

John Paul Strachan

List of Publications by Citations

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

93
papers

10,527
citations

46
h-index

98
g-index

98
ext. papers

12,972
ext. citations

12.2
avg, IF

6.44
L-index

#	Paper	IF	Citations
93	Memristors with diffusive dynamics as synaptic emulators for neuromorphic computing. <i>Nature Materials</i> , 2017 , 16, 101-108	27	1201
92	The future of electronics based on memristive systems. <i>Nature Electronics</i> , 2018 , 1, 22-29	28.4	813
91	ISAAC. <i>Computer Architecture News</i> , 2016 , 44, 14-26		570
90	Analogue signal and image processing with large memristor crossbars. <i>Nature Electronics</i> , 2018 , 1, 52-59	28.4	550
89	Fully memristive neural networks for pattern classification with unsupervised learning. <i>Nature Electronics</i> , 2018 , 1, 137-145	28.4	511
88	Sub-nanosecond switching of a tantalum oxide memristor. <i>Nanotechnology</i> , 2011 , 22, 485203	3.4	506
87	High switching endurance in TaOx memristive devices. <i>Applied Physics Letters</i> , 2010 , 97, 232102	3.4	467
86	Efficient and self-adaptive in-situ learning in multilayer memristor neural networks. <i>Nature Communications</i> , 2018 , 9, 2385	17.4	371
85	Memristor-Based Analog Computation and Neural Network Classification with a Dot Product Engine. <i>Advanced Materials</i> , 2018 , 30, 1705914	24	339
84	Anatomy of a nanoscale conduction channel reveals the mechanism of a high-performance memristor. <i>Advanced Materials</i> , 2011 , 23, 5633-40	24	338
83	Dot-product engine for neuromorphic computing 2016 ,		303
82	Chaotic dynamics in nanoscale NbO Mott memristors for analogue computing. <i>Nature</i> , 2017 , 548, 318-321	30.4	296
81	Direct identification of the conducting channels in a functioning memristive device. <i>Advanced Materials</i> , 2010 , 22, 3573-7	24	278
80	High-Speed and Low-Energy Nitride Memristors. <i>Advanced Functional Materials</i> , 2016 , 26, 5290-5296	15.6	177
79	Long short-term memory networks in memristor crossbar arrays. <i>Nature Machine Intelligence</i> , 2019 , 1, 49-57	22.5	176
78	Reinforcement learning with analogue memristor arrays. <i>Nature Electronics</i> , 2019 , 2, 115-124	28.4	166
77	Engineering nonlinearity into memristors for passive crossbar applications. <i>Applied Physics Letters</i> , 2012 , 100, 113501	3.4	162

76	ISAAC: A Convolutional Neural Network Accelerator with In-Situ Analog Arithmetic in Crossbars 2016 ,		147
75	Electrical performance and scalability of Pt dispersed SiO ₂ nanometallic resistance switch. <i>Nano Letters</i> , 2013 , 13, 3213-7	11.5	146
74	Local temperature redistribution and structural transition during joule-heating-driven conductance switching in VO ₂ . <i>Advanced Materials</i> , 2013 , 25, 6128-32	24	139
73	Time-resolved imaging of spin transfer switching: beyond the macrospin concept. <i>Physical Review Letters</i> , 2006 , 96, 217202	7.4	138
72	Capacitive neural network with neuro-transistors. <i>Nature Communications</i> , 2018 , 9, 3208	17.4	132
71	Metal/TiO ₂ interfaces for memristive switches. <i>Applied Physics A: Materials Science and Processing</i> , 2011 , 102, 785-789	2.6	128
70	State Dynamics and Modeling of Tantalum Oxide Memristors. <i>IEEE Transactions on Electron Devices</i> , 2013 , 60, 2194-2202	2.9	120
69	PUMA 2019 ,		107
68	Continuous electrical tuning of the chemical composition of TaO(x)-based memristors. <i>ACS Nano</i> , 2012 , 6, 2312-8	16.7	100
67	Diffusion of adhesion layer metals controls nanoscale memristive switching. <i>Advanced Materials</i> , 2010 , 22, 4034-8	24	95
66	Physical origins of current and temperature controlled negative differential resistances in NbO. <i>Nature Communications</i> , 2017 , 8, 658	17.4	94
65	In situ training of feed-forward and recurrent convolutional memristor networks. <i>Nature Machine Intelligence</i> , 2019 , 1, 434-442	22.5	93
64	Rescuing Memristor-based Neuromorphic Design with High Defects 2017 ,		88
63	Measuring the switching dynamics and energy efficiency of tantalum oxide memristors. <i>Nanotechnology</i> , 2011 , 22, 505402	3.4	85
62	Repeatable, accurate, and high speed multi-level programming of memristor 1T1R arrays for power efficient analog computing applications. <i>Nanotechnology</i> , 2016 , 27, 365202	3.4	84
61	The switching location of a bipolar memristor: chemical, thermal and structural mapping. <i>Nanotechnology</i> , 2011 , 22, 254015	3.4	82
60	Direct Observation of Localized Radial Oxygen Migration in Functioning Tantalum Oxide Memristors. <i>Advanced Materials</i> , 2016 , 28, 2772-6	24	80
59	Power-efficient combinatorial optimization using intrinsic noise in memristor Hopfield neural networks. <i>Nature Electronics</i> , 2020 , 3, 409-418	28.4	79

58	Spectromicroscopy of tantalum oxide memristors. <i>Applied Physics Letters</i> , 2011 , 98, 242114	3.4	77
57	Conduction Channel Formation and Dissolution Due to Oxygen Thermophoresis/Diffusion in Hafnium Oxide Memristors. <i>ACS Nano</i> , 2016 , 10, 11205-11210	16.7	75
56	Voltage divider effect for the improvement of variability and endurance of TaO(x) memristor. <i>Scientific Reports</i> , 2016 , 6, 20085	4.9	70
55	Sequential electronic and structural transitions in VO ₂ observed using X-ray absorption spectromicroscopy. <i>Advanced Materials</i> , 2014 , 26, 7505-9	24	67
54	Morphological and electrical changes in TiO ₂ memristive devices induced by electroforming and switching. <i>Physica Status Solidi - Rapid Research Letters</i> , 2010 , 4, 16-18	2.5	59
53	Dopant Control by Atomic Layer Deposition in Oxide Films for Memristive Switches. <i>Chemistry of Materials</i> , 2011 , 23, 123-125	9.6	56
52	Characterization of electroforming-free titanium dioxide memristors. <i>Beilstein Journal of Nanotechnology</i> , 2013 , 4, 467-73	3	54
51	Structural and chemical characterization of TiO ₂ memristive devices by spatially-resolved NEXAFS. <i>Nanotechnology</i> , 2009 , 20, 485701	3.4	52
50	Oxygen migration during resistance switching and failure of hafnium oxide memristors. <i>Applied Physics Letters</i> , 2017 , 110, 103503	3.4	49
49	Electronic structure and transport measurements of amorphous transition-metal oxides: observation of Fermi glass behavior. <i>Applied Physics A: Materials Science and Processing</i> , 2012 , 107, 1-11	2.6	47
48	Low-Conductance and Multilevel CMOS-Integrated Nanoscale Oxide Memristors. <i>Advanced Electronic Materials</i> , 2019 , 5, 1800876	6.4	46
47	Hybrid CMOS/memristor circuits 2010 ,		39
46	History Erase Effect in a Non-Volatile Memristor. <i>IEEE Transactions on Circuits and Systems I: Regular Papers</i> , 2016 , 63, 389-400	3.9	39
45	CMOS interface circuits for reading and writing memristor crossbar array 2011 ,		38
44	Force modulation of tunnel gaps in metal oxide memristive nanoswitches. <i>Applied Physics Letters</i> , 2009 , 95, 113503	3.4	36
43	Direct observation of spin-torque driven magnetization reversal through nonuniform modes. <i>Physical Review Letters</i> , 2008 , 100, 247201	7.4	36
42	Software defined photon counting system for time resolved x-ray experiments. <i>Review of Scientific Instruments</i> , 2007 , 78, 014702	1.7	34
41	Temperature and field-dependent transport measurements in continuously tunable tantalum oxide memristors expose the dominant state variable. <i>Applied Physics Letters</i> , 2017 , 110, 123501	3.4	31

40	Analog content-addressable memories with memristors. <i>Nature Communications</i> , 2020 , 11, 1638	17.4	28
39	Redox-based memristive devices for new computing paradigm. <i>APL Materials</i> , 2019 , 7, 110903	5.7	28
38	In-Memory Computing with Memristor Content Addressable Memories for Pattern Matching. <i>Advanced Materials</i> , 2020 , 32, e2003437	24	27
37	Newton: Gravitating Towards the Physical Limits of Crossbar Acceleration. <i>IEEE Micro</i> , 2018 , 38, 41-49	1.8	25
36	2022 roadmap on neuromorphic computing and engineering. <i>Neuromorphic Computing and Engineering</i> ,		24
35	In-operando synchronous time-multiplexed O K-edge x-ray absorption spectromicroscopy of functioning tantalum oxide memristors. <i>Journal of Applied Physics</i> , 2015 , 118, 034502	2.5	23
34	An efficient analog Hamming distance comparator realized with a unipolar memristor array: a showcase of physical computing. <i>Scientific Reports</i> , 2017 , 7, 40135	4.9	22
33	Physics-based memristor models 2013 ,		21
32	The phase transition in VO ₂ probed using x-ray, visible and infrared radiations. <i>Applied Physics Letters</i> , 2016 , 108, 073102	3.4	20
31	Memristor structures for high scalability: Non-linear and symmetric devices utilizing fabrication friendly materials and processes. <i>Microelectronic Engineering</i> , 2013 , 103, 66-69	2.5	19
30	. <i>IEEE Transactions on Computers</i> , 2020 , 69, 1128-1142	2.5	18
29	Dot-product engine as computing memory to accelerate machine learning algorithms 2016 ,		18
28	Spatially uniform resistance switching of low current, high endurance titanium-niobium-oxide memristors. <i>Nanoscale</i> , 2017 , 9, 1793-1798	7.7	18
27	. <i>IEEE Consumer Electronics Magazine</i> , 2017 , 6, 94-103	3.2	17
26	Memristor TCAMs Accelerate Regular Expression Matching for Network Intrusion Detection. <i>IEEE Nanotechnology Magazine</i> , 2019 , 18, 963-970	2.6	17
25	Dynamical memristors for higher-complexity neuromorphic computing. <i>Nature Reviews Materials</i> ,	73.3	15
24	In-Memory Computing with Memristor Arrays 2018 ,		12
23	Band offsets in transition-metal oxide heterostructures. <i>Journal Physics D: Applied Physics</i> , 2013 , 46, 295303		10

22	Hardware-Software Co-Design for an Analog-Digital Accelerator for Machine Learning 2018 ,		10
21	Volatile HRS asymmetry and subloops in resistive switching oxides. <i>Nanoscale</i> , 2017 , 9, 14414-14422	7.7	8
20	Tree-based machine learning performed in-memory with memristive analog CAM. <i>Nature Communications</i> , 2021 , 12, 5806	17.4	8
19	Redundancy and Analog Slicing for Precise In-Memory Machine Learning Part I: Programming Techniques. <i>IEEE Transactions on Electron Devices</i> , 2021 , 68, 4373-4378	2.9	8
18	CMOS-integrated nanoscale memristive crossbars for CNN and optimization acceleration 2020 ,		7
17	Time-resolved x-ray imaging of magnetization dynamics in spin-transfer torque devices. <i>Physical Review B</i> , 2009 , 80,	3.3	7
16	Large Memristor Crossbars for Analog Computing 2018 ,		6
15	Memristive Devices for Computing: Mechanisms, Applications and Challenges. <i>ECS Transactions</i> , 2013 , 58, 9-14	1	6
14	Generalize or Die: Operating Systems Support for Memristor-Based Accelerators 2017 ,		6
13	Synchronized and configurable source of electrical pulses for x-ray pump-probe experiments. <i>Review of Scientific Instruments</i> , 2007 , 78, 054703	1.7	6
12	Accelerating Discrete Fourier Transforms with dot-product engine 2016 ,		5
11	Computing In-Memory, Revisited 2018 ,		4
10	Regular Expression Matching with Memristor TCAMs 2018 ,		4
9	Redundancy and Analog Slicing for Precise In-Memory Machine Learning Part II: Applications and Benchmark. <i>IEEE Transactions on Electron Devices</i> , 2021 , 68, 4379-4383	2.9	4
8	The Art and Science of Constructing a Memristor Model: Updated 2019 , 267-285		3
7	Regular Expression Matching with Memristor TCAMs for Network Security 2018 ,		2
6	Valence Change Observed by Nanospectroscopy and Spectromicroscopy 2016 , 437-456		1
5	Designing memristors: Physics, materials science and engineering 2012 ,		1

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- 3 In-Memory Computing with Non-volatile Memristor CAM Circuits **2022**, 105-139 1
- 2 Differentiable Content Addressable Memory with Memristors. *Advanced Electronic Materials*,2101198 6.4
- 1 Prospects for Analog Circuits in Deep Networks **2022**, 49-61