Ilya Nemenman

List of Publications by Year
in descending order

67 papers	6,221 citations	257101 24 h-index	114278 63 g-index
83 all docs	83 docs citations	83 times ranked	7918 citing authors

#	Article	IF	Citations
1	Constrained brain volume in an efficient coding model explains the fraction of excitatory and inhibitory neurons in sensory cortices. PLoS Computational Biology, 2022, 18, e1009642.	1.5	13
2	Unsupervised Bayesian Ising Approximation for decoding neural activity and other biological dictionaries. ELife, 2022, 11, .	2.8	5
3	Statistical properties of large data sets with linear latent features. Physical Review E, 2022, 106, .	0.8	3
4	Latent Dynamical Variables Produce Signatures of Spatiotemporal Criticality in Large Biological Systems. Physical Review Letters, 2021, 126, 118302.	2.9	12
5	Inferring phenomenological models of first passage processes. PLoS Computational Biology, 2021, 17, e1008740.	1.5	0
6	Precise spatial memory in local random networks. Physical Review E, 2020, 102, 022405.	0.8	0
7	Randomly connected networks generate emergent selectivity and predict decoding properties of large populations of neurons. PLoS Computational Biology, 2020, 16, e1007875.	1.5	8
8	Universal Properties of Concentration Sensing in Large Ligand-Receptor Networks. Physical Review Letters, 2020, 124, 028101.	2.9	10
9	Estimation of mutual information for real-valued data with error bars and controlled bias. Physical Review E, 2019, 100, 022404.	0.8	27
10	Physical Limit to Concentration Sensing in a Changing Environment. Physical Review Letters, 2019, 123, 198101.	2.9	23
11	Automated, predictive, and interpretable inference of Caenorhabditis elegans escape dynamics. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 7226-7231.	3.3	17
12	Receptor crosstalk improves concentration sensing of multiple ligands. Physical Review E, 2019, 99, 022423.	0.8	24
13	Millisecond Spike Timing Codes for Motor Control. Trends in Neurosciences, 2018, 41, 644-648.	4.2	66
14	Increased adaptability to sudden environmental change can more than make up for the two-fold cost of males^(a). Europhysics Letters, 2018, 123, 58001.	0.7	4
15	Chance, long tails, and inference in a non-Gaussian, Bayesian theory of vocal learning in songbirds. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, E8538-E8546.	3.3	12
16	Motor control by precisely timed spike patterns. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, 1171-1176.	3.3	102
17	Single variant bottleneck in the early dynamics ofH. influenzaebacteremia in neonatal rats questions the theory of independent action. Physical Biology, 2017, 14, 045004.	0.8	1
18	Simple biochemical networks allow accurate sensing of multiple ligands with a single receptor. PLoS Computational Biology, 2017, 13, e1005490.	1.5	18

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19	Growth of bacteria in 3-d colonies. PLoS Computational Biology, 2017, 13, e1005679.	1.5	38
20	Role of spatial averaging in multicellular gradient sensing. Physical Biology, 2016, 13, 035004.	0.8	7
21	Effects of receptor correlations on molecular information transmission. Physical Review E, 2016, 94, 022425.	0.8	6
22	Cellâ€“cell communication enhances the capacity of cell ensembles to sense shallow gradients during morphogenesis. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, E679-88.	3.3	126
23	Limits to the precision of gradient sensing with spatial communication and temporal integration. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, E689-95.	3.3	67
24	On the Sufficiency of Pairwise Interactions in Maximum Entropy Models of Networks. Journal of Statistical Physics, 2016, 162, 1294-1308.	0.5	37
25	Stereotypical Escape Behavior in Caenorhabditis elegans Allows Quantification of Effective Heat Stimulus Level. PLoS Computational Biology, 2016, 12, e1005262.	1.5	10
26	The eighth q-bio conference: meeting report and special issue preface. Physical Biology, 2015, 12, 060401.	0.8	0
27	Automated adaptive inference of phenomenological dynamical models. Nature Communications, 2015, 6, 8133.	5.8	138
28	Efficient Inference of Parsimonious Phenomenological Models of Cellular Dynamics Using S-Systems and Alternating Regression. PLoS ONE, 2015, 10, e0119821.	1.1	66
29	The Seventh q-bio Conference: meeting report and preface. Physical Biology, 2014, 11, 040301.	0.8	1
30	Millisecond-Scale Motor Encoding in a Cortical Vocal Area. PLoS Biology, 2014, 12, e1002018.	2.6	49
31	Zipfâ€™s Law and Criticality in Multivariate Data without Fine-Tuning. Physical Review Letters, 2014, 113, 068102.	2.9	88
32	Cellular noise and information transmission. Current Opinion in Biotechnology, 2014, 28, 156-164.	3.3	115
33	Director Field Model of the Primary Visual Cortex for Contour Detection. PLoS ONE, 2014, 9, e108991.	1.1	2
34	Predictive Information in a Nonequilibrium Critical Model. Journal of Statistical Physics, 2013, 153, 442-459.	0.5	4
35	A large number of receptors may reduce cellular response time variation. Physical Biology, 2013, 10, 035008.	0.8	8
36	Special section dedicated to The Sixth q-bio Conference: meeting report and preface. Physical Biology, 2013, 10, 030301.	0.8	2

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37	Population-expression models of immune response. Physical Biology, 2013, 10, 035010.	0.8	3
38	Genotype to Phenotype Mapping and the Fitness Landscape of the E. coli lac Promoter. PLoS ONE, 2013, 8, e61570.	1.1	54
39	Fitness in time-dependent environments includes a geometric phase contribution. Journal of the Royal Society Interface, 2012, 9, 1354-1362.	1.5	10
40	Gain control in molecular information processing: lessons from neuroscience. Physical Biology, 2012, 9, 026003.	0.8	12
41	The Fifth Annual q-bio Conference on Cellular Information Processing. Physical Biology, 2012, 9, 050201.	0.8	0
42	Mass Conservation and Inference of Metabolic Networks from High-Throughput Mass Spectrometry Data. Journal of Computational Biology, 2011, 18, 147-154.	0.8	7
43	Information Transduction Capacity of Noisy Biochemical Signaling Networks. Science, 2011, 334, 354-358.	6.0	1,007
44	Speeding up Evolutionary Search by Small Fitness Fluctuations. Journal of Statistical Physics, 2011, 144, 367-378.	0.5	5
45	Selected papers from the Fourth Annual q-bio Conference on Cellular Information Processing. Physical Biology, 2011, 8, 050301.	0.8	2
46	Coincidences and Estimation of Entropies of Random Variables with Large Cardinalities. Entropy, 2011, 13, 2013-2023.	1.1	28
47	Model Cortical Association Fields Account for the Time Course and Dependence on Target Complexity of Human Contour Perception. PLoS Computational Biology, 2011, 7, e1002162.	1.5	10
48	The simplicity of completion time distributions for common complex biochemical processes. Physical Biology, 2010, 7, 016003.	0.8	68
49	Ergodic and non-ergodic anomalous diffusion in coupled stochastic processes. New Journal of Physics, 2009, 11, 083009.	1.2	10
50	Specificity and completion time distributions of biochemical processes. Journal of Chemical Physics, 2009, 131, 235103.	1.2	22
51	Adiabatic coarse-graining and simulations of stochastic biochemical networks. Proceedings of the National Academy of Sciences of the United States of America, 2009, 106, 10546-10551.	3.3	46
52	Genome-wide identification of post-translational modulators of transcription factor activity in human B cells. Nature Biotechnology, 2009, 27, 829-837.	9.4	226
53	Neural Coding of Natural Stimuli: Information at Sub-Millisecond Resolution. PLoS Computational Biology, 2008, 4, e1000025.	1.5	111
54	Universal Geometric Theory of Mesoscopic Stochastic Pumps and Reversible Ratchets. Physical Review Letters, 2007, 99, 220408.	2.9	80

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55	Optimal Signal Processing in Small Stochastic Biochemical Networks. PLoS ONE, 2007, 2, e1077.	1.1	107
56	Neural coding of natural stimuli: information at sub-millisecond resolution. BMC Neuroscience, 2007, 8, .	0.8	4
57	Reconstruction of Metabolic Networks from High-Throughput Metabolite Profiling Data: In Silico Analysis of Red Blood Cell Metabolism. Annals of the New York Academy of Sciences, 2007, 1115, 102-115.	1.8	22
58	Reverse engineering cellular networks. Nature Protocols, 2006, 1, 662-671.	5.5	345
59	ARACNE: An Algorithm for the Reconstruction of Gene Regulatory Networks in a Mammalian Cellular Context. BMC Bioinformatics, 2006, 7, S7.	1.2	2,218
60	Genome-Wide Discovery of Modulators of Transcriptional Interactions in Human B Lymphocytes. Lecture Notes in Computer Science, 2006, , 348-362.	1.0	23
61	Fluctuation-Dissipation Theorem and Models of Learning. Neural Computation, 2005, 17, 2006-2033.	1.3	8
62	Neural Coding of Natural Stimuli: Information at Sub-Millisecond Resolution. PLoS Computational Biology, 2005, preprint, e42.	1.5	0
63	Entropy and information in neural spike trains: Progress on the sampling problem. Physical Review E, 2004, 69, 056111.	0.8	199
64	Potential and field singularity at a surface point charge. Journal of Mathematical Physics, 2003, 44, 4460.	0.5	6
65	Occam factors and model independent Bayesian learning of continuous distributions. Physical Review E, 2002, 65, 026137.	0.8	25
66	Complexity through nonextensivity. Physica A: Statistical Mechanics and Its Applications, 2001, 302, 89-99.	1.2	59
67	Predictability, Complexity, and Learning. Neural Computation, 2001, 13, 2409-2463.	1.3	375