Gasper Tkacik

List of Publications by Year
in descending order

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79 papers	4,339 citations	109137 35 h-index	138251 58 g-index
95 all docs	95 docs citations	95 times ranked	3908 citing authors

#	Article	IF	Citations
1	Information flow and optimization in transcriptional regulation. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 12265-12270.	3.3	232
2	Searching for Collective Behavior in a Large Network of Sensory Neurons. PLoS Computational Biology, 2014, 10, e1003408.	1.5	190
3	Information-based clustering. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 18297-18302.	3.3	177
4	Thermodynamics and signatures of criticality in a network of neurons. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 11508-11513.	3.3	169
5	Biased partitioning of the multidrug efflux pump AcrAB-TolC underlies long-lived phenotypic heterogeneity. Science, 2017, 356, 311-315.	6.0	168
6	The Formation of the Bicoid Morphogen Gradient Requires Protein Movement from Anteriorly Localized mRNA. PLoS Biology, 2011, 9, e1000596.	2.6	159
7	Optimal population coding by noisy spiking neurons. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 14419-14424.	3.3	145
8	Positional information, in bits. Proceedings of the National Academy of Sciences of the United States of America, 2013, 110, 16301-16308.	3.3	144
9	Decoding of position in the developing neural tube from antiparallel morphogen gradients. Science, 2017, 356, 1379-1383.	6.0	144
10	Information transmission in genetic regulatory networks: a review. Journal of Physics Condensed Matter, 2011, 23, 153102.	0.7	141
11	Optimal Decoding of Cellular Identities in a Genetic Network. Cell, 2019, 176, 844-855.e15.	13.5	132
12	Toward a unified theory of efficient, predictive, and sparse coding. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 186-191.	3.3	124
13	The dynamics of adaptation on correlated fitness landscapes. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 18638-18643.	3.3	117
14	Information Processing in Living Systems. Annual Review of Condensed Matter Physics, 2016, 7, 89-117.	5.2	116
15	Optimizing information flow in small genetic networks. Physical Review E, 2009, 80, 031920.	0.8	95
16	Information capacity of genetic regulatory elements. Physical Review E, 2008, 78, 011910.	0.8	94
17	Shaping bacterial population behavior through computer-interfaced control of individual cells. Nature Communications, 2017, 8, 1535.	5.8	92
18	The Role of Input Noise in Transcriptional Regulation. PLoS ONE, 2008, 3, e2774.	1.1	91

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19	The simplest maximum entropy model for collective behavior in a neural network. Journal of Statistical Mechanics: Theory and Experiment, 2013, 2013, P03011.	0.9	89
20	Optimizing information flow in small genetic networks. II. Feed-forward interactions. Physical Review E, 2010, 81, 041905.	0.8	84
21	Stimulus-dependent Maximum Entropy Models of Neural Population Codes. PLoS Computational Biology, 2013, 9, e1002922.	1.5	80
22	Natural Images from the Birthplace of the Human Eye. PLoS ONE, 2011, 6, e20409.	1.1	79
23	Dynamics of Transcription Factor Binding Site Evolution. PLoS Genetics, 2015, 11, e1005639.	1.5	78
24	Local statistics in natural scenes predict the saliency of synthetic textures. Proceedings of the National Academy of Sciences of the United States of America, 2010, 107, 18149-18154.	3.3	75
25	Precise physical models of protein-DNA interaction from high-throughput data. Proceedings of the National Academy of Sciences of the United States of America, 2007, 104, 501-506.	3.3	67
26	Positional Information, Positional Error, and Readout Precision in Morphogenesis: A Mathematical Framework. Genetics, 2015, 199, 39-59.	1.2	63
27	Intrinsic limits to gene regulation by global crosstalk. Nature Communications, 2016, 7, 12307.	5.8	63
28	Fast, Scalable, Bayesian Spike Identification for Multi-Electrode Arrays. PLoS ONE, 2011, 6, e19884.	1.1	61
29	Variance predicts salience in central sensory processing. ELife, 2014, 3, .	2.8	60
30	Distributed and dynamic intracellular organization of extracellular information. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 6088-6093.	3.3	58
31	Noise and Information Transmission in Promoters with Multiple Internal States. Biophysical Journal, 2014, 106, 1194-1204.	0.2	55
32	Statistical Thermodynamics of Natural Images. Physical Review Letters, 2013, 110, 018701.	2.9	49
33	High Accuracy Decoding of Dynamical Motion from a Large Retinal Population. PLoS Computational Biology, 2015, 11, e1004304.	1.5	49
34	Diffusion, dimensionality, and noise in transcriptional regulation. Physical Review E, 2009, 79, 051901.	0.8	47
35	Multiplexed computations in retinal ganglion cells of a single type. Nature Communications, 2017, 8, 1964.	5.8	47
36	Optimizing information flow in small genetic networks. III. A self-interacting gene. Physical Review E, 2012, 85, 041903.	0.8	46

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37	Discrete modes of social information processing predict individual behavior of fish in a group. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 10149-10154.	3.3	40
38	Statistical mechanics for metabolic networks during steady state growth. Nature Communications, 2018, 9, 2988.	5.8	38
39	Mechanisms of drug interactions between translation-inhibiting antibiotics. Nature Communications, 2020, 11, 4013.	5.8	37
40	Nonlinear decoding of a complex movie from the mammalian retina. PLoS Computational Biology, 2018, 14, e1006057.	1.5	35
41	The many bits of positional information. Development (Cambridge), 2021, 148, .	1.2	34
42	Learning Quadratic Receptive Fields from Neural Responses to Natural Stimuli. Neural Computation, 2013, 25, 1661-1692.	1.3	31
43	Optimizing information flow in small genetic networks. IV. Spatial coupling. Physical Review E, 2015, 91, 062710.	0.8	28
44	Maximum entropy models as a tool for building precise neural controls. Current Opinion in Neurobiology, 2017, 46, 120-126.	2.0	27
45	Evolution of new regulatory functions on biophysically realistic fitness landscapes. Nature Communications, 2017, 8, 216.	5.8	25
46	Evolutionary potential of transcription factors for gene regulatory rewiring. Nature Ecology and Evolution, 2018, 2, 1633-1643.	3.4	25
47	Error-Robust Modes of the Retinal Population Code. PLoS Computational Biology, 2016, 12, e1005148.	1.5	24
48	Learning probabilistic neural representations with randomly connected circuits. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 25066-25073.	3.3	24
49	Probabilistic models of individual and collective animal behavior. PLoS ONE, 2018, 13, e0193049.	1.1	22
50	Probabilistic models for neural populations that naturally capture global coupling and criticality. PLoS Computational Biology, 2017, 13, e1005763.	1.5	22
51	Stochastic Proofreading Mechanism Alleviates Crosstalk in Transcriptional Regulation. Physical Review Letters, 2015, 115, 248101.	2.9	21
52	Estimating information in time-varying signals. PLoS Computational Biology, 2019, 15, e1007290.	1.5	18
53	Nonequilibrium models of optimal enhancer function. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 31614-31622.	3.3	17
54	Statistical analysis and optimality of neural systems. Neuron, 2021, 109, 1227-1241.e5.	3.8	17

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55	Predicting bacterial promoter function and evolution from random sequences. ELife, 2022, 11, .	2.8	17
56	Transformation of Stimulus Correlations by the Retina. PLoS Computational Biology, 2013, 9, e1003344.	1.5	16
57	Separating intrinsic interactions from extrinsic correlations in a network of sensory neurons. Physical Review E, 2018, 98, .	0.8	15
58	Adaptation to Changes in Higher-Order Stimulus Statistics in the Salamander Retina. PLoS ONE, 2014, 9, e85841.	1.1	15
59	Retinal Metric: A Stimulus Distance Measure Derived from Population Neural Responses. Physical Review Letters, 2013, 110, 058104.	2.9	12
60	Beyond the French Flag Model: Exploiting Spatial and Gene Regulatory Interactions for Positional Information. PLoS ONE, 2016, 11, e0163628.	1.1	12
61	A General Approximation for the Dynamics of Quantitative Traits. Genetics, 2016, 202, 1523-1548.	1.2	10
62	Clustering of Neural Activity: A Design Principle for Population Codes. Frontiers in Computational Neuroscience, 2020, 14, 20.	1.2	9
63	A simple method for estimating the entropy of neural activity. Journal of Statistical Mechanics: Theory and Experiment, 2013, 2013, P03015.	0.9	8
64	Molecular noise of innate immunity shapes bacteria-phage ecologies. PLoS Computational Biology, 2019, 15, e1007168.	1.5	7
65	Extending the dynamic range of transcription factor action by translational regulation. Physical Review E, 2016, 93, 022404.	0.8	6
66	Cell Biology: NetworksNetwork , RegulationRegulation and PathwaysPathways. , 2009, , 719-741.		6
67	Minimal biophysical model of combined antibiotic action. PLoS Computational Biology, 2021, 17, e1008529.	1.5	4
68	Inferring the function performed by a recurrent neural network. PLoS ONE, 2021, 16, e0248940.	1.1	4
69	Decoding spike timing: The differential reverse-correlation method. BioSystems, 2008, 93, 90-100.	0.9	3
70	A Tight Upper Bound on Mutual Information. , 2019, , .		3
71	Optimal correlation codes in populations of noisy spiking neurons. BMC Neuroscience, 2009, 10, .	0.8	1
72	Natural scene statistics relate to perceptual salience of second-, third-, and fourth-order spatial correlations. BMC Neuroscience, 2013, 14, .	0.8	0

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73	Understanding regulatory networks requires more than computing a multitude of graph statistics. Physics of Life Reviews, 2016, 17, 166-167.	1.5	0
74	Neural Spikes, Identification from a Multielectrode Array. , 2015, , 1019-1023.		0
75	Minimal biophysical model of combined antibiotic action. , 2021, 17, e1008529.		0
76	Minimal biophysical model of combined antibiotic action. , 2021, 17, e1008529.		0
77	Minimal biophysical model of combined antibiotic action. , 2021, 17, e1008529.		0
78	Minimal biophysical model of combined antibiotic action. , 2021, 17, e1008529.		0
79	Cell Biology: Networks, Regulation and Pathways. , 2009, , 449-476.		0