Manuel Le Gallo

List of Publications by Year
in descending order

71 papers	7,397 citations	201674 27 h-index	265206 42 g-index
74 all docs	74 docs citations	74 times ranked	4816 citing authors

#	Article	IF	Citations
1	Memory devices and applications for in-memory computing. Nature Nanotechnology, 2020, 15, 529-544.	31.5	968
2	Stochastic phase-change neurons. Nature Nanotechnology, 2016, 11, 693-699.	31.5	799
3	Parallel convolutional processing using an integrated photonic tensor core. Nature, 2021, 589, 52-58.	27.8	723
4	Neuromorphic computing using non-volatile memory. Advances in Physics: X, 2017, 2, 89-124.	4.1	629
5	Neuromorphic computing with multi-memristive synapses. Nature Communications, 2018, 9, 2514.	12.8	566
6	Mixed-precision in-memory computing. Nature Electronics, 2018, 1, 246-253.	26.0	315
7	Accurate deep neural network inference using computational phase-change memory. Nature Communications, 2020, 11, 2473.	12.8	263
8	In-memory computing on a photonic platform. Science Advances, 2019, 5, eaau5759.	10.3	238
9	Monatomic phase change memory. Nature Materials, 2018, 17, 681-685.	27.5	221
10	Memristive technologies for data storage, computation, encryption, and radio-frequency communication. Science, 2022, 376, .	12.6	220
11	2022 roadmap on neuromorphic computing and engineering. Neuromorphic Computing and Engineering, 2022, 2, 022501.	5.9	217
12	Tutorial: Brain-inspired computing using phase-change memory devices. Journal of Applied Physics, 2018, 124, .	2.5	206
13	An overview of phase-change memory device physics. Journal Physics D: Applied Physics, 2020, 53, 213002.	2.8	202
14	Crystal growth within a phase change memory cell. Nature Communications, 2014, 5, 4314.	12.8	199
15	Temporal correlation detection using computational phase-change memory. Nature Communications, 2017, 8, 1115.	12.8	188
16	In-memory hyperdimensional computing. Nature Electronics, 2020, 3, 327-337.	26.0	145
17	A phase-change memory model for neuromorphic computing. Journal of Applied Physics, 2018, 124, .	2.5	96
18	Evidence for thermally assisted threshold switching behavior in nanoscale phase-change memory cells. Journal of Applied Physics, 2016, 119, .	2.5	78

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19	Compressed Sensing With Approximate Message Passing Using In-Memory Computing. IEEE Transactions on Electron Devices, 2018, 65, 4304-4312.	3.0	78
20	Computational phase-change memory: beyond von Neumann computing. Journal Physics D: Applied Physics, 2019, 52, 443002.	2.8	78
21	Collective Structural Relaxation in Phaseâ€Change Memory Devices. Advanced Electronic Materials, 2018, 4, 1700627.	5.1	67
22	Mixed-Precision Deep Learning Based on Computational Memory. Frontiers in Neuroscience, 2020, 14, 406.	2.8	61
23	Detecting Correlations Using Phase-Change Neurons and Synapses. IEEE Electron Device Letters, 2016, 37, 1238-1241.	3.9	54
24	8-bit Precision In-Memory Multiplication with Projected Phase-Change Memory. , 2018, , .		52
25	Robust high-dimensional memory-augmented neural networks. Nature Communications, 2021, 12, 2468.	12.8	50
26	HERMES-Coreâ€”A 1.59-TOPS/mm² PCM on 14-nm CMOS In-Memory Compute Core Using 300-ps/LSB Linearized CCO-Based ADCs. IEEE Journal of Solid-State Circuits, 2022, 57, 1027-1038.	5.4	49
27	Experimental Demonstration of Supervised Learning in Spiking Neural Networks with Phase-Change Memory Synapses. Scientific Reports, 2020, 10, 8080.	3.3	48
28	HERMES Core â€“ A 14nm CMOS and PCM-based In-Memory Compute Core using an array of 300ps/LSB Linearized CCO-based ADCs and local digital processing. , 2021, , .		48
29	A Flexible and Fast PyTorch Toolkit for Simulating Training and Inference on Analog Crossbar Arrays. , 2021, , .		48
30	Subthreshold electrical transport in amorphous phase-change materials. New Journal of Physics, 2015, 17, 093035.	2.9	44
31	Mixed-precision architecture based on computational memory for training deep neural networks. , 2018, , .		42
32	High-field electrical transport in amorphous phase-change materials. Journal of Applied Physics, 2015, 118, .	2.5	25
33	A collective relaxation model for resistance drift in phase change memory cells. , 2015, , .		24
34	Applications of Computation-In-Memory Architectures based on Memristive Devices. , 2019, , .		24
35	Optimised weight programming for analogue memory-based deep neural networks. Nature Communications, 2022, 13, .	12.8	21
36	Inâ€Memory Database Query. Advanced Intelligent Systems, 2020, 2, 2000141.	6.1	19

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37	Deep learning acceleration based on in-memory computing. IBM Journal of Research and Development, 2019, 63, 7:1-7:16.	3.1	18
38	Precision of bit slicing with in-memory computing based on analog phase-change memory crossbars. Neuromorphic Computing and Engineering, 2022, 2, 014009.	5.9	18
39	Precision of synaptic weights programmed in phase-change memory devices for deep learning inference. , 2020, , .		17
40	Inherent stochasticity in phase-change memory devices. , 2016, , .		16
41	Compressed sensing recovery using computational memory. , 2017, , .		16
42	Stochastic weight updates in phase-change memory-based synapses and their influence on artificial neural networks. , 2017, , .		14
43	State dependence and temporal evolution of resistance in projected phase change memory. Scientific Reports, 2020, 10, 8248.	3.3	14
44	Memristive effects in oxygenated amorphous carbon nanodevices. Nanotechnology, 2018, 29, 035201.	2.6	12
45	Phase-Change Memory Models for Deep Learning Training and Inference. , 2019, , .		11
46	Mushroom-Type phase change memory with projection liner: An array-level demonstration of conductance drift and noise mitigation. , 2021, , .		11
47	Computational memory-based inference and training of deep neural networks. , 2019, , .		9
48	BIGT control optimisation for overall loss reduction. , 2013, , .		8
49	Supervised learning in spiking neural networks with MLC PCM synapses. , 2017, , .		8
50	Impact of conductance drift on multi-PCM synaptic architectures. , 2018, , .		8
51	Multi-ReRAM Synapses for Artificial Neural Network Training. , 2019, , .		8
52	Measurement of Onset of Structural Relaxation in Meltâ€Quenched Phase Change Materials. Advanced Functional Materials, 2021, 31, 2104422.	14.9	8
53	Temperature sensitivity of analog in-memory computing using phase-change memory. , 2021, , .		8
54	Mechanism and Impact of Bipolar Current Voltage Asymmetry in Computational Phaseâ€Change Memory. Advanced Materials, 2023, 35, e2201238.	21.0	8

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55	Fatiguing STDP: Learning from spike-timing codes in the presence of rate codes. , 2017, , .		7
56	MNEMOSENE: Tile Architecture and Simulator for Memristor-based Computation-in-memory. ACM Journal on Emerging Technologies in Computing Systems, 2022, 18, 1-24.	2.3	7
57	The complete time/temperature dependence of I-V drift in PCM devices. , 2016, , .		6
58	Energy Efficient In-Memory Hyperdimensional Encoding for Spatio-Temporal Signal Processing. IEEE Transactions on Circuits and Systems II: Express Briefs, 2021, 68, 1725-1729.	3.0	6
59	A finite-element thermoelectric model for phase-change memory devices. , 2015, , .		5
60	Computational memory-based inference and training of deep neural networks. , 2019, , .		5
61	Experimental validation of state equations and dynamic route maps for phase change memristive devices. Scientific Reports, 2022, 12, 6488.	3.3	5
62	Phase-change memory. , 2020, , 63-96.		3
63	A Multi-Memristive Unit-Cell Array With Diagonal Interconnects for In-Memory Computing. IEEE Transactions on Circuits and Systems II: Express Briefs, 2021, 68, 3522-3526.	3.0	3
64	Temperature Compensation Schemes for In-Memory Computing using Phase-Change Memory. , 2020, , .		2
65	Real-time Language Recognition using Hyperdimensional Computing on Phase-change Memory Array. , 2021, , .		2
66	Training Neural Networks using Memristive Devices with Nonlinear Accumulative Behavior. , 2019, , .		1
67	Accurate Weight Mapping in a Multi-Memristive Synaptic Unit. , 2021, , .		1
68	An efficient synaptic architecture for artificial neural networks. , 2017, , .		0
69	Phase-change memory enables energy-efficient brain-inspired computing. , 2019, , .		0
70	Accurate Emulation of Memristive Crossbar Arrays for In-Memory Computing. , 2020, , .		0
71	ESSOP: Efficient and Scalable Stochastic Outer Product Architecture for Deep Learning. , 2020, , .		0