Tobi Delbruck

List of Publications by Year
in descending order

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100	9,816	156536	175968
papers	citations	32 h-index	55 g-index

110	110	110	5029
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Spartus: A 9.4 TOp/s FPGA-Based LSTM Accelerator Exploiting Spatio-Temporal Sparsity. IEEE Transactions on Neural Networks and Learning Systems, 2024, 35, 1098-1112.	7.2	16
2	Event-Based Vision: A Survey. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2022, 44, 154-180.	9.7	671
3	v2e: From Video Frames to Realistic DVS Events. , 2021, , .		94
4	EILE: Efficient Incremental Learning on the Edge. , 2021, , .		3
5	Feedback control of event cameras. , 2021, , .		16
6	Autonomous Driving of a Rover-Like Robot Using Neuromorphic Computing. Lecture Notes in Computer Science, 2021, , 57-68.	1.0	2
7	Dynamic Vision Sensor integration on FPGA-based CNN accelerators for high-speed visual classification. , 2021, , .		6
8	Lessons Learned the Hard Way. , 2020, , .		0
9	Live Demonstration: CNN Edge Computing for Mobile Robot Navigation. , 2020, , .		0
10	Self Calibration of Wide Dynamic Range Bias Current Generators. , 2020, , .		0
11	EdgeDRNN: Enabling Low-latency Recurrent Neural Network Edge Inference. , 2020, , .		15
12	DDD20 End-to-End Event Camera Driving Dataset: Fusing Frames and Events with Deep Learning for Improved Steering Prediction. , 2020, , .		33
13	Siamese Networks for Few-Shot Learning on Edge Embedded Devices. IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2020, 10, 488-497.	2.7	12
14	EdgeDRNN: Recurrent Neural Network Accelerator for Edge Inference. IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2020, 10, 419-432.	2.7	28
15	Learning to Exploit Multiple Vision Modalities by Using Grafted Networks. Lecture Notes in Computer Science, 2020, , 85-101.	1.0	18
16	NullHop: A Flexible Convolutional Neural Network Accelerator Based on Sparse Representations of Feature Maps. IEEE Transactions on Neural Networks and Learning Systems, 2019, 30, 644-656.	7.2	183
17	Event-Driven Sensing for Efficient Perception: Vision and Audition Algorithms. IEEE Signal Processing Magazine, 2019, 36, 29-37.	4.6	56
18	Incremental Learning Meets Reduced Precision Networks. , 2019, , .		2

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19	Fast event-driven incremental learning of hand symbols. , 2019, , .		8
20	CNN-based Object Detection on Low Precision Hardware: Racing Car Case Study. , 2019, , .		7
21	A 132 by 104 10Î¼m-Pixel 250Î¼W 1kefps Dynamic Vision Sensor with Pixel-Parallel Noise and Spatial Redundancy Suppression. , 2019, , .		23
22	Low Latency Event-Based Filtering and Feature Extraction for Dynamic Vision Sensors in Real-Time FPGA Applications. IEEE Access, 2019, 7, 134926-134942.	2.6	27
23	Real-Time Speech Recognition for IoT Purpose using a Delta Recurrent Neural Network Accelerator. , 2019, , .		26
24	Lip Reading Deep Network Exploiting Multi-Modal Spiking Visual and Auditory Sensors. , 2019, , .		10
25	DHP19: Dynamic Vision Sensor 3D Human Pose Dataset. , 2019, , .		36
26	EV-IMO: Motion Segmentation Dataset and Learning Pipeline for Event Cameras. , 2019, , .		43
27	Data-Driven Neuromorphic DRAM-based CNN and RNN Accelerators. , 2019, , .		3
28	Introduction to the Special Issue on the 1st IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS 2019). IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2019, 9, 595-597.	2.7	1
29	Incremental Learning of Hand Symbols Using Event-Based Cameras. IEEE Journal on Emerging and Selected Topics in Circuits and Systems, 2019, 9, 690-696.	2.7	8
30	A Sensitive Dynamic and Active Pixel Vision Sensor for Color or Neural Imaging Applications. IEEE Transactions on Biomedical Circuits and Systems, 2018, 12, 123-136.	2.7	59
31	Event-Based, 6-DOF Camera Tracking from Photometric Depth Maps. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2018, 40, 2402-2412.	9.7	109
32	Front and Back Illuminated Dynamic and Active Pixel Vision Sensors Comparison. IEEE Transactions on Circuits and Systems II: Express Briefs, 2018, 65, 677-681.	2.2	60
33	Feature Representations for Neuromorphic Audio Spike Streams. Frontiers in Neuroscience, 2018, 12, 23.	1.4	66
34	Approaching Retinal Ganglion Cell Modeling and FPGA Implementation for Robotics. Entropy, 2018, 20, 475.	1.1	6
35	Authorsâ€™ Reply to Comment on â€œTemperature and Parasitic Photocurrent Effects in Dynamic Vision Sensorsâ€• IEEE Transactions on Electron Devices, 2018, 65, 3083-3083.	1.6	2
36	The event-camera dataset and simulator: Event-based data for pose estimation, visual odometry, and SLAM. International Journal of Robotics Research, 2017, 36, 142-149.	5.8	357

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37	Analysis of Encoding Degradation in Spiking Sensors Due to Spike Delay Variation. IEEE Transactions on Circuits and Systems I: Regular Papers, 2017, 64, 145-155.	3.5	5
38	Temperature and Parasitic Photocurrent Effects in Dynamic Vision Sensors. IEEE Transactions on Electron Devices, 2017, 64, 3239-3245.	1.6	45
39	Block-matching optical flow for dynamic vision sensors: Algorithm and FPGA implementation. , 2017, , .		26
40	In-vivo imaging of neural activity with dynamic vision sensors. , 2017, , .		3
41	A Low Power, Fully Event-Based Gesture Recognition System. , 2017, , .		378
42	Color temporal contrast sensitivity in dynamic vision sensors. , 2017, , .		17
43	Live demonstration: Event-driven real-time spoken digit recognition system. , 2017, , .		1
44	Live demonstration: Convolutional neural network driven by dynamic vision sensor playing RoShamBo. , 2017, , .		38
45	Neuromorphic Approach Sensitivity Cell Modeling and FPGA Implementation. Lecture Notes in Computer Science, 2017, , 179-187.	1.0	2
46	A Dataset for Visual Navigation with Neuromorphic Methods. Frontiers in Neuroscience, 2016, 10, 49.	1.4	31
47	Evaluation of Event-Based Algorithms for Optical Flow with Ground-Truth from Inertial Measurement Sensor. Frontiers in Neuroscience, 2016, 10, 176.	1.4	73
48	DVS Benchmark Datasets for Object Tracking, Action Recognition, and Object Recognition. Frontiers in Neuroscience, 2016, 10, 405.	1.4	86
49	Training Deep Spiking Neural Networks Using Backpropagation. Frontiers in Neuroscience, 2016, 10, 508.	1.4	585
50	A 0.5 V 55 $mu ext{W}$ 64 $imes $ 2 Channel Binaural Silicon Cochlea for Event-Driven Stereo-Audio Sensing. IEEE Journal of Solid-State Circuits, 2016, 51, 2554-2569.	3.5	54
51	Combined frame- and event-based detection and tracking. , 2016, , .		54
52	Steering a predator robot using a mixed frame/event-driven convolutional neural network. , 2016, , .		73
53	ELiSeD â€" An event-based line segment detector. , 2016, , .		19
54	Neuromorophic vision sensing and processing. , 2016, , .		23

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55	Design of an RGBW color VGA rolling and global shutter dynamic and active-pixel vision sensor. , 2015, , .		31
56	A Dynamic Vision Sensor With 1% Temporal Contrast Sensitivity and In-Pixel Asynchronous Delta Modulator for Event Encoding. IEEE Journal of Solid-State Circuits, 2015, 50, 2149-2160.	3.5	120
57	1 kHz 2D Visual Motion Sensor Using 20<formula formulatype="inline"><tex Notation="TeX">$,imes,$</tex></formula>20 Silicon Retina Optical Sensor and DSP Microcontroller. IEEE Transactions on Biomedical Circuits and Systems, 2015, 9, 207-216.	2.7	6
58	Proximity Sensing Based on a Dynamic Vision Sensor for Mobile Devices. IEEE Transactions on Industrial Electronics, 2015, 62, 536-544.	5.2	26
59	Research topic: neuromorphic engineering systems and applications. A snapshot of neuromorphic systems engineering. Frontiers in Neuroscience, 2014, 8, 424.	1.4	3
60	Comparison of spike encoding schemes in asynchronous vision sensors: Modeling and design. , 2014, , .		8
61	Subthreshold DCâ€gain enhancement by exploiting small size effects of MOSFETs. Electronics Letters, 2014, 50, 835-837.	0.5	105
62	Asynchronous Binaural Spatial Audition Sensor With 2<formula formulatype="inline"><tex Notation="TeX">$,imes,$</tex></formula>64<formula formulatype="inline"><tex Notation="TeX">$,imes,$</tex></formula>4 Channel Output. IEEE Transactions on Biomedical Circuits and Systems, 2014, 8, 453-464.	2.7	135
63	Real-time, high-speed video decompression using a frame- and event-based DAVIS sensor. , 2014, , .		62
64	Real-Time Gesture Interface Based on Event-Driven Processing From Stereo Silicon Retinas. IEEE Transactions on Neural Networks and Learning Systems, 2014, 25, 2250-2263.	7.2	59
65	1kHz 2D silicon retina motion sensor platform. , 2014, , .		3
66	A 240 Ã— 180 130 dB 3 Âµs Latency Global Shutter Spatiotemporal Vision Sensor. IEEE Journal of Solid-State Circuits, 2014, 49, 2333-2341.	3.5	702
67	Retinomorphic Event-Based Vision Sensors: Bioinspired Cameras With Spiking Output. Proceedings of the IEEE, 2014, 102, 1470-1484.	16.4	270
68	Fast neuromorphic sound localization for binaural hearing aids. , 2013, 2013, 5275-8.		5
69	Low-latency localization by active LED markers tracking using a dynamic vision sensor. , 2013, , .		65
70	Real-time classification and sensor fusion with a spiking deep belief network. Frontiers in Neuroscience, 2013, 7, 178.	1.4	281
71	Robotic goalie with 3 ms reaction time at 4% CPU load using event-based dynamic vision sensor. Frontiers in Neuroscience, 2013, 7, 223.	1.4	149
72	Adaptive pulsed laser line extraction for terrain reconstruction using a dynamic vision sensor. Frontiers in Neuroscience, 2013, 7, 275.	1.4	38

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73	Real-time speaker identification using the AEREAR2 event-based silicon cochlea. , 2012, , .		24
74	Addressable current reference array with 170dB dynamic range. , 2012, , .		11
75	The Language of the Brain. Scientific American, 2012, 307, 54-59.	1.0	17
76	Asynchronous Event-Based Binocular Stereo Matching. IEEE Transactions on Neural Networks and Learning Systems, 2012, 23, 347-353.	7.2	126
77	Event-based silicon retinas and cochleas. , 2012, , 87-100.		3
78	Fun with Asynchronous Vision Sensors and Processing. Lecture Notes in Computer Science, 2012, , 506-515.	1.0	6
79	Neuromorphic Silicon Neuron Circuits. Frontiers in Neuroscience, 2011, 5, 73.	1.4	1,004
80	Toward real-time particle tracking using an event-based dynamic vision sensor. Experiments in Fluids, 2011, 51, 1465-1469.	1.1	90
81	Event-Based Pixel Sensitive to Changes of Color and Brightness. IEEE Transactions on Circuits and Systems I: Regular Papers, 2011, 58, 1581-1590.	3.5	30
82	Neuromorphic sensory systems. Current Opinion in Neurobiology, 2010, 20, 288-295.	2.0	326
83	Event-based 64-channel binaural silicon cochlea with Q enhancement mechanisms. , 2010, , .		65
84	Temporal contrast AER pixel with 0.3%-contrast event threshold. , 2010, , .		12
85	Activity-driven, event-based vision sensors. , 2010, , .		157
86	Fully integrated 500uW speech detection wake-up circuit. , 2010, , .		13
87	32-bit Configurable bias current generator with sub-off-current capability. , 2010, , .		34
88	Event-based color change pixel in standard CMOS. , 2010, , .		7
89	CAVIAR: A 45k Neuron, 5M Synapse, 12G Connects/s AER Hardware Sensoryâ€“Processingâ€“ Learningâ€“Actuating System for High-Speed Visual Object Recognition and Tracking. IEEE Transactions on Neural Networks, 2009, 20, 1417-1438.	4.8	285
90	Getting to Know Your Neighbors: Unsupervised Learning of Topography from Real-World, Event-Based Input. Neural Computation, 2009, 21, 216-238.	1.3	8

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91	A 128$imes$128 120 dB 15 mus Latency Asynchronous Temporal Contrast Vision Sensor. IEEE Journal of Solid-State Circuits, 2008, 43, 566-576.	3.5	1,504
92	Fall detection using an address-event temporal contrast vision sensor. , 2008, , .		11
93	An Address-Event Fall Detector for Assisted Living Applications. IEEE Transactions on Biomedical Circuits and Systems, 2008, 2, 88-96.	2.7	65
94	A tactile luminous floor for an interactive autonomous space. Robotics and Autonomous Systems, 2007, 55, 433-443.	3.0	25
95	An Investigation of Collective Human Behavior in Large-Scale Mixed Reality Spaces. Presence: Teleoperators and Virtual Environments, 2006, 15, 403-418.	0.3	14
96	Bias Current Generators with Wide Dynamic Range. Analog Integrated Circuits and Signal Processing, 2005, 43, 247-268.	0.9	58
97	A silicon early visual system as a model animal. Vision Research, 2004, 44, 2083-2089.	0.7	39
98	Design for a Brain Revisited: The Neuromorphic Design and Functionality of the Interactive Space 'Ada'. Reviews in the Neurosciences, 2003, 14, 145-80.	1.4	19
99	Silicon retina with correlation-based, velocity-tuned pixels. IEEE Transactions on Neural Networks, 1993, 4, 529-541.	4.8	165
100	<title>Time-derivative adaptive silicon photoreceptor array</title>. , 1991, , .		21