Walter Senn

List of Publications by Year
in descending order

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Version: 2024-02-01

85	4,870	172207	106150
papers	citations	29 h-index	65 g-index

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

#	Article	IF	Citations
1	Cortical oscillations support sampling-based computations in spiking neural networks. PLoS Computational Biology, 2022, 18, e1009753.	1.5	8
2	Learning cortical representations through perturbed and adversarial dreaming. ELife, 2022, 11, .	2.8	10
3	Natural-gradient learning for spiking neurons. ELife, 2022, 11, .	2.8	2
4	Spike-Timing Dependent Plasticity, Learning Rules. , 2022, , 3262-3270.		0
5	Reinforcement Learning in Cortical Networks. , 2022, , 3019-3026.		0
6	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.	1.4	11
7	Predictive olfactory learning in Drosophila. Scientific Reports, 2021, 11, 6795.	1.6	19
8	Data-driven reduction of dendritic morphologies with preserved dendro-somatic responses. ELife, 2021, 10, .	2.8	20
9	Evolving interpretable plasticity for spiking networks. ELife, 2021, 10, .	2.8	8
10	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.	1.7	10
11	Conductance-based dendrites perform reliability-weighted opinion pooling. , 2020, , .		1
12	Natural gradient learning for spiking neurons. , 2020, , .		0
13	Stochasticity from function â€" Why the Bayesian brain may need no noise. Neural Networks, 2019, 119, 200-213.	3.3	19
14	A deep learning framework for neuroscience. Nature Neuroscience, 2019, 22, 1761-1770.	7.1	563
15	Statistical modelling of navigational decisions based on intensity versus directionality in Drosophila larval phototaxis. Scientific Reports, 2018, 8, 11272.	1.6	4
16	Spiking neurons with short-term synaptic plasticity form superior generative networks. Scientific Reports, 2018, 8, 10651.	1.6	20
17	Spatial But Not Oculomotor Information Biases Perceptual Memory: Evidence From Face Perception and Cognitive Modeling. Cognitive Science, 2017, 41, 1533-1554.	0.8	0
18	Somato-dendritic Synaptic Plasticity and Error-backpropagation in Active Dendrites. PLoS Computational Biology, 2016, 12, e1004638.	1.5	61

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19	Prospective Coding by Spiking Neurons. PLoS Computational Biology, 2016, 12, e1005003.	1.5	35
20	Scale-Free Navigational Planning by Neuronal Traveling Waves. PLoS ONE, 2015, 10, e0127269.	1.1	10
21	Hierarchical Novelty-Familiarity Representation in the Visual System by Modular Predictive Coding. PLoS ONE, 2015, 10, e0144636.	1.1	3
22	Neurons that Remember How We Got There. Neuron, 2015, 85, 664-666.	3.8	0
23	Backward reasoning the formation rules. Nature Neuroscience, 2015, 18, 1705-1706.	7.1	2
24	Human and Machine Learning in Non-Markovian Decision Making. PLoS ONE, 2015, 10, e0123105.	1.1	9
25	Modulation of orientation-selective neurons by motion: when additive, when multiplicative?. Frontiers in Computational Neuroscience, 2014, 8, 67.	1.2	0
26	CODE-SPECIFIC LEARNING RULES IMPROVE ACTION SELECTION BY POPULATIONS OF SPIKING NEURONS. International Journal of Neural Systems, 2014, 24, 1450002.	3.2	39
27	A Normative Theory of Forgetting: Lessons from the Fruit Fly. PLoS Computational Biology, 2014, 10, e1003640.	1.5	28
28	Nerve Injury-Induced Neuropathic Pain Causes Disinhibition of the Anterior Cingulate Cortex. Journal of Neuroscience, 2014, 34, 5754-5764.	1.7	129
29	Learning by the Dendritic Prediction of Somatic Spiking. Neuron, 2014, 81, 521-528.	3.8	149
30	Reinforcement Learning in Cortical Networks. , 2014, , 1-9.		0
31	Spike-Timing-Dependent Plasticity, Learning Rules. , 2014, , 1-10.		1
32	Reinforcement Learning in Cortical Networks. , 2014, , 1-6.		0
33	Matching Recall and Storage in Sequence Learning with Spiking Neural Networks. Journal of Neuroscience, 2013, 33, 9565-9575.	1.7	107
34	Spike-based Decision Learning of Nash Equilibria in Two-Player Games. PLoS Computational Biology, 2012, 8, e1002691.	1.5	5
35	Gradient estimation in dendritic reinforcement learning. Journal of Mathematical Neuroscience, 2012, 2, 2.	2.4	4
36	Policy gradient rules for populations of spiking neurons. BMC Neuroscience, 2011, 12, .	0.8	0

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37	Reinforcement learning in dendritic structures. BMC Neuroscience, 2011, 12, .	0.8	0
38	Spatio-Temporal Credit Assignment in Neuronal Population Learning. PLoS Computational Biology, 2011, 7, e1002092.	1.5	46
39	Learning Spike-Based Population Codes by Reward and Population Feedback. Neural Computation, 2010, 22, 1698-1717.	1.3	12
40	Spike-Time-Dependent Plasticity and Heterosynaptic Competition Organize Networks to Produce Long Scale-Free Sequences of Neural Activity. Neuron, 2010, 65, 563-576.	3.8	253
41	Adaptive Gain Modulation in V1 Explains Contextual Modifications during Bisection Learning. PLoS Computational Biology, 2009, 5, e1000617.	1.5	6
42	Spike-Based Reinforcement Learning in Continuous State and Action Space: When Policy Gradient Methods Fail. PLoS Computational Biology, 2009, 5, e1000586.	1.5	82
43	A Gradient Learning Rule for the Tempotron. Neural Computation, 2009, 21, 340-352.	1.3	16
44	Learning flexible sensori-motor mappings in a complex network. Biological Cybernetics, 2009, 100, 147-158.	0.6	16
45	Stimulus sampling as an exploration mechanism for fast reinforcement learning. Biological Cybernetics, 2009, 100, 319-330.	0.6	3
46	Dendritic encoding of sensory stimuli controlled by deep cortical interneurons. Nature, 2009, 457, 1137-1141.	13.7	326
47	Reinforcement learning in populations of spiking neurons. Nature Neuroscience, 2009, 12, 250-252.	7.1	77
48	Special issue on object localization. Biological Cybernetics, 2008, 98, 447-447.	0.6	0
49	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.	0.6	29
50	The response of cortical neurons to in vivo-like input current: theory and experiment. Biological Cybernetics, 2008, 99, 279-301.	0.6	47
51	Special issue on quantitative neuron modeling. Biological Cybernetics, 2008, 99, 237-239.	0.6	12
52	Dopamine Increases the Gain of the Input-Output Response of Rat Prefrontal Pyramidal Neurons. Journal of Neurophysiology, 2008, 99, 2985-2997.	0.9	95
53	Modulating the granularity of category formation by global cortical states. Frontiers in Computational Neuroscience, 2008, 2, 1.	1.2	29
54	Perceptual Learning via Modification of Cortical Top-Down Signals. PLoS Computational Biology, 2007, 3, e165.	1.5	28

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55	Learning Real-World Stimuli in a Neural Network with Spike-Driven Synaptic Dynamics. Neural Computation, 2007, 19, 2881-2912.	1.3	310
56	Repetitive TMS over the human oculomotor cortex: Comparison of 1-Hz and theta burst stimulation. Neuroscience Letters, 2006, 409, 57-60.	1.0	136
57	Extending lifetime of plastic changes in the human brain. European Journal of Neuroscience, 2006, 24, 2961-2966.	1.2	120
58	Multiple Time Scales of Temporal Response in Pyramidal and Fast Spiking Cortical Neurons. Journal of Neurophysiology, 2006, 96, 3448-3464.	0.9	108
59	Eluding oblivion with smart stochastic selection of synaptic updates. Chaos, 2006, 16, 026112.	1.0	19
60	Learning Only When Necessary: Better Memories of Correlated Patterns in Networks with Bounded Synapses. Neural Computation, 2005, 17, 2106-2138.	1.3	33
61	Convergence of stochastic learning in perceptrons with binary synapses. Physical Review E, 2005, 71, 061907.	0.8	53
62	Minimal Models of Adapted Neuronal Response to In Vivoâ€“Like Input Currents. Neural Computation, 2004, 16, 2101-2124.	1.3	89
63	Climbing Neuronal Activity as an Event-Based Cortical Representation of Time. Journal of Neuroscience, 2004, 24, 3295-3303.	1.7	133
64	Top-down Dendritic Input Increases the Gain of Layer 5 Pyramidal Neurons. Cerebral Cortex, 2004, 14, 1059-1070.	1.6	279
65	Comparison between networks of conductance- and current-driven neurons: stationary spike rates and subthreshold depolarization. Neurocomputing, 2004, 58-60, 253-258.	3.5	11
66	Slow stochastic learning with global inhibition: a biological solution to the binary perceptron problem. Neurocomputing, 2004, 58-60, 321-326.	3.5	5
67	Neocortical Pyramidal Cells Respond as Integrate-and-Fire Neurons to In Vivoâ€“Like Input Currents. Journal of Neurophysiology, 2003, 90, 1598-1612.	0.9	224
68	Hyperpolarization-Activated Current Ih Disconnects Somatic and Dendritic Spike Initiation Zones in Layer V Pyramidal Neurons. Journal of Neurophysiology, 2003, 90, 2428-2437.	0.9	113
69	Activity-Dependent Development of Axonal and Dendritic Delays, or, Why Synaptic Transmission Should Be Unreliable. Neural Computation, 2002, 14, 583-619.	1.3	44
70	A Synaptic Explanation of Suppression in Visual Cortex. Journal of Neuroscience, 2002, 22, 10053-10065.	1.7	192
71	Hebb in perspective. Biological Cybernetics, 2002, 87, 317-318.	0.6	4
72	Beyond spike timing: the role of nonlinear plasticity and unreliable synapses. Biological Cybernetics, 2002, 87, 344-355.	0.6	40

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73	Firing Rate Adaptation without Losing Sensitivity to Input Fluctuations. Lecture Notes in Computer Science, 2002, , 180-185.	1.0	2
74	When NMDA Receptor Conductances Increase Inter- spike Interval Variability. Lecture Notes in Computer Science, 2002, , 235-240.	1.0	1
75	Similar NonLeaky Integrate-and-Fire Neurons with Instantaneous Couplings Always Synchronize. SIAM Journal on Applied Mathematics, 2001, 61, 1143-1155.	0.8	16
76	A model of expectation effects in inferior temporal cortex. Neurocomputing, 2001, 38-40, 1533-1540.	3.5	7
77	Learning direction selectivity through spike-timing dependent modification of neurotransmitter release probability. Neurocomputing, 2001, 38-40, 121-127.	3.5	4
78	An Algorithm for Modifying Neurotransmitter Release Probability Based on Pre- and Postsynaptic Spike Timing. Neural Computation, 2001, 13, 35-67.	1.3	180
79	Modeling of Spontaneous Activity in Developing Spinal Cord Using Activity-Dependent Depression in an Excitatory Network. Journal of Neuroscience, 2000, 20, 3041-3056.	1.7	182
80	Comparison of two models for pattern generation based on synaptic depression. Neurocomputing, 1999, 26-27, 551-556.	3.5	8
81	Recruitment of reticulospinal neurones and steady locomotion in lamprey. Neural Networks, 1998, 11, 1005-1015.	3.3	1
82	A Model of How Rapid Changes in Local Input Resistance of Shark Electrosensory Neurons May Enable Detection of Small Signals. , 1998, , 239-243.		1
83	A cospectral correction model for measurement of turbulent NO2 flux. Boundary-Layer Meteorology, 1995, 74, 321-340.	1.2	170
84	Strange limits of stability in host-parasitoid systems. Journal of Mathematical Biology, 1994, 32, 563-572.	0.8	6
85	Strikte KonvexitÃt fÃ¼r Variationsprobleme auf demn-dimensionalen Torus. Manuscripta Mathematica, 1991, 71, 45-65.	0.3	16