Steve B Furber

List of Publications by Year
in descending order

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162 papers	5,393 citations	249298 26 h-index	124990 64 g-index
168 all docs	168 docs citations	168 times ranked	3768 citing authors

#	Article	IF	Citations
1	2022 roadmap on neuromorphic computing and engineering. Neuromorphic Computing and Engineering, 2022, 2, 022501.	2.8	217
2	Linking Brain Structure, Activity, and Cognitive Function through Computation. ENeuro, 2022, 9, ENEURO.0316-21.2022.	0.9	22
3	Event driven bio-inspired attentive system for the iCub humanoid robot on SpiNNaker. Neuromorphic Computing and Engineering, 2022, 2, 024008.	2.8	6
4	Comparison of Artificial and Spiking Neural Networks on Digital Hardware. Frontiers in Neuroscience, 2021, 15, 651141.	1.4	52
5	Comparing Loihi with a SpiNNaker 2 prototype on low-latency keyword spotting and adaptive robotic control. Neuromorphic Computing and Engineering, 2021, 1, 014002.	2.8	26
6	Towards Biologically-Plausible Neuron Models and Firing Rates in High-Performance Deep Spiking Neural Networks. , 2021, , .		0
7	Nanoscale Room-Temperature Multilayer Skyrmionic Synapse for Deep Spiking Neural Networks. Physical Review Applied, 2020, 14, .	1.5	26
8	Robustness to Noisy Synaptic Weights in Spiking Neural Networks. , 2020, , .		4
9	Embodied tactile perception and learning. Brain Science Advances, 2020, 6, 132-158.	0.3	6
10	spiNNlink: FPGA-Based Interconnect for the Million-Core SpiNNaker System. IEEE Access, 2020, 8, 84918-84928.	2.6	11
11	A GPS-Less Localization and Mobility Modelling (LMM) System for Wildlife Tracking. IEEE Access, 2020, 8, 102709-102732.	2.6	15
12	Stochastic rounding and reduced-precision fixed-point arithmetic for solving neural ordinary differential equations. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2020, 378, 20190052.	1.6	32
13	Real-time cortical simulation on neuromorphic hardware. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2020, 378, 20190160.	1.6	37
14	Event-based Signal Processing for Radioisotope Identification. , 2020, , .		0
15	Spiking Neural Network Based Low-Power Radioisotope Identification using FPGA. , 2020, , .		0
16	Efficient Reward-Based Structural Plasticity on a SpiNNaker 2 Prototype. IEEE Transactions on Biomedical Circuits and Systems, 2019, 13, 579-591.	2.7	20
17	Dynamic Power Management for Neuromorphic Many-Core Systems. IEEE Transactions on Circuits and Systems I: Regular Papers, 2019, 66, 2973-2986.	3.5	12
18	SpiNNTools: The Execution Engine for the SpiNNaker Platform. Frontiers in Neuroscience, 2019, 13, 231.	1.4	25

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19	Classification and regression of spatio-temporal signals using NeuCube and its realization on SpiNNaker neuromorphic hardware. Journal of Neural Engineering, 2019, 16, 026014.	1.8	29
20	SpiNNaker: Event-Based Simulationâ€"Quantitative Behavior. IEEE Transactions on Multi-Scale Computing Systems, 2018, 4, 450-462.	2.5	5
21	Visual attention and object naming in humanoid robots using a bio-inspired spiking neural network. Robotics and Autonomous Systems, 2018, 104, 56-71.	3.0	14
22	Behavioral Learning in a Cognitive Neuromorphic Robot: An Integrative Approach. IEEE Transactions on Neural Networks and Learning Systems, 2018, 29, 6132-6144.	7.2	13
23	Building a Spiking Neural Network Model of the Basal Ganglia on SpiNNaker. IEEE Transactions on Cognitive and Developmental Systems, 2018, 10, 823-836.	2.6	24
24	Memory-Efficient Deep Learning on a SpiNNaker 2 Prototype. Frontiers in Neuroscience, 2018, 12, 840.	1.4	38
25	sPyNNaker: A Software Package for Running PyNN Simulations on SpiNNaker. Frontiers in Neuroscience, 2018, 12, 816.	1.4	61
26	Approximate Fixed-Point Elementary Function Accelerator for the SpiNNaker-2 Neuromorphic Chip. , 2018, , .		9
27	SLAMBench2: Multi-Objective Head-to-Head Benchmarking for Visual SLAM. , 2018, , .		40
28	Deep Spiking Neural Network model for time-variant signals classification: a real-time speech recognition approach. , 2018, , .		35
29	Structural Plasticity on the SpiNNaker Many-Core Neuromorphic System. Frontiers in Neuroscience, 2018, 12, 434.	1.4	12
30	Spiking neural networks for computer vision. Interface Focus, 2018, 8, 20180007.	1.5	29
31	Parallel Distribution of an Inner Hair Cell and Auditory Nerve Model for Real-Time Application. IEEE Transactions on Biomedical Circuits and Systems, 2018, 12, 1018-1026.	2.7	3
32	Neuromodulated Synaptic Plasticity on the SpiNNaker Neuromorphic System. Frontiers in Neuroscience, 2018, 12, 105.	1.4	23
33	Performance Comparison of the Digital Neuromorphic Hardware SpiNNaker and the Neural Network Simulation Software NEST for a Full-Scale Cortical Microcircuit Model. Frontiers in Neuroscience, 2018, 12, 291.	1.4	100
34	Performance Comparison of Time-Step-Driven versus Event-Driven Neural State Update Approaches in SpiNNaker. , 2018, , .		2
35	Navigating the Landscape for Real-Time Localization and Mapping for Robotics and Virtual and Augmented Reality. Proceedings of the IEEE, 2018, 106, 2020-2039.	16.4	34
36	Network-on-chip evaluation for a novel neural architecture. , 2018, , .		1

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37	Microprocessors: the engines of the digital age. Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences, 2017, 473, 20160893.	1.0	15
38	On Multiple AER Handshaking Channels Over High-Speed Bit-Serial Bidirectional LVDS Links With Flow-Control and Clock-Correction on Commercial FPGAs for Scalable Neuromorphic Systems. IEEE Transactions on Biomedical Circuits and Systems, 2017, 11, 1133-1147.	2.7	30
39	Identifying Energy Holes in Randomly Deployed Hierarchical Wireless Sensor Networks. IEEE Access, 2017, 5, 21395-21418.	2.6	11
40	Optimized task graph mapping on a many-core neuromorphic supercomputer. , 2017, , .		2
41	Live demonstration: Dynamic voltage and frequency scaling for neuromorphic many-core systems. , 2017, , .		1
42	Asynchronous interface FIFO design on FPGA for high-throughput NRZ synchronisation. , 2017, , .		3
43	A fixed point exponential function accelerator for a neuromorphic many-core system. , 2017, , .		21
44	Profiling a Many-core Neuromorphic Platform. , 2017, , .		1
45	A Spiking Neural Network Model of the Lateral Geniculate Nucleus on the SpiNNaker Machine. Frontiers in Neuroscience, 2017, 11, 454.	1.4	9
46	Using Stochastic Spiking Neural Networks on SpiNNaker to Solve Constraint Satisfaction Problems. Frontiers in Neuroscience, 2017, 11, 714.	1.4	46
47	Dynamic voltage and frequency scaling for neuromorphic many-core systems. , 2017, , .		3
48	Large-Scale Simulations of Plastic Neural Networks on Neuromorphic Hardware. Frontiers in Neuroanatomy, 2016, 10, 37.	0.9	16
49	Synapse-Centric Mapping of Cortical Models to the SpiNNaker Neuromorphic Architecture. Frontiers in Neuroscience, 2016, 10, 420.	1.4	18
50	Benchmarking Spike-Based Visual Recognition: A Dataset and Evaluation. Frontiers in Neuroscience, 2016, 10, 496.	1.4	27
51	High performance computing on SpiNNaker neuromorphic platform: A case study for energy efficient image processing. , 2016, , .		12
52	pyDVS: An extensible, real-time Dynamic Vision Sensor emulator using off-the-shelf hardware. , 2016, , .		9
53	Neuromorphic sampling on the SpiNNaker and parallella chip multiprocessors. , 2016, , .		4
54	Brainâ€inspired computing. IET Computers and Digital Techniques, 2016, 10, 299-305.	0.9	20

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55	Large-scale neuromorphic computing systems. Journal of Neural Engineering, 2016, 13, 051001.	1.8	331
56	Efficient SpiNNaker simulation of a heteroassociative memory using the Neural Engineering Framework. , 2016, , .		8
57	Fast Predictive Handshaking in Synchronous FPGAs for Fully Asynchronous Multisymbol Chip Links: Application to SpiNNaker 2-of-7 Links. IEEE Transactions on Circuits and Systems II: Express Briefs, 2016, 63, 763-767.	2.2	9
58	Noisy Softplus: A Biology Inspired Activation Function. Lecture Notes in Computer Science, 2016, , 405-412.	1.0	19
59	Live demonstration: Handwritten digit recognition using spiking deep belief networks on SpiNNaker. , 2015, , .		6
60	An efficient SpiNNaker implementation of the Neural Engineering Framework. , 2015, , .		31
61	Breaking the millisecond barrier on SpiNNaker: implementing asynchronous event-based plastic models with microsecond resolution. Frontiers in Neuroscience, 2015, 9, 206.	1.4	24
62	Robustness of spiking Deep Belief Networks to noise and reduced bit precision of neuro-inspired hardware platforms. Frontiers in Neuroscience, 2015, 9, 222.	1.4	74
63	Live demonstration: Real-time event-driven object recognition on SpiNNaker. , 2015, , .		0
64	SpiNNaker: Enhanced multicast routing. Parallel Computing, 2015, 45, 49-66.	1.3	21
65	Network traffic exploration on a many-core computing platform: SpiNNaker real-time traffic visualiser. , 2015, , .		5
66	Introducing SLAMBench, a performance and accuracy benchmarking methodology for SLAM. , 2015, , .		90
67	Reliable computation with unreliable computers. IET Computers and Digital Techniques, 2015, 9, 230-237.	0.9	3
68	Markov Chain Monte Carlo inference on graphical models using event-based processing on the SpiNNaker neuromorphic architecture. , 2015, , .		11
69	Real-time event-driven spiking neural network object recognition on the SpiNNaker platform. , 2015, , .		17
70	Accuracy and Efficiency in Fixed-Point Neural ODE Solvers. Neural Computation, 2015, 27, 2148-2182.	1.3	33
71	ConvNets experiments on SpiNNaker. , 2015, , .		27
72	Transport-Independent Protocols for Universal AER Communications. Lecture Notes in Computer Science, 2015, , 675-684.	1.0	4

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73	Engineering a thalamo-cortico-thalamic circuit on SpiNNaker: a preliminary study toward modeling sleep and wakefulness. Frontiers in Neural Circuits, 2014, 8, 46.	1.4	7
74	Real-time million-synapse simulation of rat barrel cortex. Frontiers in Neuroscience, 2014, 8, 131.	1.4	12
75	Event-based neural computing on an autonomous mobile platform. , 2014, , .		31
76	Optimising the overall power usage on the SpiNNaker neuromimetic platform. , 2014, , .		0
77	SpiNNaker - programming model. IEEE Transactions on Computers, 2014, , 1-1.	2.4	15
78	The SpiNNaker Project. Proceedings of the IEEE, 2014, 102, 652-665.	16.4	888
79	Beyond Moore's law. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2014, 372, 20130376.	1.6	9
80	On generating multicast routes for SpiNNaker. , 2014, , .		3
81	A framework for plasticity implementation on the SpiNNaker neural architecture. Frontiers in Neuroscience, 2014, 8, 429.	1.4	45
82	Towards Real-World Neurorobotics: Integrated Neuromorphic Visual Attention. Lecture Notes in Computer Science, 2014, , 563-570.	1.0	9
83	Overview of the SpiNNaker System Architecture. IEEE Transactions on Computers, 2013, 62, 2454-2467.	2.4	479
84	Power analysis of large-scale, real-time neural networks on SpiNNaker. , 2013, , .		46
85	SpiNNaker: Fault tolerance in a power- and area- constrained large-scale neuromimetic architecture. Parallel Computing, 2013, 39, 693-708.	1.3	9
86	Spike-based learning of transfer functions with the SpiNNaker neuromimetic simulator. , 2013, , .		1
87	Correctness and performance of the SpiNNaker architecture. , 2013, , .		17
88	Modeling populations of spiking neurons for fine timing sound localization. , 2013, , .		3
89	A location-independent direct link neuromorphic interface. , 2013, , .		13
90	Interconnection system for the SpiNNaker biologically inspired multiâ€computer. IET Computers and Digital Techniques, 2013, 7, 115-121.	0.9	2

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91	Algebraic approach to time borrowing. IET Computers and Digital Techniques, 2013, 7, 1-10.	0.9	2
92	SpiNNaker: A 1-W 18-Core System-on-Chip for Massively-Parallel Neural Network Simulation. IEEE Journal of Solid-State Circuits, 2013, 48, 1943-1953.	3.5	450
93	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
94	A hierachical configuration system for a massively parallel neural hardware platform. , 2012, , .		53
95	Large-Scale On-Chip Dynamic Programming Network Inferences Using Moderated Inter-core Communication. , 2012, , .		0
96	SpiNNaker: A multi-core System-on-Chip for massively-parallel neural net simulation. , 2012, , .		42
97	An Asynchronous Fully Digital Delay Locked Loop for DDR SDRAM Data Recovery. , 2012, , .		2
98	Creating, documenting and sharing network models. Network: Computation in Neural Systems, 2012, 23, 131-149.	2.2	14
99	Managing a Massively-Parallel Resource-Constrained Computing Architecture. , 2012, , .		0
100	Live Demo: Spiking ratSLAM: Rat hippocampus cells in spiking neural hardware. , 2012, , .		12
101	Analytical Assessment of the Suitability of Multicast Communications for the SpiNNaker Neuromimetic System. , 2012, , .		3
102	Population-based routing in the SpiNNaker neuromorphic architecture. , 2012, , .		13
103	Event-driven MLP implementation on neuromimetic hardware. , 2012, , .		1
104	Real time on-chip implementation of dynamical systems with spiking neurons. , 2012, , .		20
105	Visualising large-scale neural network models in real-time. , 2012, , .		2
106	Power-efficient simulation of detailed cortical microcircuits on SpiNNaker. Journal of Neuroscience Methods, 2012, 210, 110-118.	1.3	43
107	A forecast-based STDP rule suitable for neuromorphic implementation. Neural Networks, 2012, 32, 3-14.	3.3	28
108	Scalable communications for a million-core neural processing architecture. Journal of Parallel and Distributed Computing, 2012, 72, 1507-1520.	2.7	8

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109	To build a brain. IEEE Spectrum, 2012, 49, 44-49.	0.5	50
110	Modelling normal and impaired letter recognition: Implications for understanding pure alexic reading. Neuropsychologia, 2012, 50, 2773-2788.	0.7	15
111	A Real-Time, Event-Driven Neuromorphic System for Goal-Directed Attentional Selection. Lecture Notes in Computer Science, 2012, , 226-233.	1.0	17
112	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
113	â€œSerialâ€•effects in parallel models of reading. Cognitive Psychology, 2012, 64, 267-291.	0.9	20
114	A Universal Abstract-Time Platform for Real-Time Neural Networks. , 2012, , 135-157.		3
115	Distributed configuration of massively-parallel simulation on SpiNNaker neuromorphic hardware. , 2011, , .		7
116	Representing and decoding rank order codes using polychronization in a network of spiking neurons. , 2011, , .		3
117	Maintaining real-time synchrony on SpiNNaker. , 2011, , .		0
118	Modelling circuit performance variations due to statistical variability: Monte Carlo static timing analysis. , 2011, , .		7
119	A Novel Programmable Parallel CRC Circuit. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2011, 19, 1898-1902.	2.1	28
120	Concurrent heterogeneous neural model simulation on real-time neuromimetic hardware. Neural Networks, 2011, 24, 961-978.	3.3	22
121	Event-driven configuration of a neural network CMP system over an homogeneous interconnect fabric. Parallel Computing, 2011, 37, 392-409.	1.3	3
122	SpiNNaker. ACM Journal on Emerging Technologies in Computing Systems, 2011, 7, 1-18.	1.8	29
123	A forecast-based biologically-plausible STDP learning rule. , 2011, , .		3
124	An event-driven model for the SpiNNaker virtual synaptic channel. , 2011, , .		6
125	STDP Pattern Onset Learning Depends on Background Activity. Advances in Experimental Medicine and Biology, 2011, 718, 19-31.	0.8	3
126	Modeling Spiking Neural Networks on SpiNNaker. Computing in Science and Engineering, 2010, 12, 91-97.	1.2	74

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127	A Multicast Routing Scheme for a Universal Spiking Neural Network Architecture. Computer Journal, 2010, 53, 280-288.	1.5	23
128	SpiNNaker. , 2010, , .		8
129	Biologically Inspired Means for Rank-Order Encoding Images: A Quantitative Analysis. IEEE Transactions on Neural Networks, 2010, 21, 1087-1099.	4.8	12
130	Scalable event-driven native parallel processing. , 2010, , .		24
131	Algorithm and software for simulation of spiking neural networks on the multi-chip SpiNNaker system. , 2010, , .		11
132	Efficient parallel implementation of multilayer backpropagation networks on SpiNNaker. , 2010, , .		5
133	Implementing spike-timing-dependent plasticity on SpiNNaker neuromorphic hardware. , 2010, , .		38
134	A General-Purpose Model Translation System for a Universal Neural Chip. Lecture Notes in Computer Science, 2010, , 58-65.	1.0	16
135	Evaluating rank-order code performance using a biologically-derived retinal model. , 2009, , .		4
136	Biologically-Inspired Massively-Parallel Architectures - Computing Beyond a Million Processors. , 2009, , .		42
137	A Token-Managed Admission Control System for QoS Provision on a Best-Effort GALS Interconnect. Fundamenta Informaticae, 2009, 95, 53-72.	0.3	0
138	Event-Driven Configuration of a Neural Network CMP System over a Homogeneous Interconnect Fabric. , 2009, , .		4
139	A Programmable Adaptive Router for a GALS Parallel System. , 2009, , .		12
140	Adaptive admission control on the SpiNNaker MPSoC. , 2009, , .		1
141	Fault Tolerant Delay Insensitive Inter-chip Communication. , 2009, , .		23
142	Understanding the interconnection network of SpiNNaker. , 2009, , .		34
143	Implementing Learning on the SpiNNaker Universal Neural Chip Multiprocessor. Lecture Notes in Computer Science, 2009, , 425-432.	1.0	8
144	SpiNNaker: The Design Automation Problem. Lecture Notes in Computer Science, 2009, , 1049-1056.	1.0	4

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145	THE CALL TO ARMs. Advances in Computer Science and Engineering, 2009, , 117-127.	0.2	0
146	An On-Chip and Inter-Chip Communications Network for the SpiNNaker Massively-Parallel Neural Net Simulator. , 2008, , .		14
147	Efficient modelling of spiking neural networks on a scalable chip multiprocessor. , 2008, , .		40
148	An admission control system for QoS provision on a best-effort GALS interconnect. , 2008, , .		1
149	Virtual synaptic interconnect using an asynchronous network-on-chip. , 2008, , .		27
150	The Future of Computer Technology and its Implications for the Computer Industry. Computer Journal, 2008, 51, 735-740.	1.5	10
151	Neural Systems Engineering. Studies in Computational Intelligence, 2008, , 763-796.	0.7	11
152	A GALS Infrastructure for a Massively Parallel Multiprocessor. IEEE Design and Test of Computers, 2007, 24, 454-463.	1.4	108
153	Neural systems engineering. Journal of the Royal Society Interface, 2007, 4, 193-206.	1.5	101
154	Asynchronous and Self-Timed Processor Design. , 2007, , 367-389.		0
155	Sparse distributed memory using N-of-M codes. Neural Networks, 2004, 17, 1437-1451.	3.3	32
156	Design and analysis of a self-timed duplex communication system. IEEE Transactions on Computers, 2004, 53, 798-814.	2.4	15
157	An asynchronous copy-back cache architecture. Microprocessors and Microsystems, 2003, 27, 485-500.	1.8	0
158	Validating the AMULET Microprocessors. Computer Journal, 2002, 45, 19-26.	1.5	2
159	MARBLE: an asynchronous on-chip macrocell bus. Microprocessors and Microsystems, 2000, 24, 213-222.	1.8	10
160	Four-phase micropipeline latch control circuits. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 1996, 4, 247-253.	2.1	181
161	RISC architectures. Microprocessors and Microsystems, 1992, 16, 499.	1.8	0
162	RISC architecture. Microprocessors and Microsystems, 1987, 11, 403.	1.8	1