William B Levy

List of Publications by Year
in descending order

41 papers	2,287 citations	623574 14 h-index	330025 37 g-index
45 all docs	45 docs citations	45 times ranked	1436 citing authors

#	Article	IF	Citations
1	Communication consumes 35 times more energy than computation in the human cortex, but both costs are needed to predict synapse number. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	47
2	Constructing multilayered neural networks with sparse, data-driven connectivity using biologically-inspired, complementary, homeostatic mechanisms. Neural Networks, 2020, 122, 68-93.	3.3	8
3	Linearization of excitatory synaptic integration at no extra cost. Journal of Computational Neuroscience, 2018, 44, 173-188.	0.6	4
4	A consensus layer V pyramidal neuron can sustain interpulse-interval coding. PLoS ONE, 2017, 12, e0180839.	1.1	12
5	Limited synapse overproduction can speed development but sometimes with long-term energy and discrimination penalties. PLoS Computational Biology, 2017, 13, e1005750.	1.5	7
6	Neural Computation From First Principles: Using the Maximum Entropy Method to Obtain an Optimal Bits-Per-Joule Neuron. IEEE Transactions on Molecular, Biological, and Multi-Scale Communications, 2016, 2, 154-165.	1.4	9
7	Mutual Information and Parameter Estimation in the Generalized Inverse Gaussian Diffusion Model of Cortical Neurons. IEEE Transactions on Molecular, Biological, and Multi-Scale Communications, 2016, 2, 166-182.	1.4	6
8	Controlling information flow and energy use via adaptive synaptogenesis. , 2016, , .		1
9	Adaptive Synaptogenesis Constructs Neural Codes That Benefit Discrimination. PLoS Computational Biology, 2015, 11, e1004299.	1.5	9
10	Neuronal dynamics during the learning of trace conditioning in a CA3 model of hippocampal function. Cognitive Neurodynamics, 2014, 8, 127-141.	2.3	0
11	Design principles and specifications for neural-like computation under constraints on information preservation and energy costs as analyzed with statistical theory. , 2012, , .		2
12	A Mathematical Theory of Energy Efficient Neural Computation and Communication. IEEE Transactions on Information Theory, 2010, 56, 852-874.	1.5	46
13	Information transfer by energy-efficient neurons. , 2009, , .		2
14	The cost of linearization. Journal of Computational Neuroscience, 2009, 27, 259-275.	0.6	5
15	Persistent sodium is a better linearizing mechanism than the hyperpolarization-activated current. Neurocomputing, 2007, 70, 1635-1639.	3.5	4
16	Theta-modulated input reduces intrinsic gamma oscillations in a hippocampal model. Neurocomputing, 2007, 70, 2074-2078.	3.5	1
17	A hippocampal model predicts a fluctuating phase transition when learning certain trace conditioning paradigms. Cognitive Neurodynamics, 2007, 1, 143-155.	2.3	11
18	Metabolic Energy Cost of Action Potential Velocity. Journal of Neurophysiology, 2006, 96, 1237-1246.	0.9	63

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19	Decision functions that can support a hippocampal model. Neurocomputing, 2006, 69, 1238-1243.	3.5	2
20	Gamma oscillations in a minimal CA3 model. Neurocomputing, 2006, 69, 1244-1248.	3.5	2
21	Interpreting hippocampal function as recoding and forecasting. Neural Networks, 2005, 18, 1242-1264.	3.3	96
22	Computing conditional probabilities in a minimal CA3 pyramidal neuron. Neurocomputing, 2005, 65-66, 297-303.	3.5	2
23	Activity affects trace conditioning performance in a minimal hippocampal model. Neurocomputing, 2005, 65-66, 315-321.	3.5	1
24	Energy-efficient interspike interval codes. Neurocomputing, 2005, 65-66, 371-378.	3.5	10
25	Conduction velocity costs energy. Neurocomputing, 2005, 65-66, 907-913.	3.5	2
26	Contrasting rules for synaptogenesis, modification of existing synapses, and synaptic removal as a function of neuronal computation. Neurocomputing, 2004, 58-60, 343-350.	3.5	11
27	Configural representations in transverse patterning with a hippocampal model. Neural Networks, 2004, 17, 175-190.	3.3	6
28	Analysis of the Optimal Channel Density of the Squid Giant Axon Using a Reparameterized Hodgkinâ€“Huxley Model. Journal of Neurophysiology, 2004, 91, 2541-2550.	0.9	30
29	Energy-Efficient Neuronal Computation via Quantal Synaptic Failures. Journal of Neuroscience, 2002, 22, 4746-4755.	1.7	201
30	The statistical relationship between connectivity and neural activity in fractionally connected feed-forward networks. Biological Cybernetics, 1999, 80, 131-139.	0.6	5
31	Quantifying the Role of Inhibition in Associative Long-Term Potentiation in Dentate Granule Cells With Computational Models. Journal of Neurophysiology, 1997, 78, 103-116.	0.9	19
32	Ovarian steroidal control of connectivity in the female hippocampus: An overview of recent experimental findings and speculations on its functional consequences. , 1997, 7, 239-245.		62
33	Energy Efficient Neural Codes. Neural Computation, 1996, 8, 531-543.	1.3	505
34	The influence of limited presynaptic growth and synapse removal on adaptive synaptogenesis. Biological Cybernetics, 1994, 71, 461-468.	0.6	16
35	Adaptive synaptogenesis constructs networks that maintain information and reduce statistical dependence. Biological Cybernetics, 1993, 70, 81-87.	0.6	11
36	Information maintenance and statistical dependence reduction in simple neural networks. Biological Cybernetics, 1992, 67, 469-477.	0.6	17

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37	Changes in the postsynaptic density with long-term potentiation in the dentate gyrus. Journal of Comparative Neurology, 1986, 253, 476-482.	0.9	186
38	Changes in the numerical density of synaptic contacts with long-term potentiation in the hippocampal dentate gyrus. Journal of Comparative Neurology, 1986, 253, 466-475.	0.9	188
39	Dendritic caliber and the 3/2 power relationship of dentate granule cells. Journal of Comparative Neurology, 1984, 227, 589-596.	0.9	27
40	A quantitative anatomical study of the granule cell dendritic fields of the rat dentate gyrus using a novel probabilistic method. Journal of Comparative Neurology, 1982, 212, 131-145.	0.9	95
41	Synapses as associative memory elements in the hippocampal formation. Brain Research, 1979, 175, 233-245.	1.1	551