Geoffrey W Burr

List of Publications by Year
in descending order

53 papers	7,158 citations	318942 23 h-index	488211 31 g-index
54 all docs	54 docs citations	54 times ranked	6239 citing authors

#	Article	IF	Citations
1	Fair and Comprehensive Benchmarking of Machine Learning Processing Chips. IEEE Design and Test, 2022, 39, 18-27.	1.1	15
2	Yield Methodology and Learning in Phase Change Memory (PCM) technology for Analog Computing : Topic/category: YE: Yield Enhancement/Learning, YM: Yield Methodologies. , 2022, , .		2
3	Optimised weight programming for analogue memory-based deep neural networks. Nature Communications, 2022, 13, .	5.8	21
4	Mushroom-Type phase change memory with projection liner: An array-level demonstration of conductance drift and noise mitigation. , 2021, , .		11
5	Circuit Techniques for Efficient Acceleration of Deep Neural Network Inference with Analog-AI (Invited). , 2021, , .		1
6	Toward Software-Equivalent Accuracy on Transformer-Based Deep Neural Networks With Analog Memory Devices. Frontiers in Computational Neuroscience, 2021, 15, 675741.	1.2	14
7	Noise-Resilient DNN: Tolerating Noise in PCM-Based AI Accelerators via Noise-Aware Training. IEEE Transactions on Electron Devices, 2021, 68, 4356-4362.	1.6	21
8	Fully On-Chip MAC at 14 nm Enabled by Accurate Row-Wise Programming of PCM-Based Weights and Parallel Vector-Transport in Duration-Format. IEEE Transactions on Electron Devices, 2021, 68, 6629-6636.	1.6	33
9	Optimization of Analog Accelerators for Deep Neural Networks Inference. , 2020, , .		1
10	Inference of Deep Neural Networks with Analog Memory Devices. , 2020, , .		3
11	Accelerating Deep Neural Networks with Analog Memory Devices. , 2020, , .		5
12	Enabling High-Performance DNN Inference Accelerators Using Non-Volatile Analog Memory (Invited). , 2020, , .		5
13	Analog acceleration of deep learning using phase-change memory. , 2020, , 329-362.		0
14	Neuromorphic Computing with Phase Change, Device Reliability, and Variability Challenges. , 2020, , .		3
15	Resistive switching materials forÂinformation processing. Nature Reviews Materials, 2020, 5, 173-195.	23.3	668
16	Emerging materials in neuromorphic computing: Guest editorial. APL Materials, 2020, 8, .	2.2	16
17	Accelerating Deep Neural Networks with Analog Memory Devices. , 2020, , .		5
18	Training fully connected networks with resistive memories: impact of device failures. Faraday Discussions, 2019, 213, 371-391.	1.6	14

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19	Inference of Long-Short Term Memory networks at software-equivalent accuracy using 2.5M analog Phase Change Memory devices. , 2019, , .		25
20	AI hardware acceleration with analog memory: Microarchitectures for low energy at high speed. IBM Journal of Research and Development, 2019, 63, 8:1-8:14.	3.2	39
21	Accelerating Deep Neural Networks with Analog Memory Devices. , 2019, , .		3
22	Phase-change memory cycling endurance. MRS Bulletin, 2019, 44, 710-714.	1.7	43
23	Weight Programming in DNN Analog Hardware Accelerators in the Presence of NVM Variability. Advanced Electronic Materials, 2019, 5, 1900026.	2.6	30
24	Analog-to-Digital Conversion With Reconfigurable Function Mapping for Neural Networks Activation Function Acceleration. IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2019, 9, 367-376.	2.7	19
25	Reducing the Impact of Phase-Change Memory Conductance Drift on the Inference of large-scale Hardware Neural Networks. , 2019, , .		42
26	Neuro-Inspired Computing: From Resistive Memory to Optics. , 2019, , .		0
27	A role for analogue memory in AI hardware. Nature Machine Intelligence, 2019, 1, 10-11.	8.3	18
28	Bidirectional Non-Filamentary RRAM as an Analog Neuromorphic Synapse, Part II: Impact of Al/Mo/Pr_{0.7}Ca_{0.3}MnO₃ Device Characteristics on Neural Network Training Accuracy. IEEE Journal of the Electron Devices Society, 2018, 6, 169-178.	1.2	23
29	Bidirectional Non-Filamentary RRAM as an Analog Neuromorphic Synapse, Part I: Al/Mo/Pr_{0.7}Ca_{0.3}MnO₃ Material Improvements and Device Measurements. IEEE Journal of the Electron Devices Society, 2018, 6, 146-155.	1.2	54
30	Perspective on training fully connected networks with resistive memories: Device requirements for multiple conductances of varying significance. Journal of Applied Physics, 2018, 124, .	1.1	31
31	Tutorial: Brain-inspired computing using phase-change memory devices. Journal of Applied Physics, 2018, 124, .	1.1	206
32	Equivalent-accuracy accelerated neural-network training using analogue memory. Nature, 2018, 558, 60-67.	13.7	755
33	Recent progress in analog memory-based accelerators for deep learning. Journal Physics D: Applied Physics, 2018, 51, 283001.	1.3	173
34	Neuromorphic computing using non-volatile memory. Advances in Physics: X, 2017, 2, 89-124.	1.5	629
35	Multilayer Perceptron Algorithm: Impact of Nonideal Conductance and Area-Efficient Peripheral Circuits. , 2017, , 209-231.		1
36	Reducing circuit design complexity for neuromorphic machine learning systems based on Non-Volatile Memory arrays. , 2017, , .		8

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37	Toward on-chip acceleration of the backpropagation algorithm using nonvolatile memory. IBM Journal of Research and Development, 2017, 61, 11:1-11:11.	3.2	54
38	Improved Deep Neural Network Hardware-Accelerators Based on Non-Volatile-Memory: The Local Gains Technique. , 2017, , .		10
39	Recent Progress in Phase-Change<?Pub _newline ?>Memory Technology. IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2016, 6, 146-162.	2.7	273
40	Accelerating machine learning with Non-Volatile Memory: Exploring device and circuit tradeoffs. , 2016, , .		26
41	Large-scale neural networks implemented with Non-Volatile Memory as the synaptic weight element: Impact of conductance response. , 2016, , .		31
42	NVM neuromorphic core with 64k-cell (256-by-256) phase change memory synaptic array with on-chip neuron circuits for continuous in-situ learning. , 2015, , .		125
43	Optimization of Conductance Change in Pr_{1â€"<i>x</i>}Ca_{<i>x</i>}MnO₃-Based Synaptic Devices for Neuromorphic Systems. IEEE Electron Device Letters, 2015, 36, 457-459.	2.2	235
44	Experimental Demonstration and Tolerancing of a Large-Scale Neural Network (165 000 Synapses) Using Phase-Change Memory as the Synaptic Weight Element. IEEE Transactions on Electron Devices, 2015, 62, 3498-3507.	1.6	705
45	Access devices for 3D crosspoint memory. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2014, 32, .	0.6	276
46	Nanoscale electronic synapses using phase change devices. ACM Journal on Emerging Technologies in Computing Systems, 2013, 9, 1-20.	1.8	123
47	Sub-30nm scaling and high-speed operation of fully-confined Access-Devices for 3D crosspoint memory based on mixed-ionic-electronic-conduction (MIEC) materials. , 2012, , .		32
48	Voltage polarity effects in Ge2Sb2Te5-based phase change memory devices. Journal of Applied Physics, 2011, 110, .	1.1	56
49	Evidence of Crystallizationâ€"Induced Segregation in the Phase Change Material Te-Rich GST. Journal of the Electrochemical Society, 2011, 158, H965.	1.3	40
50	Phase change memory technology. Journal of Vacuum Science and Technology B:Nanotechnology and Microelectronics, 2010, 28, 223-262.	0.6	795
51	Phase-change random access memory: A scalable technology. IBM Journal of Research and Development, 2008, 52, 465-479.	3.2	832
52	Overview of candidate device technologies for storage-class memory. IBM Journal of Research and Development, 2008, 52, 449-464.	3.2	588
53	On the dynamic resistance and reliability of phase change memory. , 2008, , .		20