); Mathematical Association of America (MAA); Society for Industrial and Applied Mathematics (SIAM)

TEACHING

CLASSES

Information Theory

Several undergraduate/graduate courses; introduction to information theory; channel coding and error-correcting codes, data compression, quantization, image/video compression algorithms, information theory and probability, multiterminal information theory, communication networks

Stochastic Processes

Graduate course; non-measure theoretic; random walks, renewal theory, Markov processes in discrete and continuous time

Elementary Probability and Statistics

Undergraduate introduction to the fundamentals of probability and statistics for non-majors

Communications and Signal Processing

Two undergraduate courses on fundamentals of digital communications and signal processing: Linear filters, frequency response, Fourier analysis, sampling, reconstruction, Nyquist's criterion, power spectra, hypothesis testing, Wiener filtering, detection, quantization

Graduate Probability

Several graduate courses in measure-theoretic probability; measure theory, limit theorems, martingales, weak convergence, Brownian motion

Applied Probability

Two courses on probabilistic models in communications, networks, and computer science; randomized algorithms and probabilistic analysis; the probabilistic method; queueing theory and stochastic networks

Graduate Statistics

Several graduate courses in theoretical and applied statistics; classical and Bayesian statistics; modeling, inference, model-selection; simulation and Markov chain Monte Carlo methods

Operations Research

Undergraduate/graduate course; optimization theory and algorithms, dynamic programming and probabilistic dynamic programming, Markov chain Monte Carlo methods, Markov decision problems, scheduling, applications in finance, business and simulation

GRADUATE STUDENTS

Principal advisor to one graduate student; co-advisor for three graduate students; member of the Ph.D. committee for ten graduate students

PERSONAL INFORMATION

Date/Place of Birth: January 24, 1972, Athens, Greece.

Nationality: Greek.

Updated July 7, 2017.