Johannes Schemmel

List of Publications by Year
in descending order

69	3,589	361413	254184
papers	citations	20 h-index	43 g-index

71	71	71	2620
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Neuromorphic Silicon Neuron Circuits. Frontiers in Neuroscience, 2011, 5, 73.	2.8	1,004
2	A wafer-scale neuromorphic hardware system for large-scale neural modeling. , 2010, , .		449
3	Large-Scale Neuromorphic Spiking Array Processors: A Quest to Mimic the Brain. Frontiers in Neuroscience, 2018, 12, 891.	2.8	177
4	Wafer-scale integration of analog neural networks. , 2008, , .		175
5	Six Networks on a Universal Neuromorphic Computing Substrate. Frontiers in Neuroscience, 2013, 7, 11.	2.8	131
6	A self-calibrating single-chip CMOS camera with logarithmic response. IEEE Journal of Solid-State Circuits, 2001, 36, 586-596.	5.4	115
7	Neuromorphic hardware in the loop: Training a deep spiking network on the BrainScaleS wafer-scale system. , 2017, , .		99
8	Demonstrating Hybrid Learning in a Flexible Neuromorphic Hardware System. IEEE Transactions on Biomedical Circuits and Systems, 2017, 11, 128-142.	4.0	87
9	Demonstrating Advantages of Neuromorphic Computation: A Pilot Study. Frontiers in Neuroscience, 2019, 13, 260.	2.8	83
10	Is a 4-Bit Synaptic Weight Resolution Enough? â€“ Constraints on Enabling Spike-Timing Dependent Plasticity in Neuromorphic Hardware. Frontiers in Neuroscience, 2012, 6, 90.	2.8	77
11	A comprehensive workflow for general-purpose neural modeling with highly configurable neuromorphic hardware systems. Biological Cybernetics, 2011, 104, 263-296.	1.3	72
12	Control of criticality and computation in spiking neuromorphic networks with plasticity. Nature Communications, 2020, 11, 2853.	12.8	70
13	The Heidelberg Spiking Data Sets for the Systematic Evaluation of Spiking Neural Networks. IEEE Transactions on Neural Networks and Learning Systems, 2022, 33, 2744-2757.	11.3	61
14	Spike-Frequency Adapting Neural Ensembles: Beyond Mean Adaptation and Renewal Theories. Neural Computation, 2007, 19, 2958-3010.	2.2	59
15	An Accelerated LIF Neuronal Network Array for a Large-Scale Mixed-Signal Neuromorphic Architecture. IEEE Transactions on Circuits and Systems I: Regular Papers, 2018, 65, 4299-4312.	5.4	59
16	Modeling Synaptic Plasticity within Networks of Highly Accelerated I&F Neurons. , 2007, , .		56
17	An accelerated analog neuromorphic hardware system emulating NMDA- and calcium-based non-linear dendrites. , 2017, , .		50
18	The BrainScaleS-2 Accelerated Neuromorphic System With Hybrid Plasticity. Frontiers in Neuroscience, 2022, 16, 795876.	2.8	50

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19	Stochastic inference with spiking neurons in the high-conductance state. Physical Review E, 2016, 94, 042312.	2.1	46
20	Characterization and Compensation of Network-Level Anomalies in Mixed-Signal Neuromorphic Modeling Platforms. PLoS ONE, 2014, 9, e108590.	2.5	42
21	Live demonstration: A scaled-down version of the BrainScaleS wafer-scale neuromorphic system. , 2012, , .		41
22	Realizing biological spiking network models in a configurable wafer-scale hardware system. , 2008, , .		40
23	A Mixed-Signal Structured AdEx Neuron for Accelerated Neuromorphic Cores. IEEE Transactions on Biomedical Circuits and Systems, 2018, 12, 1027-1037.	4.0	38
24	Surrogate gradients for analog neuromorphic computing. Proceedings of the National Academy of Sciences of the United States of America, 2022, 119, .	7.1	37
25	Establishing a Novel Modeling Tool: A Python-based Interface for a Neuromorphic Hardware System. Frontiers in Neuroinformatics, 2009, 3, 17.	2.5	35
26	Reward-based learning under hardware constraintsâ€"using a RISC processor embedded in a neuromorphic substrate. Frontiers in Neuroscience, 2013, 7, 160.	2.8	27
27	Verification and Design Methods for the BrainScaleS Neuromorphic Hardware System. Journal of Signal Processing Systems, 2020, 92, 1277-1292.	2.1	25
28	Compensating Inhomogeneities of Neuromorphic VLSI Devices Via Short-Term Synaptic Plasticity. Frontiers in Computational Neuroscience, 2010, 4, 129.	2.1	23
29	Accelerated Physical Emulation of Bayesian Inference in Spiking Neural Networks. Frontiers in Neuroscience, 2019, 13, 1201.	2.8	22
30	Emulating Dendritic Computing Paradigms on Analog Neuromorphic Hardware. Neuroscience, 2022, 489, 290-300.	2.3	22
31	Spiking neurons with short-term synaptic plasticity form superior generative networks. Scientific Reports, 2018, 8, 10651.	3.3	20
32	A highly tunable 65-nm CMOS LIF neuron for a large scale neuromorphic system. , 2016, , .		19
33	Stochasticity from function â€" Why the Bayesian brain may need no noise. Neural Networks, 2019, 119, 200-213.	5.9	19
34	CMOS image sensor with logarithmic response and self-calibrating fixed pattern noise correction. , 1998, 3410, 117.		17
35	A Mixed-Mode Analog Neural Network Using Current-Steering Synapses. Analog Integrated Circuits and Signal Processing, 2004, 38, 233-244.	1.4	17
36	Probabilistic inference in discrete spaces can be implemented into networks of LIF neurons. Frontiers in Computational Neuroscience, 2015, 9, 13.	2.1	17

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37	An analog dynamic memory array for neuromorphic hardware. , 2013, , .		16
38	Effect of Heterogeneity on Decorrelation Mechanisms in Spiking Neural Networks: A Neuromorphic-Hardware Study. Physical Review X, 2016, 6, .	8.9	15
39	A Scalable Switched Capacitor Realization of the Resistive Fuse Network. Analog Integrated Circuits and Signal Processing, 2002, 32, 135-148.	1.4	14
40	A location-independent direct link neuromorphic interface. , 2013, , .		13
41	Accelerated Analog Neuromorphic Computing. , 2022, , 83-102.		13
42	Deterministic networks for probabilistic computing. Scientific Reports, 2019, 9, 18303.	3.3	10
43	Structural plasticity on an accelerated analog neuromorphic hardware system. Neural Networks, 2021, 133, 11-20.	5.9	10
44	Interconnecting VLSI Spiking Neural Networks Using Isochronous Connections. , 2007, , 471-478.		10
45	Operational Amplifiers: An Example for Multi-objective Optimization on an Analog Evolvable Hardware Platform. Lecture Notes in Computer Science, 2005, , 86-97.	1.3	9
46	A Scalable Approach to Modeling on Accelerated Neuromorphic Hardware. Frontiers in Neuroscience, 2022, 16, .	2.8	9
47	A QoS network architecture to interconnect large-scale VLSI neural networks. , 2009, , .		8
48	Simulator-like exploration of cortical network architectures with a mixed-signal VLSI system. , 2010, , .		8
49	Neuromorphic learning towards nano second precision. , 2013, , .		8
50	A Software Framework for Tuning the Dynamics of Neuromorphic Silicon Towards Biology. , 2007, , 479-486.		7
51	hxtorch: PyTorch for BrainScaleS-2. Communications in Computer and Information Science, 2020, , 189-200.	0.5	7
52	Inference with Artificial Neural Networks on Analog Neuromorphic Hardware. Communications in Computer and Information Science, 2020, , 201-212.	0.5	6
53	A computer controlled pendulum with position readout. American Journal of Physics, 2010, 78, 555-561.	0.7	5
54	The high-conductance state enables neural sampling in networks of LIF neurons. BMC Neuroscience, 2015, 16, .	1.9	5

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55	From LIF to AdEx neuron models: Accelerated analog 65 nm CMOS implementation. , 2017, , .		5
56	Spiking neuromorphic chip learns entangled quantum states. SciPost Physics, 2022, 12, .	4.9	5
57	The operating system of the neuromorphic BrainScaleS-1 system. Neurocomputing, 2022, 501, 790-810.	5.9	5
58	High-conductance states on a neuromorphic hardware system. , 2009, , .		4
59	Full wafer redistribution and wafer embedding as key technologies for a multi-scale neuromorphic hardware cluster. , 2017, , .		4
60	Deterministic neural networks as sources of uncorrelated noise for probabilistic computations. BMC Neuroscience, 2015, 16, .	1.9	2
61	Brain-Inspired Hardware for Artificial Intelligence: Accelerated Learning in a Physical-Model Spiking Neural Network. Lecture Notes in Computer Science, 2019, , 119-122.	1.3	2
62	Towards Addressing Noise andÂStatic Variations ofÂAnalog Computations Using Efficient Retraining. Communications in Computer and Information Science, 2021, , 409-420.	0.5	2
63	Robustness from structure: Inference with hierarchical spiking networks on analog neuromorphic hardware. , 2017, , .		1
64	<title>Camera with adaptive photoreceptors in analog CMOS technology</title>. , 1996, , .		0
65	Live demonstration: Simulator-like exploration of cortical network architectures with a mixed-signal VLSI system. , 2010, , .		0
66	A highly tunable 65-nm CMOS LIF neuron for a large scale neuromorphic system. , 2016, , .		0
67	Neuromorphic Hardware, Large Scale. , 2014, , 1-4.		0
68	Demonstrating BrainScaleS-2 Inter-Chip Pulse-Communication using EXTOLL. , 2022, , .		0
69	Neuromorphic Hardware, Large-Scale. , 2022, , 2322-2325.		0