Curriculum Vitae
(Shortened Version)

IGAL SASON

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PERSONAL DETAILS

Full name:	Igal Sason
Nationality:	Israeli
Birth:	May 1969, Haifa, Israel.
Marital status:	Married + 2.
Work Address:	Viterbi Faculty of Electrical and Computer Engineering (ECE), Technion-Israel Institute of Technology, Haifa 3200003, Israel.
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ACADEMIC DEGREES

Ph.D., 2001:	Department of Electrical Engineering, Technion, Israel.
Master, 1999:	Department of Electrical Engineering, Technion, Israel (upon acceptance to the direct Ph.D. track).
B.Sc., 1992:	Department of Electrical Engineering, Technion, Israel (cum laude).

ACADEMIC APPOINTMENTS

07/2024–present	Incumbent of the *Joseph and Bessie Feinberg Academic Chair*, Technion, Israel.
10/2021–present	Professor, secondary affiliation at the Faculty of Mathematics, Technion, Haifa, Israel.
10/2017–present	Professor, Andrew and Erna Viterbi Faculty of Electrical and Computer Engineering (ECE), Technion, Haifa, Israel.
04/2009–09/2017	Associate Professor (with tenure), Department of Electrical Engineering, Technion, Haifa, Israel.
10/2003–03/2009	Senior Lecturer (tenure track), Department of Electrical Engineering, Technion, Haifa, Israel.
10/2001–09/2003	Scientific Collaborator (post-doc), School of Computer and Communication Sciences, Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland.
03/1998–09/2001	Graduate student (at the direct track to PhD) at the Electrical Engineering Department, Technion, Haifa, Israel.

RESEARCH INTERESTS

- Information theory: Shannon theory, information measures, and zero-error information theory.
- Algebraic, extremal, and probabilistic combinatorics with connections to information theory.
- Concentration-of-measure inequalities in information theory and applications.
- Coding theory: codes on graphs, performance bounds, and performance-complexity tradeoffs.

EDITORIAL ACTIVITIES IN PEER-REVIEWED JOURNALS

1. *Editor-in-Chief of the IEEE Transactions on Information Theory* (1.1.2020 – 30.6.2021).
2. *Executive Editor of the IEEE Transactions on Information Theory* (1.7.2018 – 31.12.2019).
3. *Associate Editor At Large of the IEEE Transactions on Information Theory* (1.5.2014 – 31.12.2017).
4. *Associate Editor for Coding Theory of the IEEE Transactions on Information Theory* (1.2.2008 – 1.2.2011).
5. *Guest Editor for the AIMS Mathematics journal* (AIMS Press) of a special issue entitled *Mathematical Foundations of Information Theory* (1.7.2023 - 31.10.2025).
6. *Guest Editor of the Entropy journal* (MDPI) for the following special issues:
   (a) Extremal and Additive Combinatorial Aspects in Information Theory (1.6.2022 – 31.8.2024).
   (b) Divergence Measures: Mathematical Foundations and Their Applications in Information-Theoretic and Statistical Problems (1.7.2019 – 1.6.2021).
   (c) Probabilistic Methods in Information Theory, Hypothesis Testing, and Coding (1.5.2018 – 30.6.2019).

ACADEMIC HONORS

1. Incumbent of the *Joseph and Bessie Feinberg Academic Chair* at the Technion, effective from July 2024.
2. *Fellow of the Institute of Combinatorics and its Applications (ICA)*, effective from January 2024.
3. *IEEE Fellow of the Information Theory Society*, effective from January 2019.
4. Fellowships as a young faculty member, department of Electrical Engineering at the Technion:
   - *Alon fellowship*, 2004–2006.
   - *Horev fellowship for Leaders in Science and Technology*, 2004–2006.
5. July 2003: Co-recipient of the *2003 IEEE Information Theory Society and the IEEE Communications Society joint paper award* for the paper: S. Shamai and I. Sason, "Variations on the Gallager bounds, connections, and applications," *IEEE Trans. on Information Theory*, vol. 48, pp. 3029–3051, December 2002.

LIST OF SCIENTIFIC PUBLICATIONS

Book:

M. Raginsky and I. Sason, *Concentration of Measure Inequalities in Information Theory, Communications and Coding: Third Edition*, (261 pages, ISBN: 978-1-68083-534-2), *Foundations and Trends in Communications and Information Theory*, NOW Publishers, Delft, Netherlands, 2019.

Edited Books:

Mathematical Foundations of Information Theory, (400 pages, ISSN: 2473-6988), edited by I. Sason, *AIMS Press*. American Institute of Mathematical Sciences in collaboration with Shandong Normal University, 2026.

Divergence Measures: Mathematical Foundations & Applications in Information-Theoretic and Statistical Problems, (256 pages, ISBN: 978-3-0365-4332-1), edited by I. Sason, *Entropy*, MDPI, Basel, Switzerland, 2022.

Published Peer-Reviewed Journal Papers

1. I. Sason and S. Shamai, "Bounds on the error probability for block and turbo-block codes," *Annals of Telecommunications*, vol. 54, no. 3–4, pp. 183–200, March–April 1999.
2. M. Peleg, I. Sason, S. Shamai and A. Elia, "On interleaved, differentially encoded convolutional codes," *IEEE Transactions on Information Theory*, vol. 45, no. 7, pp. 2572–2582, November 1999.
3. I. Sason and S. Shamai, "Improved upper bounds on the ML decoding error probability of parallel and serial concatenated turbo codes via their ensemble distance spectrum," *IEEE Transactions on Information Theory*, vol. 46, no. 1, pp. 24–47, January 2000.
4. I. Sason and S. Shamai, "Improved upper bounds on the ensemble performance of ML decoded low-density parity-check codes," *IEEE Communications Letters*, vol. 4, no. 3, pp. 89–91, March 2000.
5. I. Sason and S. Shamai, "On union bounds for random serially concatenated turbo codes with maximum likelihood decoding," *European Transactions on Telecommunications* (ETT), vol. 11, no. 3, pp. 271–282, May–June 2000.
6. I. Sason and S. Shamai, "On improved bounds on the decoding error probability of block codes over interleaved fading channels, with applications to turbo-like codes," *IEEE Transactions on Information Theory*, vol. 47, no. 6, pp. 2275–2299, September 2001.
7. S. Shamai and I. Sason, "Variations on Gallager bounds with some applications," *Physica A: Statistical Mechanics and Its Applications*, Elsevier Science, vol. 302, no. 1-4, pp. 22-34, December 2001.
8. S. Shamai and I. Sason, "Variations on the Gallager bounds, connections, and applications," *IEEE Transactions on Information Theory*, vol. 48, pp. 3029–3051, December 2002. (This paper was awarded the *2003 IEEE Information Theory Society and IEEE Communications Society joint paper award*).
9. I. Sason, E. Telatar and R. Urbanke, "On the asymptotic input-output weight distributions and thresholds of convolutional and turbo-like encoders," *IEEE Transactions on Information Theory*, vol. 48, no. 12, pp. 3052–3061, December 2002.

10. I. Sason and R. Urbanke, "Parity-check density versus performance of binary linear block codes over memoryless symmetric channels," *IEEE Transactions on Information Theory*, vol. 49, no. 7, pp. 1611–1635, July 2003.

11. I. Sason, S. Shamai and D. Divsalar, "Tight exponential upper bounds on the ML decoding error probability of block codes over fully interleaved fading channels," *IEEE Transactions on Communications*, vol. 51, no. 8, pp. 1296–1305, August 2003.

12. I. Sason and R. Urbanke, "Complexity versus performance of capacity-achieving irregular repeat-accumulate codes on the erasure channel," *IEEE Transactions on Information Theory*, vol. 50, no. 6, pp. 1247–1256, June 2004.

13. I. Sason, "On achievable rate regions for the Gaussian interference channel," *IEEE Transactions on Information Theory*, vol. 50, no. 6, pp. 1345–1356, June 2004.

14. H. D. Pfister, I. Sason and R. Urbanke, "Capacity-achieving ensembles for the binary erasure channel with bounded complexity," *IEEE Transactions on Information Theory*, vol. 51, no. 7, pp. 2352–2379, July 2005.

15. I. Sason and S. Shamai, "Performance analysis of linear codes under maximum-likelihood decoding: A Tutorial," *Foundations and Trends in Communications and Information Theory*, vol. 3, no. 1–2, pp. 1–222, July 2006.

16. G. Wiechman and I. Sason, "Parity-check density versus performance of binary linear block codes: New bounds and applications," *IEEE Transactions on Information Theory*, vol. 53, no. 2, pp. 550–579, February 2007.

17. I. Sason and G. Wiechman, "On achievable rates and complexity of LDPC codes over parallel channels: Bounds and applications," *IEEE Transactions on Information Theory*, vol. 53, no. 2, pp. 580–598, February 2007.

18. M. Twitto and I. Sason, "On the error exponents of some improved tangential-sphere bounds," *IEEE Transactions on Information Theory*, vol. 53, no. 3, pp. 1196–1210, March 2007.

19. M. Twitto, I. Sason and S. Shamai, "Tightened upper bounds on the ML decoding error probability of binary linear block codes," *IEEE Transactions on Information Theory*, vol. 53, no. 4, pp. 1495–1510, April 2007.

20. H. D. Pfister and I. Sason, "Accumulate-repeat-accumulate codes: Capacity-achieving ensembles of systematic codes for the erasure channel with bounded complexity," *IEEE Transactions on Information Theory*, vol. 53, no. 6, pp. 2088–2115, June 2007.

21. I. Sason and I. Goldenberg, "Coding for parallel channels: Gallager bounds and applications to turbo-like codes," *IEEE Transactions on Information Theory*, vol. 53, no. 7, pp. 2394–2428, July 2007.

22. G. Wiechman and I. Sason, "An improved sphere-packing bound for finite-length codes over memoryless symmetric channels," *IEEE Transactions on Information Theory*, vol. 54, no. 5, pp. 1962–1990, May 2008.

23. E. Hof, I. Sason and S. Shamai, "Performance bounds for non-binary linear block codes over memoryless symmetric channels," *IEEE Transactions on Information Theory*, vol. 55, no. 3, pp. 977–996, March 2009.

24. I. Sason and G. Wiechman, "Bounds on the number of iterations for LDPC-like code ensembles over the binary erasure channel," *IEEE Transactions on Information Theory*, vol. 55, no. 6, pp. 2602–2617, June 2009.

25. I. Sason, "On universal properties of capacity-approaching LDPC ensembles," *IEEE Transactions on Information Theory*, vol. 55, no. 7, pp. 2956–2990, July 2009.

26. E. Hof, I. Sason and S. Shamai, "Performance bounds for erasure, list and feedback schemes with linear block codes," *IEEE Transactions on Information Theory*, vol. 56, no. 8, pp. 3754–3778, August 2010.

27. I. Sason and B. Shuval, "On universal LDPC code ensembles on memoryless symmetric channels," *IEEE Transactions on Information Theory*, vol. 57, no. 8, pp. 5182–5202, August 2011.

28. E. Hof, I. Sason, S. Shamai and C. Tian, "Capacity-achieving polar codes for arbitrarily-permuted parallel channels," *IEEE Transactions on Information Theory*, vol. 59, no. 3, pp. 1505–1516, March 2013.

29. I. Sason, "On tightened exponential bounds for discrete time, conditionally symmetric martingales with bounded jumps," *Statistics and Probability Letters*, vol. 83, no. 8, pp. 1928–1936, August 2013.

30. I. Sason, "Improved lower bounds on the total variation distance for the Poisson approximation," *Statistics and Probability Letters*, vol. 83, no. 10, pp. 2422–2431, October 2013.

31. M. Raginsky and I. Sason, "Concentration of measure inequalities in information theory, communications and coding," *Foundations and Trends in Communications and Information Theory*, vol. 10, no. 1–2, pp. 1–246, NOW Publishers, Delft, the Netherlands, October 2013.

32. I. Sason, "Entropy bounds for discrete random variables via maximal coupling," *IEEE Transactions on Information Theory*, vol. 59, no. 11, pp. 7118–7131, November 2013.

33. I. Sason, "Tight bounds on symmetric divergence measures and a refined bound for lossless source coding," *IEEE Transactions on Information Theory*, vol. 61, no. 2, pp. 701–707, February 2015.

34. M. Mondelli, H. Hassani, I. Sason and R. Urbanke, "Achieving Marton's region for broadcast channels using polar codes," *IEEE Transactions on Information Theory*, vol. 61, no. 2, pp. 783–800, February 2015.

35. I. Sason, "On the corner points of the capacity region of a two-user Gaussian interference channel," *IEEE Transactions on Information Theory*, vol. 61, no. 7, pp. 3682–3697, July 2015.

36. M. Raginsky and I. Sason, "Concentration of measure inequalities and their communication and information–theoretic applications," *IEEE Information Theory Society Newsletter*, vol. 65, no. 4, pp. 24–34, December 2015.

37. I. Sason, "On the Rényi divergence, joint range of relative entropies, and a channel coding theorem," *IEEE Transactions on Information Theory*, vol. 62, no. 1, pp. 23–34, January 2016.

38. M. A. Kumar and I. Sason, "Projection theorems for the Rényi divergence on α-convex sets," *IEEE Transactions on Information Theory*, vol. 62, no. 9, pp. 4924–4935, September 2016.

39. I. Sason and S. Verdú, "f-divergence inequalities," *IEEE Transactions on Information Theory*, vol. 62, no. 11, pp. 5973–6006, November 2016.

40. E. Ram and I. Sason, "On Rényi entropy power inequalities," *IEEE Transactions on Information Theory*, vol. 62, no. 12, pp. 6800–6815, December 2016.

41. I. Sason and S. Verdú, "Arimoto-Rényi conditional entropy and Bayesian M-ary hypothesis testing," *IEEE Transactions on Information Theory*, vol. 64, no. 1, pp. 4–25, January 2018.

42. I. Sason, "On f-divergences: integral representations, local behavior, and inequalities," *Entropy*, vol. 20, no. 5, paper 383, pp. 1–32, May 2018.

43. I. Sason and S. Verdú, "Improved bounds on lossless source coding and guessing moments via Rényi measures," *IEEE Transactions on Information Theory*, vol. 64, no. 6, pp. 4323–4346, June 2018.

44. I. Sason, "Tight bounds on the Rényi entropy via majorization with applications to guessing and compression," *Entropy*, vol. 20, no. 12, paper 896, pp. 1–25, November 2018.

45. I. Sason, "On data-processing and majorization inequalities for f-divergences with applications," *Entropy*, vol. 21, no. 10, paper 1022, pp. 1–80, October 2019.

46. N. Merhav and I. Sason, "An integral representation of the logarithmic function with applications in information theory," *Entropy*, vol. 22, no. 1, paper 51, pp. 1–22, December 2019.

47. T. Nishiyama and I. Sason, "On relations between the relative entropy and χ^2–divergence, generalizations and applications," *Entropy*, vol. 22, no. 5, paper 563, pp. 1–36, May 2020.

48. N. Merhav and I. Sason, "Some useful integral representations for information-theoretic analyses," *Entropy*, vol. 22, no. 6, paper 707, pp. 1–28, June 2020.

49. I. Sason, "A generalized information-theoretic approach for bounding the number of independent sets in bipartite graphs," *Entropy*, vol. 23, no. 3, paper 270, pp. 1–14, March 2021.

50. R. Graczyk and I. Sason, "On two-stage guessing," *Information*, vol. 12, no. 4, paper 159, pp. 1–20, April 2021.

51. I. Sason, "Information inequalities via submodularity, and a problem in extremal graph theory," *Entropy*, vol. 24, no. 5, paper 597, pp. 1–31, April 2022.

52. I. Sason, "Divergence measures: mathematical foundations and applications in information-theoretic and statistical problems," editorial paper, *Entropy*, vol. 24, no. 5, paper 712, pp. 1–5, May 2022.

53. I. Sason, "Observations on the Lovász ϑ-function, graph capacity, eigenvalues, and strong products," *Entropy*, vol. 25, no. 1, paper 104, pp. 1–40, January 2023.

54. I. Sason, "Observations on graph invariants with the Lovász ϑ-function," *AIMS Mathematics*, vol. 9, no. 6, pp. 15385–15468, April 2024.

55. I. Sason, N. Krupnik, S. Hamud, A. Berman, "On spectral graph determination," *Mathematics*, vol. 13, no. 4, paper 549, pp. 1–44, February 2025.

56. I. Sason, "On strongly regular graphs and the friendship theorem," *Mathematics*, vol. 13, no. 6, paper 970, pp. 1–21, March 2025.

57. I. Sason, "On H-intersecting graph families and counting of homomorphisms," *AIMS Mathematics*, vol. 10, no. 3, paper 290, pp. 6355–6378, March 2025.

58. I. Sason, "An example showing that Schrijver's ϑ-function need not upper bound the Shannon capacity of a graph," *AIMS Mathematics*, vol. 10, no. 7, paper 685, pp. 15294–15301, July 2025.

59. N. Lavi and I. Sason, "Advances in the Shannon capacity of graphs," *AIMS Mathematics*, special issue: Mathematical Foundations of Information Theory, vol. 1, no. 1, paper 111, pp. 2747–2796, January 2026.

60. I. Sason, "Mathematical foundations of information theory," editorial paper, *AIMS Mathematics*, special issue: Mathematical Foundations of Information Theory, vol. 11, no. 2, paper 132, pp. 3269–3274, February 2026.

61. I. Sason, "The Lovász local lemma: foundations and applications," *AIMS Mathematics* (topical section: Combinatorics and Graph Theory), vol. 11, no. 7, paper 798, pp. 19659–19715, July 2026.

62. I. Sason, "Shannon capacity and related graph invariants for lexicographic products," *Entropy*, vol. 28, no. 9, paper 994, pp. 1–33, September 2026.

63. N. Krupnik, I. Sason, and A. Berman, "On the transitivity of Gilbert graphs and their complements," *Graphs and Combinatorics*, vol. 42, no. 5, paper 68, pp. 873–904, October 2026.