Walter Senn

List of Publications by Year
in descending order

85	4,870	172457	106344
papers	citations	29 h-index	65 g-index

93	93	93	4703
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	A deep learning framework for neuroscience. Nature Neuroscience, 2019, 22, 1761-1770.	14.8	563
2	Dendritic encoding of sensory stimuli controlled by deep cortical interneurons. Nature, 2009, 457, 1137-1141.	27.8	326
3	Learning Real-World Stimuli in a Neural Network with Spike-Driven Synaptic Dynamics. Neural Computation, 2007, 19, 2881-2912.	2.2	310
4	Top-down Dendritic Input Increases the Gain of Layer 5 Pyramidal Neurons. Cerebral Cortex, 2004, 14, 1059-1070.	2.9	279
5	Spike-Time-Dependent Plasticity and Heterosynaptic Competition Organize Networks to Produce Long Scale-Free Sequences of Neural Activity. Neuron, 2010, 65, 563-576.	8.1	253
6	Neocortical Pyramidal Cells Respond as Integrate-and-Fire Neurons to In Vivoâ€“Like Input Currents. Journal of Neurophysiology, 2003, 90, 1598-1612.	1.8	224
7	A Synaptic Explanation of Suppression in Visual Cortex. Journal of Neuroscience, 2002, 22, 10053-10065.	3.6	192
8	Modeling of Spontaneous Activity in Developing Spinal Cord Using Activity-Dependent Depression in an Excitatory Network. Journal of Neuroscience, 2000, 20, 3041-3056.	3.6	182
9	An Algorithm for Modifying Neurotransmitter Release Probability Based on Pre- and Postsynaptic Spike Timing. Neural Computation, 2001, 13, 35-67.	2.2	180
10	A cospectral correction model for measurement of turbulent NO2 flux. Boundary-Layer Meteorology, 1995, 74, 321-340.	2.3	170
11	Learning by the Dendritic Prediction of Somatic Spiking. Neuron, 2014, 81, 521-528.	8.1	149
12	Repetitive TMS over the human oculomotor cortex: Comparison of 1-Hz and theta burst stimulation. Neuroscience Letters, 2006, 409, 57-60.	2.1	136
13	Climbing Neuronal Activity as an Event-Based Cortical Representation of Time. Journal of Neuroscience, 2004, 24, 3295-3303.	3.6	133
14	Nerve Injury-Induced Neuropathic Pain Causes Disinhibition of the Anterior Cingulate Cortex. Journal of Neuroscience, 2014, 34, 5754-5764.	3.6	129
15	Extending lifetime of plastic changes in the human brain. European Journal of Neuroscience, 2006, 24, 2961-2966.	2.6	120
16	Hyperpolarization-Activated Current Ih Disconnects Somatic and Dendritic Spike Initiation Zones in Layer V Pyramidal Neurons. Journal of Neurophysiology, 2003, 90, 2428-2437.	1.8	113
17	Multiple Time Scales of Temporal Response in Pyramidal and Fast Spiking Cortical Neurons. Journal of Neurophysiology, 2006, 96, 3448-3464.	1.8	108
18	Matching Recall and Storage in Sequence Learning with Spiking Neural Networks. Journal of Neuroscience, 2013, 33, 9565-9575.	3.6	107

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19	Dopamine Increases the Gain of the Input-Output Response of Rat Prefrontal Pyramidal Neurons. Journal of Neurophysiology, 2008, 99, 2985-2997.	1.8	95
20	Minimal Models of Adapted Neuronal Response to In Vivoâ€"Like Input Currents. Neural Computation, 2004, 16, 2101-2124.	2.2	89
21	Spike-Based Reinforcement Learning in Continuous State and Action Space: When Policy Gradient Methods Fail. PLoS Computational Biology, 2009, 5, e1000586.	3.2	82
22	Reinforcement learning in populations of spiking neurons. Nature Neuroscience, 2009, 12, 250-252.	14.8	77
23	Somato-dendritic Synaptic Plasticity and Error-backpropagation in Active Dendrites. PLoS Computational Biology, 2016, 12, e1004638.	3.2	61
24	Convergence of stochastic learning in perceptrons with binary synapses. Physical Review E, 2005, 71, 061907.	2.1	53
25	The response of cortical neurons to in vivo-like input current: theory and experiment. Biological Cybernetics, 2008, 99, 279-301.	1.3	47
26	Spatio-Temporal Credit Assignment in Neuronal Population Learning. PLoS Computational Biology, 2011, 7, e1002092.	3.2	46
27	Activity-Dependent Development of Axonal and Dendritic Delays, or, Why Synaptic Transmission Should Be Unreliable. Neural Computation, 2002, 14, 583-619.	2.2	44
28	Beyond spike timing: the role of nonlinear plasticity and unreliable synapses. Biological Cybernetics, 2002, 87, 344-355.	1.3	40
29	CODE-SPECIFIC LEARNING RULES IMPROVE ACTION SELECTION BY POPULATIONS OF SPIKING NEURONS. International Journal of Neural Systems, 2014, 24, 1450002.	5.2	39
30	Prospective Coding by Spiking Neurons. PLoS Computational Biology, 2016, 12, e1005003.	3.2	35
31	Learning Only When Necessary: Better Memories of Correlated Patterns in Networks with Bounded Synapses. Neural Computation, 2005, 17, 2106-2138.	2.2	33
32	The response of cortical neurons to in vivo-like input current: theory and experiment: II. Time-varying and spatially distributed inputs. Biological Cybernetics, 2008, 99, 303-318.	1.3	29
33	Modulating the granularity of category formation by global cortical states. Frontiers in Computational Neuroscience, 2008, 2, 1.	2.1	29
34	Perceptual Learning via Modification of Cortical Top-Down Signals. PLoS Computational Biology, 2007, 3, e165.	3.2	28
35	A Normative Theory of Forgetting: Lessons from the Fruit Fly. PLoS Computational Biology, 2014, 10, e1003640.	3.2	28
36	Spiking neurons with short-term synaptic plasticity form superior generative networks. Scientific Reports, 2018, 8, 10651.	3.3	20

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37	Data-driven reduction of dendritic morphologies with preserved dendro-somatic responses. ELife, 2021, 10, .	6.0	20
38	Eluding oblivion with smart stochastic selection of synaptic updates. Chaos, 2006, 16, 026112.	2.5	19
39	Stochasticity from function â€" Why the Bayesian brain may need no noise. Neural Networks, 2019, 119, 200-213.	5.9	19
40	Predictive olfactory learning in Drosophila. Scientific Reports, 2021, 11, 6795.	3.3	19
41	Strikte KonvexitÃt fÃ¼r Variationsprobleme auf demn-dimensionalen Torus. Manuscripta Mathematica, 1991, 71, 45-65.	0.6	16
42	Similar NonLeaky Integrate-and-Fire Neurons with Instantaneous Couplings Always Synchronize. SIAM Journal on Applied Mathematics, 2001, 61, 1143-1155.	1.8	16
43	A Gradient Learning Rule for the Tempotron. Neural Computation, 2009, 21, 340-352.	2.2	16
44	Learning flexible sensori-motor mappings in a complex network. Biological Cybernetics, 2009, 100, 147-158.	1.3	16
45	Special issue on quantitative neuron modeling. Biological Cybernetics, 2008, 99, 237-239.	1.3	12
46	Learning Spike-Based Population Codes by Reward and Population Feedback. Neural Computation, 2010, 22, 1698-1717.	2.2	12
47	Comparison between networks of conductance- and current-driven neurons: stationary spike rates and subthreshold depolarization. Neurocomputing, 2004, 58-60, 253-258.	5.9	11
48	Stress-induced alterations of social behavior are reversible by antagonism of steroid hormones in C57/BL6 mice. Naunyn-Schmiedeberg's Archives of Pharmacology, 2021, 394, 127-135.	3.0	11
49	Scale-Free Navigational Planning by Neuronal Traveling Waves. PLoS ONE, 2015, 10, e0127269.	2.5	10
50	Efficient Low-Pass Dendro-Somatic Coupling in the Apical Dendrite of Layer 5 Pyramidal Neurons in the Anterior Cingulate Cortex. Journal of Neuroscience, 2020, 40, 8799-8815.	3.6	10
51	Learning cortical representations through perturbed and adversarial dreaming. ELife, 2022, 11, .	6.0	10
52	Human and Machine Learning in Non-Markovian Decision Making. PLoS ONE, 2015, 10, e0123105.	2.5	9
53	Comparison of two models for pattern generation based on synaptic depression. Neurocomputing, 1999, 26-27, 551-556.	5.9	8
54	Evolving interpretable plasticity for spiking networks. ELife, 2021, 10, .	6.0	8

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55	Cortical oscillations support sampling-based computations in spiking neural networks. PLoS Computational Biology, 2022, 18, e1009753.	3.2	8
56	A model of expectation effects in inferior temporal cortex. Neurocomputing, 2001, 38-40, 1533-1540.	5.9	7
57	Strange limits of stability in host-parasitoid systems. Journal of Mathematical Biology, 1994, 32, 563-572.	1.9	6
58	Adaptive Gain Modulation in V1 Explains Contextual Modifications during Bisection Learning. PLoS Computational Biology, 2009, 5, e1000617.	3.2	6
59	Slow stochastic learning with global inhibition: a biological solution to the binary perceptron problem. Neurocomputing, 2004, 58-60, 321-326.	5.9	5
60	Spike-based Decision Learning of Nash Equilibria in Two-Player Games. PLoS Computational Biology, 2012, 8, e1002691.	3.2	5
61	Learning direction selectivity through spike-timing dependent modification of neurotransmitter release probability. Neurocomputing, 2001, 38-40, 121-127.	5.9	4
62	Hebb in perspective. Biological Cybernetics, 2002, 87, 317-318.	1.3	4
63	Gradient estimation in dendritic reinforcement learning. Journal of Mathematical Neuroscience, 2012, 2, 2.	2.4	4
64	Statistical modelling of navigational decisions based on intensity versus directionality in Drosophila larval phototaxis. Scientific Reports, 2018, 8, 11272.	3.3	4
65	Stimulus sampling as an exploration mechanism for fast reinforcement learning. Biological Cybernetics, 2009, 100, 319-330.	1.3	3
66	Hierarchical Novelty-Familiarity Representation in the Visual System by Modular Predictive Coding. PLoS ONE, 2015, 10, e0144636.	2.5	3
67	Backward reasoning the formation rules. Nature Neuroscience, 2015, 18, 1705-1706.	14.8	2
68	Firing Rate Adaptation without Losing Sensitivity to Input Fluctuations. Lecture Notes in Computer Science, 2002, , 180-185.	1.3	2
69	Natural-gradient learning for spiking neurons. ELife, 2022, 11, .	6.0	2
70	Recruitment of reticulospinal neurones and steady locomotion in lamprey. Neural Networks, 1998, 11, 1005-1015.	5.9	1
71	When NMDA Receptor Conductances Increase Inter- spike Interval Variability. Lecture Notes in Computer Science, 2002, , 235-240.	1.3	1
72	Spike-Timing-Dependent Plasticity, Learning Rules. , 2014, , 1-10.		1

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73	A Model of How Rapid Changes in Local Input Resistance of Shark Electrosensory Neurons May Enable Detection of Small Signals. , 1998, , 239-243.		1
74	Conductance-based dendrites perform reliability-weighted opinion pooling. , 2020, , .		1
75	Special issue on object localization. Biological Cybernetics, 2008, 98, 447-447.	1.3	0
76	Policy gradient rules for populations of spiking neurons. BMC Neuroscience, 2011, 12, .	1.9	0
77	Reinforcement learning in dendritic structures. BMC Neuroscience, 2011, 12, .	1.9	0
78	Modulation of orientation-selective neurons by motion: when additive, when multiplicative?. Frontiers in Computational Neuroscience, 2014, 8, 67.	2.1	0
79	Neurons that Remember How We Got There. Neuron, 2015, 85, 664-666.	8.1	0
80	Spatial But Not Oculomotor Information Biases Perceptual Memory: Evidence From Face Perception and Cognitive Modeling. Cognitive Science, 2017, 41, 1533-1554.	1.7	0
81	Reinforcement Learning in Cortical Networks. , 2014, , 1-9.		0
82	Reinforcement Learning in Cortical Networks. , 2014, , 1-6.		0
83	Natural gradient learning for spiking neurons. , 2020, , .		0
84	Spike-Timing Dependent Plasticity, Learning Rules. , 2022, , 3262-3270.		0
85	Reinforcement Learning in Cortical Networks. , 2022, , 3019-3026.		0