

CURRICULUM VITAE OF JÁNOS KÖRNER

OFFICE:

Department of Computer Science,
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PERSONAL DATA:

born in Budapest, Hungary on November 30, 1946
married to Emanuela Fachini
father of Júlia Körner, born on October 1, 1979
citizen of Italy and Hungary

EDUCATION:

Degree in Mathematics, Loránd Eötvös University, Budapest, 1970
Advisor: Imre Csiszár
Language skills: fluent in English, French, German, Hungarian and Italian
Working knowledge of Russian

POSITIONS HELD:

Since 1970 member of the Information Theory Group at the Mathematical Institute of the Hungarian Academy of Sciences. In 1991 promoted to Senior Research Fellow.
November 1992–November 1993: Associate professor of Information Theory, Dept. Computer Science, University of Bologna, Italy
November 1993–November 1994: Associate professor of Information Theory, Dept. Computer Science, University of Rome “La Sapienza”, Italy
November 1994–November 1996: Professor of Information Theory, Dept. Computer Science, University of Salerno, Italy

November 1996–: Professor of Information Theory, Dept. Computer Science, University of Rome “La Sapienza”, Italy

VISITING POSITIONS:

1974: Visiting Assistant Professor, Dept. Mathematics, Ohio State University, Columbus, OH (3 months),

1980: Guest Lecturer, Dept. EE, Linköping University, Sweden (2 months),

1981–1983: Member of Technical Staff, Mathematics and Statistics Resesarch Center, Bell Laboratories, Murray Hill, NJ (2 years),

1987–1988: Visiting Professor, Dept. Computer Science, École Nationale Supérieure des Télécommunications, Paris, France (9 months)

1989–1990: Visiting Professor, Dept. Computer Science, University of Salerno, Italy (6 months),

April 1990: Visiting Scientist, Dept. Computer Science, Hebrew University, Israel (1 month),

August 1992–October 1992: Visiting Professor, Center for Discrete Structures in Mathematics, University of Bielefeld, Germany

September 2000: Visiting Scientist, Microsoft Research, Redmond, WA, USA

In the period of 2003 to 2016 Visiting Professor at Dept. Computer Science, École Nationale Supérieure des Télécommunications, (now Paris Tech) Paris, France during 1 to 2 months each year

EDITORIAL ACTIVITY:

1982—1986 and 2011–2014: Associate Editor for Shannon Theory, IEEE Transactions on Information Theory;

GRADUATE STUDENTS:

Gábor Simonyi, (1991) Budapest,

Giampaolo Greco, (1997) Rome

Blerina Sinimeri (2010) Rome

RESEARCH INTERESTS:

Information Theory, Combinatorics.

Special focus on Coding Theorems in the Shannon sense for multi-terminal source and channel networks, extremal problems for graph and hypergraphs, information-theoretic invariants in combinatorics and their applications in Computer Science.

AWARDS and DISTINCTIONS:

External member of the Hungarian Academy of Sciences (2010–)

Honorary member of the Rényi Institute of the Hungarian Academy of Sciences

Claude E. Shannon Award of the IEEE Information Theory Society, 2014

LIST OF PUBLICATIONS

1. A property of conditional entropy. *Studia Sci.Math.Hung.* 6 (1971), 355–359.
2. Coding of an information source having ambiguous alphabet and the entropy of graphs. *Transactions of the 6th Prague conference on Information Theory, etc., 1971*, Academia, Prague, (1973), 411–425
3. Common information is far less than mutual information. *Problems of Control and Information Theory* 2 (2)(1973), 149–162, (with Péter Gács)
4. A consistency problem of conditional distributions. *International Centre for Mechanical Sciences Int. Rept. No. 4*, Udine, April 1972
5. Two-step encoding of finite sources, *IEEE Trans. Inform. Theory* 19, Nov. 1973, 778–782, (with G. Longo)
6. Coding of finite sources with sum-type distortion, (1973) *Preprint*
7. An extension of the class of perfect graphs, *Studia Sci. Math. Hung.* 8 (1973), 405–409
8. On the connection between the entropies of input and output distributions of discrete memoryless channels, *Proceedings of the 5th Brasov Conference on Probability Theory, Brasov, 1974*. Editura Academiei, Bucuresti, 1977, 13–23, (with R. Ahlswede)
9. Source coding with side information and a converse for degraded broadcast channels, *IEEE Trans. Inform. Theory* 21, Nov. 1975, 629–637, (with R. Ahlswede)
10. On common information and related characteristics of correlated information sources, *Preprint*(1974), republished in 1995 as Tech. Rept. 95–003, Universität Bielefeld, (with R. Ahlswede)
11. Bounds on conditional probabilities with applications in multi-user communication, *Zeitschrift f. Wahrscheinlichkeitstheorie verw. Geb.* 34(1976), 157–179, (with P. Gács and R. Ahlswede)
12. Images of a set via two channels and their role in multi-user communication, *IEEE Trans. Inform. Theory* 23, Nov. 1977, 751–761, (with K. Marton)

13. Comparison of two noisy channels, In: *Topics in Information Theory, Coll. Math. Soc. J. Bolyai No. 16*, Ed. P. Elias and I. Csiszár, North Holland, Amsterdam 1977, 411–423, (with K. Marton)
14. General broadcast channels with degraded message sets, *IEEE Trans. Inform. Theory* 23, Jan. 1977, 60–64, (with K. Marton)
15. Some methods in multi-user communication, In: *Information Theory, New Trends and Open Problems*, Ed. G. Longo, Springer-Verlag, Wien 1976, 172–224
16. Broadcast channels with confidential messages, *IEEE Trans. Inform. Theory* 24, May 1978, 339–348, (with I. Csiszár)
17. Source networks with unauthorized users, *Journal of Combinatorics, Information and System Sciences*, 1(1), (1976), 25–40, (with I. Csiszár)
18. A new look at exponential error bounds for memoryless channels, *Preprint(1977)*, (pubblicato nel libro [23]), (with I. Csiszár and K. Marton)
19. Source networks and new information measures, In: *Colloques Internationaux du CNRS No. 276, Théorie de l'Information*, Paris 1977, 235–242
20. Reliability function of a DMC at rates above capacity, *IEEE Trans. Inform. Theory* 25, Jan. 1979, 82–85, (with G. Dueck)
21. How to encode the modulo 2 sum of binary sources, *IEEE Trans. Inform. Theory* 25, March 1979, 219–221, (with K. Marton)
22. Towards a general theory of source networks, *IEEE Trans. Inform. Theory* 26, March 1980, 155–165, (with I. Csiszár)
23. *Information Theory: Coding Theorems for Discrete Memoryless Systems*. Academic Press, New York, 1982 and Akadémiai Kiadó, Budapest, 1981, (460 pp), (with I. Csiszár)
24. Universally attainable error exponents for broadcast channels with degraded message sets, *IEEE Trans. Inform. Theory* 26, Nov. 1980, 670–679, (with A. Sgarro)
25. Graph decomposition: a new key to coding theorems, *IEEE Trans. Inform. Theory* 27, Jan. 1981, 5–12, (with I. Csiszár)

26. On the capacity of the arbitrarily varying channel for maximum probability of error, *Zeitschrift für Wahrscheinlichkeitstheorie verw. Geb.* 57(1981), 87–101, (with I. Csiszár)
27. About a combinatorial proof of the noisy channel coding theorem, In: *Multi-User Communication*, Ed. G. Longo, Springer-Verlag, Wien, 1982, 49–72
28. Many coding theorems follow from an elementary combinatorial lemma, In: *Third Czechoslovak-Soviet-Hungarian Seminar on Information Theory*, Liblice, June 23-27, 1980, 25–44, (with I. Csiszár)
29. Feedback does not effect the reliability function of a DMC at rates above capacity, *IEEE Trans. Inform. Theory* 28, Jan. 1982, 92–93, (with I. Csiszár)
30. Odd and even Hamming spheres also have minimum boundary, *Discrete Math.*, 51(1984), 147–165, (with V. K. Wei)
31. Selecting non-consecutive balls arranged in many lines, *J. Comb. Theory*, A37(1984), 327–336, (with F. K. Hwang and V. K. Wei)
32. Successive encoding of correlated sources, *IEEE Trans. Inform. Theory* 29, May 1983, 390–395, (with T. Ericson)
33. OPEC or a basic problem in source networks, *IEEE Trans. Inform. Theory* 30, Jan. 1984, 68–77
34. Coding for a write-once memory, *Bell Syst. Tech. J.* 6(63), July-August 1984, 1089–1112, (with A. D. Wyner, J. K. Wolf and J. Ziv)
35. Addendum to "Odd and even Hamming spheres also have minimum boundary", *Discrete Math.* 62(1986), 105–106, (with V. K. Wei)
36. Fredman-Komlós bounds and information theory, *SIAM J. on Algebraic and Discrete Meth.*, 4(7), (1986), 560–570
37. A new approach to rate-distortion theory, *Rend. Ist. Matem. Univ. Trieste*, vol. XVIII.,(1986), 177–187, (with A. Sgarro)
38. New bounds for perfect hashing via information theory, *European J. Combinatorics*, 9(1988), 523–530, (with K. Marton)
39. Graphs that split entropies, *SIAM J. Discrete Math.*, 1(1),(1988), 71–79, (with K. Marton)

40. Random access communication and graph entropy, *IEEE Trans. Inform. Theory* **34**, March 1988, 312–314, (with K. Marton)
41. Relative Shannon capacity of graphs, *Preprint*(1987), (with K. Marton)
42. Entropy splitting for antiblocking corners and perfect graphs, *Combinatorica*, **1(10)**(1990), 27–40, (with I. Csiszár, L. Lovász, K. Marton and G. Simonyi)
43. Separating partition systems and locally different sequences, *SIAM J. Discrete Math.*, **1(3)**, (1988), 355–359, (with G. Simonyi)
44. On the capacity of uniform hypergraphs, *IEEE Trans. Inform. Theory*, **36**, Jan. 1990, 153–156, (with K. Marton)
45. Zero-error capacities and very different sequences, in: *Sequences. Combinatorics, Security and Transmission*, Advanced International Workshop on Sequences, Positano, Italy, June 1988, Springer, New York, 1990, R. M. Capocelli, ed., 144–155, (with G. Cohen and G. Simonyi)
46. Perfect couples of graphs, *Combinatorica*, **2(12)**(1992), 179–192, (with G. Simonyi and Z. Tuza)
47. A Sperner-type theorem and qualitative independence, *J. Comb. Theory, Ser. A*, **1(59)**(1992), 90–103, (with G. Simonyi)
48. Qualitative independence and Sperner problems for directed graphs, *J. Comb. Theory, Ser. A*, **61**(1992), 173–192, (with L. Gargano and U. Vaccaro)
49. Search problems for two irregular coins with incomplete feedback: the underweight model, *Disc. Appl. Math.*, **36**(1992), 191–197 (with L. Gargano and U. Vaccaro)
50. Sperner capacities, *Graphs and Combinatorics*, **9**, (1993), pp. 31–46, (with L. Gargano and U. Vaccaro)
51. Capacities: from information theory to extremal set theory, *J. Comb. Theory Ser. A*, **68**(1994), no. 2, pp. 296–315, (with L. Gargano and U. Vaccaro)
52. Intersection number and capacities of graphs, *Discrete Math.*, **142**(1995), pp. 169–184,
53. On the capacity of Boolean graph formulae, *Graphs and Combinatorics*, **11**(1995), pp. 29–48, (with L. Gargano and U. Vaccaro)

54. Triffence, *Studia Sci. Math. Hung.*, 30(1995), pp. 95–103, (with G. Simonyi)
55. Compressing inconsistent data, *IEEE Trans. Inform. Theory*, **40** no. 3, May 1994, pp. 706–715, (with M. Lucertini)
56. Different capacities of digraphs, *Graphs and Combinatorics*, 10(1994), pp. 105–121, (with A. Galluccio, L. Gargano and G. Simonyi).
57. Cancellative Pairs of Families, *European J. Comb.*, 16(1995), pp. 263–266, (with R. Holzman)
58. On the extremal combinatorics of the Hamming space, *J. Comb. Th., Ser. A*, **71**,no. 1, July 1995, pp. 112-126,
59. On clique growth in products of directed graphs, *Graphs and Combinatorics*, **14**(1998), pp. 25–36,
60. Tight packings of Hamming spheres, *J. Comb. Th., Ser. A*, **76**(1996), pp. 292–294, (with E. Fachini)
61. On the odd cycles of normal graphs, *Disc. Appl. Math.*, **94**(1999) pp. 161–169, (with C. De Simone)
62. Tiling Hamming space with few spheres, *J. Comb. Theory, Ser. A*, **80**(1997), pp. 388–393, (with H. D. L. Hollmann and S. Litsyn),
63. Colour number, capacity and perfectness of directed graphs, *Graphs and Combinatorics*, **16**(2000), pp. 389–398 (with E. Fachini)
64. Graph pairs and their entropies: modularity problems, *Combinatorica*, **220**(2000), pp. 227–240, (with G. Simonyi)
65. Zero-error information theory, *IEEE Trans. Inform. Theory*, **44** no. 6, October 1998, pp. 2207–2229, (with A. Orłitsky)
66. Compact representations of the intersection structure of families of finite sets, *SIAM J. on Discrete Mathematics*, **14**(2001) no. 2, pp. 181–192, (with A. Monti)
67. Relative capacity and dimension of graphs, *Transactions of the Fifth Czech-Slovak Symposium on Combinatorics, Graph Theory, Algorithms and Applications, Discrete Math.* **235**(2001), pp. 307–315, (with K. Marton),

68. String quartets in binary, *Combinatorics, Probability and Computing*, **9**(2000), no. 5, pp. 381–390, (with N. Alon and A. Monti)
69. Locally thin set families, *Combinatorics, Probability and Computing*, **9**(2000), no. 6, pp. 481–488, (with N. Alon and E. Fachini)
70. Self-similarity bounds for locally thin set families, *Combinatorics, Probability and Computing*, **10**(2001), no. 4, pp. 309–315, (with E. Fachini and A. Monti)
71. A better bound for locally thin set families, *J. Comb. Theory Ser. A*, **95**(2001), no. 2, pp. 209–218, (with E. Fachini and A. Monti)
72. A note on counting very different sequences, *Combinatorics, Probability and Computing*, **10**(2001), no. 6, pp. 501–504, (with E. Fachini)
73. Delta-systems and qualitative (in)dependence, *J. Comb. Theory Ser. A*, **99**(2002), pp. 75–84, (with A. Monti)
74. Codes for a long silence, *IEEE Trans. Inform. Theory*, submitted (with E. Fachini)
75. Local chromatic number and Sperner capacity *J. Comb. Theory Ser. B*, vol. 95(2005), pp. 101–117, (with C. Pilotto e G. Simonyi)
76. Pairwise colliding permutations and the capacity of infinite graphs, *SIAM J. on Discrete Mathematics*, 1, vol. 20(2006), pp. 203–212 (with C. Malvenuto)
77. On cancellative set families, *Combinatorics, Probability and Computing*, vol. 16(2007), pp. 767–773 (with B. Sinaireri)
78. Cross-intersecting couples of graphs, *J. Graph Theory*, vol. 56 no. 2(2007), pp. 105–112, (with E. Fachini)
79. Graph-different permutations, *SIAM J. on Discrete Mathematics*, 2, vol. 22(2008), pp. 489–499, (with C. Malvenuto and G. Simonyi)
80. On types of growth for graph-different permutations, *J. Comb. Theory Ser. A*, 116(2009), pp. 713–723, (with G. Simonyi and B. Sinaireri),
81. Permutation capacities of families of oriented infinite paths, *SIAM J. on Discrete Mathematics*, 2(24)(2010), pp. 441–456 (with G. Brightwell, G. Cohen and E. Fachini, M. Fairthorne, G. Simonyi and Á. Tóth)

82. Forbiddance and capacity, *Graphs and Combinatorics*, 4(27) (2011), pp.495–503 (with E. Fachini)
83. Skewincidence, *IEEE Transactions on Information Theory*, vol. 58(2011), no. 2, pp. 7313 - 7316 (with G. Cohen and E. Fachini)
84. *Information Theory: Coding Theorems for Discrete Memoryless Systems, 2nd, revised edition*. Cambridge University Press, 2011, (600 pp), (with I. Csiszár)
85. Families of graph–different Hamilton paths, *SIAM J. on Discrete Mathematics*, 26(2012), pp. 321-329, (with S. Messuti and G. Simonyi)
86. Connector families of graphs, *Graphs and Combinatorics*, vol. 30(2014) no. 6, pp. 1417–1425, (with G. Cohen and E. Fachini)
87. Degree–doubling graph families, *SIAM J. on Discrete Mathematics*, 27 (2013), no. 3, pp. 1575–1583 (with I. Muzi)
88. Zero–error capacity of binary channels with memory, *IEEE Trans. Information Theory*, vol. 63(2016), pp. 1–7, (with G. Cohen and E. Fachini)
89. Families of locally separated Hamilton paths, submitted (with A. Monti)
90. Path separation by short cycles, *J. of Graph Theory* , to appear. Version of Record online : 26 MAY 2016, DOI: 10.1002/jgt.22050 (with G. Cohen and E. Fachini)