SpiNNaker: Mapping neural networks onto a massively-

DOI: 10.1109/ijcnn.2008.4634199

Citation Report

#	Article	IF	Citations
1	A universal abstract-time platform for real-time neural networks. , 2009, , .		4
2	Biologically-Inspired Massively-Parallel Architectures - Computing Beyond a Million Processors. , 2009, , .		42
3	Optimal connectivity in hardware-targetted MLP networks. , 2009, , .		6
4	A psycholinguistic model of natural language parsing implemented in simulated neurons. Cognitive Neurodynamics, 2009, 3, 317-330.	2.3	16
5	A configurable simulation environment for the efficient simulation of large-scale spiking neural networks on graphics processors. Neural Networks, 2009, 22, 791-800.	3.3	168
6	FPGA Implementation of Izhikevich Spiking Neural Networks for Character Recognition. , 2009, , .		60
7	Efficient simulation of large-scale Spiking Neural Networks using CUDA graphics processors. , 2009, , .		58
8	Event-Driven Configuration of a Neural Network CMP System over a Homogeneous Interconnect Fabric. , 2009, , .		4
9	Modeling Spiking Neural Networks on SpiNNaker. Computing in Science and Engineering, 2010, 12, 91-97.	1.2	74
10	Revitalizing Work in CiSE. Computing in Science and Engineering, 2010, 12, 4-4.	1.2	0
11	Practical completion detection for 2-of-N delay-insensitive codes. , 2010, , .		8
12	Large Developing Receptive Fields Using a Distributed and Locally Reprogrammable Addressâ€“Event Receiver. IEEE Transactions on Neural Networks, 2010, 21, 286-304.	4.8	18
13	EMBRACE-SysC for analysis of NoC-based Spiking Neural Network architectures. , 2010, , .		8
14	A communication infrastructure for a million processor machine. , 2010, , .		2
15	Optimization and performance study of large-scale biological networks for reconfigurable computing. , 2010, , .		10
16	Scalable event-driven native parallel processing. , 2010, , .		24
17	Algorithm for Mapping Multilayer BP Networks onto the SpiNNaker Neuromorphic Hardware. , 2010, , .		3
18	Scalable event routing in hierarchical neural array architecture with global synaptic connectivity. , 2010, , .		35

#	Article	IF	Citations
19	The Leaky Integrate-and-Fire neuron: A platform for synaptic model exploration on the SpiNNaker chip. , 2010, , .		24
20	An Instant-Startup Jitter-Tolerant Manchester-Encoding Serializer/Deserializer Scheme for Event-Driven Bit-Serial LVDS Interchip AER Links. IEEE Transactions on Circuits and Systems I: Regular Papers, 2011, 58, 2647-2660.	3.5	17
21	Real-time simulation of a spiking neural network model of the basal ganglia circuitry using general purpose computing on graphics processing units. Neural Networks, 2011, 24, 950-960.	3.3	41
22	Concurrent heterogeneous neural model simulation on real-time neuromimetic hardware. Neural Networks, 2011, 24, 961-978.	3.3	22
23	Hardware spiking neural network prototyping and application. Genetic Programming and Evolvable Machines, 2011, 12, 257-280.	1.5	41
24	Event-driven configuration of a neural network CMP system over an homogeneous interconnect fabric. Parallel Computing, 2011, 37, 392-409.	1.3	3
25	Interacting maps for fast visual interpretation. , 2011, , .		79
26	GPU implementation of spiking neural networks for color image segmentation. , 2011, , .		7
27	Index to Constant Weight Codeword Converter. Lecture Notes in Computer Science, 2011, , 193-205.	1.0	4
28	Physical aspects of low power synapses based on phase change memory devices. Journal of Applied Physics, 2012, 112, .	1.1	115
29	An Event-Driven Multi-Kernel Convolution Processor Module for Event-Driven Vision Sensors. IEEE Journal of Solid-State Circuits, 2012, 47, 504-517.	3.5	92
30	PID (Partial Inversion Data): An M-of-N Level-Encoded Transition Signaling Protocol for Asynchronous Global Communication. , 2012, , .		1
31	Event-driven MLP implementation on neuromimetic hardware. , 2012, , .		1
32	Programming Time-Multiplexed Reconfigurable Hardware Using a Scalable Neuromorphic Compiler. IEEE Transactions on Neural Networks and Learning Systems, 2012, 23, 889-901.	7.2	16
33	A <formula formulatype="inline"><tex Notation="TeX">${0.35}~mu{m m}$</tex></formula> Sub-ns Wake-up Time ON-OFF Switchable LVDS Driver-Receiver Chip I/O Pad Pair for Rate-Dependent Power Saving in AER Bit-Serial Links. IEEE Transactions on Biomedical Circuits and Systems, 2012, 6, 486-497.	2.7	14
34	Managing Burstiness and Scalability in Event-Driven Models on the SpiNNaker Neuromimetic System. International Journal of Parallel Programming, 2012, 40, 553-582.	1.1	7
35	Design of adaptive nano/CMOS neural architectures. , 2012, , .		12
36	Modeling Brain Function. JAMA Neurology, 2013, 70, 1325-9.	4.5	4

#	Article	IF	Citations
37	Biochemical connectionism. Natural Computing, 2013, 12, 453-472.	1.8	10
38	Multicasting Mesh AER: A Scalable Assembly Approach for Reconfigurable Neuromorphic Structured AER Systems. Application to ConvNets. IEEE Transactions on Biomedical Circuits and Systems, 2013, 7, 82-102.	2.7	83
39	Design of silicon brains in the nano-CMOS era: Spiking neurons, learning synapses and neural architecture optimization. Neural Networks, 2013, 45, 4-26.	3.3	95
40	SpiNNaker: Fault tolerance in a power- and area- constrained large-scale neuromimetic architecture. Parallel Computing, 2013, 39, 693-708.	1.3	9
41	A 1.5 ns OFF/ON Switching-Time Voltage-Mode LVDS Driver/Receiver Pair for Asynchronous AER Bit-Serial Chip Grid Links With Up to 40 Times Event-Rate Dependent Power Savings. IEEE Transactions on Biomedical Circuits and Systems, 2013, 7, 722-731.	2.7	3
42	A location-independent direct link neuromorphic interface. , 2013, , .		13
43	Extending the hardware architecture of systemic computation to a complete programming platform. , 2013, , .		0
44	Efficiently passing messages in distributed spiking neural network simulation. Frontiers in Computational Neuroscience, 2013, 7, 77.	1.2	4
45	Synthesis of neural networks for spatio-temporal spike pattern recognition and processing. Frontiers in Neuroscience, 2013, 7, 153.	1.4	54
46	Routing in the brain. Frontiers in Computational Neuroscience, 2014, 8, 44.	1.2	26
47	DianNao. , 2014, , .		845
48	DianNao. Computer Architecture News, 2014, 42, 269-284.	2.5	221
49	Efficient implementation of STDP rules on SpiNNaker neuromorphic hardware. , 2014, , .		23
50	DaDianNao: A Machine-Learning Supercomputer. , 2014, , .		1,016
51	Efficient Spiking Neural Network Model of Pattern Motion Selectivity in Visual Cortex. Neuroinformatics, 2014, 12, 435-454.	1.5	21
52	A compact spike-timing-dependent-plasticity circuit for floating gate weight implementation. Neurocomputing, 2014, 124, 210-217.	3.5	8
53	Fabrication and characterization of tungsten-oxide-based memristors for neuromorphic circuits. , 2014, , .		1
54	Brian 2: neural simulations on a variety of computational hardware. BMC Neuroscience, 2014, 15, P199.	0.8	16

#	Article	IF	Citations
55	Towards General-Purpose Neural Network Computing. , 2015, , .		13
56	Unsupervised learning of digit recognition using spike-timing-dependent plasticity. Frontiers in Computational Neuroscience, 2015, 9, 99.	1.2	906
57	A visual tracking model implemented on the iCub robot as a use case for a novel neurorobotic toolkit integrating brain and physics simulation. , 2015, , .		9
58	Spin orbit torque based electronic neuron. Applied Physics Letters, 2015, 106, .	1.5	71
59	A GPU-accelerated cortical neural network model for visually guided robot navigation. Neural Networks, 2015, 72, 75-87.	3.3	28
60	Spin-Transfer Torque Magnetic neuron for low power neuromorphic computing. , 2015, , .		24
61	NeuroFlow: A General Purpose Spiking Neural Network Simulation Platform using Customizable Processors. Frontiers in Neuroscience, 2015, 9, 516.	1.4	66
62	Survey of scaling platforms for Deep Neural Networks. , 2016, , .		3
63	Eager recirculating memory to alleviate the von Neumann Bottleneck. , 2016, , .		5
64	Real-Time Face Tracking and Recognition on IBM Neuromorphic Chip. , 2016, , .		2
65	Mapping Generative Models onto a Network of Digital Spiking Neurons. IEEE Transactions on Biomedical Circuits and Systems, 2016, 10, 837-854.	2.7	17
66	On the energy benefits of spiking deep neural networks: A case study. , 2016, , .		27
67	Conversion of artificial recurrent neural networks to spiking neural networks for low-power neuromorphic hardware. , 2016, , .		121
68	TrueHappiness: Neuromorphic emotion recognition on TrueNorth. , 2016, , .		44
69	GeNN: a code generation framework for accelerated brain simulations. Scientific Reports, 2016, 6, 18854.	1.6	105
70	Neuromorphic architectures with electronic synapses. , 2016, , .		26
71	Reproducibility in Computational Neuroscience Models and Simulations. IEEE Transactions on Biomedical Engineering, 2016, 63, 2021-2035.	2.5	43
72	DaDianNao: A Neural Network Supercomputer. IEEE Transactions on Computers, 2017, 66, 73-88.	2.4	125

#	Article	IF	Citations
73	Neuromorphic neural interfaces: from neurophysiological inspiration to biohybrid coupling with nervous systems. Journal of Neural Engineering, 2017, 14, 041002.	1.8	57
74	Controlled Propagation of Spiking Dynamics in Vertical-Cavity Surface-Emitting Lasers: Towards Neuromorphic Photonic Networks. IEEE Journal of Selected Topics in Quantum Electronics, 2017, 23, 1-8.	1.9	67
75	Parallel Turing Machine, a Proposal. Journal of Computer Science and Technology, 2017, 32, 269-285.	0.9	8
76	Rethinking NoCs for Spatial Neural Network Accelerators. , 2017, , .		53
77	EnsembleSNN: Distributed assistive STDP learning for energy-efficient recognition in spiking neural networks. , 2017, , .		3
78	Biologically-inspired visual place recognition with adaptive multiple scales. Robotics and Autonomous Systems, 2017, 96, 224-237.	3.0	10
79	INXS: Bridging the throughput and energy gap for spiking neural networks. , 2017, , .		17
80	Network intrusion detection for cyber security on neuromorphic computing system. , 2017, , .		28
81	Hierarchical Address Event Routing for Reconfigurable Large-Scale Neuromorphic Systems. IEEE Transactions on Neural Networks and Learning Systems, 2017, 28, 2408-2422.	7.2	88
82	A Framework for Coupled Simulations of Robots and Spiking Neuronal Networks. Journal of Intelligent and Robotic Systems: Theory and Applications, 2017, 85, 71-91.	2.0	16
83	Towards autonomous locomotion: Slithering gait design of a snake-like robot for target observation and tracking. , 2017, , .		8
84	A spike-based long short-term memory on a neurosynaptic processor. , 2017, , .		13
85	Live demonstration: Multiplexing AER asynchronous channels over LVDS links with flow-control and clock-correction for scalable neuromorphic systems. , 2017, , .		0
86	Proprioceptive Feedback through a Neuromorphic Muscle Spindle Model. Frontiers in Neuroscience, 2017, 11, 341.	1.4	10
87	Hardware-Efficient On-line Learning through Pipelined Truncated-Error Backpropagation in Binary-State Networks. Frontiers in Neuroscience, 2017, 11, 496.	1.4	7
88	Impact of Linearity and Write Noise of Analog Resistive Memory Devices in a Neural Algorithm Accelerator. , 2017, , .		17
89	Performance evaluation of coherent Ising machines against classical neural networks. Quantum Science and Technology, 2017, 2, 044002.	2.6	34
90	Neural computing for scientific computing applications. , 2017, , .		7

#	Article	IF	Citations
91	Balancing the learning ability and memory demand of a perceptron-based dynamically trainable neural network. Journal of Supercomputing, 2018, 74, 3211-3235.	2.4	0
92	Cross-Layer Design Exploration for Energy-Quality Tradeoffs in Spiking and Non-Spiking Deep Artificial Neural Networks. IEEE Transactions on Multi-Scale Computing Systems, 2018, 4, 613-623.	2.5	11
93	Evaluating the Impact of Spiking Neural Network Traffic on Extreme-Scale Hybrid Systems. , 2018, , .		3
94	Stable Propagation of Inhibited Spiking Dynamics in Vertical-Cavity Surface-Emitting Lasers for Neuromorphic Photonic Networks. IEEE Access, 2018, 6, 67951-67958.	2.6	35
95	NVIDIA Tensor Core Programmability, Performance & Precision. , 2018, , .		181
96	Flexon: A Flexible Digital Neuron for Efficient Spiking Neural Network Simulations. , 2018, , .		20
97	Training Deep Spiking Convolutional Neural Networks With STDP-Based Unsupervised Pre-training Followed by Supervised Fine-Tuning. Frontiers in Neuroscience, 2018, 12, 435.	1.4	121
98	Modular Spiking Neural Circuits for Mapping Long Short-Term Memory on a Neurosynaptic Processor. IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2018, 8, 782-795.	2.7	7
99	Mapping of local and global synapses on spiking neuromorphic hardware. , 2018, , .		40
100	DropOut and DropConnect for Reliable Neuromorphic Inference under Energy and Bandwidth Constraints in Network Connectivity. , 2019, , .		4
101	Modeling Deep Learning Accelerator Enabled GPUs. , 2019, , .		44
102	Socio-Emotional Robot with Distributed Multi-Platform Neuromorphic Processing : (Invited) Tj ETQq1 1 0.784314 rgBT /Overlock 10 T		3
103	Emergence of Neuromorphic Chips to simulate Human Brain. , 2019, , .		2
104	A Framework for the Analysis of Throughput-Constraints of SNNs on Neuromorphic Hardware. , 2019, , .		19
105	Direct Training for Spiking Neural Networks: Faster, Larger, Better. Proceedings of the AAAI Conference on Artificial Intelligence, 2019, 33, 1311-1318.	3.6	257
106	Training deep neural networks for binary communication with the Whetstone method. Nature Machine Intelligence, 2019, 1, 86-94.	8.3	67
107	Neuromorphic Stereo Vision: A Survey of Bio-Inspired Sensors and Algorithms. Frontiers in Neurorobotics, 2019, 13, 28.	1.6	31
108	Packing Sparse Convolutional Neural Networks for Efficient Systolic Array Implementations. , 2019, , .		94

#	Article	IF	Citations
109	An unsupervised neuromorphic clustering algorithm. Biological Cybernetics, 2019, 113, 423-437.	0.6	13
110	NengoDL: Combining Deep Learning and Neuromorphic Modelling Methods. Neuroinformatics, 2019, 17, 611-628.	1.5	45
111	Memristive Imitation of Synaptic Transmission and Plasticity. IEEE Transactions on Neural Networks and Learning Systems, 2019, 30, 3458-3470.	7.2	41
112	Towards spike-based machine intelligence with neuromorphic computing. Nature, 2019, 575, 607-617.	13.7	869
113	Dropout and DropConnect for Reliable Neuromorphic Inference Under Communication Constraints in Network Connectivity. IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2019, 9, 658-667.	2.7	4
114	Deep Spiking Convolutional Neural Network Trained With Unsupervised Spike-Timing-Dependent Plasticity. IEEE Transactions on Cognitive and Developmental Systems, 2019, 11, 384-394.	2.6	65
115	Mapping Spiking Neural Networks to Neuromorphic Hardware. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2020, 28, 76-86.	2.1	75
116	A Model for $R(t)$ Elements and $R(t)$ -Based Spike-Timing-Dependent Plasticity With Basic Circuit Examples. IEEE Transactions on Neural Networks and Learning Systems, 2020, 31, 4206-4216.	7.2	2
117	SpinalFlow: An Architecture and Dataflow Tailored for Spiking Neural Networks. , 2020, , .		36
118	NeuronFlow: a neuromorphic processor architecture for Live AI applications. , 2020, , .		11
119	Machine Learning in a Post Mooreâ€™s Law World: Quantum vs. Neuromorphic Substrates. , 2020, , .		3
120	Shenjing: A low power reconfigurable neuromorphic accelerator with partial-sum and spike networks-on-chip. , 2020, , .		11
121	Hardware implementation of spiking neural networks on FPGA. Tsinghua Science and Technology, 2020, 25, 479-486.	4.1	63
122	Minimally buffered deflection router for spiking neural network hardware implementations. Neural Computing and Applications, 2021, 33, 11753-11764.	3.2	4
123	Provable Advantages for Graph Algorithms in Spiking Neural Networks. , 2021, , .		7
124	Fast Post-Hoc Normalization for Brain Inspired Sparse Coding on a Neuromorphic Device. IEEE Transactions on Parallel and Distributed Systems, 2022, 33, 302-309.	4.0	2
125	Rectified Linear Postsynaptic Potential Function for Backpropagation in Deep Spiking Neural Networks. IEEE Transactions on Neural Networks and Learning Systems, 2022, 33, 1947-1958.	7.2	55
126	Classification of fMRI Data in the NeuCube Evolving Spiking Neural Network Architecture. Lecture Notes in Computer Science, 2014, , 421-428.	1.0	6

#	Article	IF	Citations
128	Simulating Biological-Inspired Spiking Neural Networks with OpenCL. Lecture Notes in Computer Science, 2010, , 184-187.	1.0	8
129	A Large-Scale Spiking Neural Network Accelerator for FPGA Systems. Lecture Notes in Computer Science, 2012, , 113-120.	1.0	38
130	Real-Time Interface Board for Closed-Loop Robotic Tasks on the SpiNNaker Neural Computing System. Lecture Notes in Computer Science, 2013, , 467-474.	1.0	23
131	Survey of Machine Learning Accelerators. , 2020, , .		74
132	DSIP: A Scalable Inference Accelerator for Convolutional Neural Networks. IEEE Journal of Solid-State Circuits, 2018, 53, 605-618.	3.5	48
133	DianNao. ACM SIGPLAN Notices, 2014, 49, 269-284.	0.2	248
134	Modeling epidemic spread with spike-based models. , 2020, , .		15
135	Extending the Functional Subnetwork Approach to a Generalized Linear Integrate-and-Fire Neuron Model. Frontiers in Neurorobotics, 2020, 14, 577804.	1.6	9
136	STDP and STDP variations with memristors for spiking neuromorphic learning systems. Frontiers in Neuroscience, 2013, 7, 2.	1.4	368
137	LSI Implementation of Neural Network Model for Detecting Local Image Motion in Motion Stereo Vision. The Brain & Neural Networks, 2015, 22, 152-161.	0.1	1
138	Web-enabled Neuron Model Hardware Implementation and Testing. , 2015, , .		1
140	A Software Framework for Mapping Neural Networks to a Wafer-scale Neuromorphic Hardware System. , 2010, , .		3
141	Factor Graph Inference Engine on the SpiNNaker Neural Computing System. Lecture Notes in Computer Science, 2014, , 161-168.	1.0	0
142	Synfire Chain Emulation by Means of Flexible SNN Modeling on a SIMD Multicore Architecture. Lecture Notes in Computer Science, 2016, , 365-373.	1.0	0
143	Compact Associative Memory for AER Spike Decoding in FPGA-Based Evolvable SNN Emulation. Lecture Notes in Computer Science, 2016, , 399-407.	1.0	2
144	Neuromorphic Approach Sensitivity Cell Modeling and FPGA Implementation. Lecture Notes in Computer Science, 2017, , 179-187.	1.0	2
145	Neural Network Architecture for Hybrid Network-On-Chip using Scalable Spiking for Man Machine Interface. Indian Journal of Science and Technology, 2017, 10, 1-7.	0.5	1
146	Overview of machine learning (ML) based perception algorithms for unstructured and degraded visual environments. , 2019, , .		2

#	Article	IF	Citations
147	Alien vs. Predator: Brain Inspired Sparse Coding Optimization on Neuromorphic and Quantum Devices. , 2020, , .		1
148	Design and Implementation of a Highly Accurate Stochastic Spiking Neural Network. , 2021, , .		1
149	Neuron-Like Optical Spiking Generation Based on Silicon Microcavity. , 2020, , .		2
150	Self-Supervised Optical Flow with Spiking Neural Networks and Event Based Cameras. , 2021, , .		2
151	Online learning for orientation estimation during translation in an insect ring attractor network. Scientific Reports, 2022, 12, 3210.	1.6	4
152	The Future of Mammalian Whole-brain Simulations Estimated from Technological Trends in Supercomputers and Brain Measurements. The Brain & Neural Networks, 2021, 28, 172-182.	0.1	0
153	Hand Gesture Recognition in Range-Doppler Images Using Binary Activated Spiking Neural Networks. , 2021, , .		2
155	NeuroSync: A Scalable and Accurate Brain Simulator Using Safe and Efficient Speculation. , 2022, , .		2
156	Efficient Spiking Neural Networks With Radix Encoding. IEEE Transactions on Neural Networks and Learning Systems, 2024, 35, 3689-3701.	7.2	2
157	End-to-End Synthesis of Dynamically Controlled Machine Learning Accelerators. IEEE Transactions on Computers, 2022, , 1-14.	2.4	1
158	Demonstrating Analog Inference on the BrainScaleS-2 Mobile System. IEEE Open Journal of Circuits and Systems, 2022, 3, 252-262.	1.4	5
159	RecDis-SNN: Rectifying Membrane Potential Distribution for Directly Training Spiking Neural Networks. , 2022, , .		20
161	Real Spike: Learning Real-Valued Spikes forÂSpiking Neural Networks. Lecture Notes in Computer Science, 2022, , 52-68.	1.0	4
162	Reducing Information Loss forÂSpiking Neural Networks. Lecture Notes in Computer Science, 2022, , 36-52.	1.0	7
164	Hierarchical Multicast Network-On-Chip for Scalable Reconfigurable Neuromorphic Systems. , 2022, , .		1
165	A cerebellum inspired spiking neural network as a multi-model for pattern classification and robotic trajectory prediction. Frontiers in Neuroscience, 0, 16, .	1.4	3
166	Spiking Neural-Networks-Based Data-Driven Control. Electronics (Switzerland), 2023, 12, 310.	1.8	1
167	A perspective on the neuromorphic control of legged locomotion in past, present, and future insect-like robots. Neuromorphic Computing and Engineering, 2023, 3, 023001.	2.8	5

#	Article	IF	Citations
168	A Rapid andÂPrecise Spiking Neural Network forÂImage Recognition. Communications in Computer and Information Science, 2023, , 385-393.	0.4	0
171	A High-Throughput Low-Latency Interface Board for SpiNNaker-in-the-loop Real-Time Systems. , 2023, , .		0
172	GMap : An Open-source Efficient Compiler for Mapping any Network onto any Neuromophic Chip. , 2023, , .		0
173	FABLE: A Development and Computing Framework for Brain-inspired Learning Algorithms. , 2023, , .		1
174	An Event-Based Tracking Control Framework for Multirotor Aerial Vehicles Using a Dynamic Vision Sensor and Neuromorphic Hardware. , 2023, , .		0
175	RMP-Loss: Regularizing Membrane Potential Distribution for Spiking Neural Networks. , 2023, , .		1