David C O'carroll

List of Publications by Year
in descending order

100 papers	3,227 citations	117625 34 h-index	168389 53 g-index
106 all docs	106 docs citations	106 times ranked	1429 citing authors

#	Article	IF	Citations
1	Feature-detecting neurons in dragonflies. Nature, 1993, 362, 541-543.	27.8	182
2	Insect motion detectors matched to visual ecology. Nature, 1996, 382, 63-66.	27.8	145
3	Contrast Gain Reduction in Fly Motion Adaptation. Neuron, 2000, 28, 595-606.	8.1	143
4	Insect Detection of Small Targets Moving in Visual Clutter. PLoS Biology, 2006, 4, e54.	5.6	131
5	Accuracy of velocity estimation by Reichardt correlators. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2001, 18, 241.	1.5	124
6	A `bright zone' in male hoverfly (Eristalis tenax) eyes and associated faster motion detection and increased contrast sensitivity. Journal of Experimental Biology, 2006, 209, 4339-4354.	1.7	122
7	A Model for the Detection of Moving Targets in Visual Clutter Inspired by Insect Physiology. PLoS ONE, 2008, 3, e2784.	2.5	121
8	Comparative ultrastructure of Layer I receptor mosaics in principal eyes of jumping spiders: the evolution of regular arrays of light guides. Cell and Tissue Research, 1990, 262, 445-460.	2.9	104
9	Adaptation and the temporal delay filter of fly motion detectors. Vision Research, 1999, 39, 2603-2613.	1.4	91
10	Built-in polarizers form part of a compass organ in spiders. Nature, 1999, 401, 470-473.	27.8	88
11	Selective Attention in an Insect Visual Neuron. Current Biology, 2013, 23, 156-161.	3.9	87
12	Robust Models for Optic Flow Coding in Natural Scenes Inspired by Insect Biology. PLoS Computational Biology, 2009, 5, e1000555.	3.2	85
13	Retinotopic Organization of Small-Field-Target-Detecting Neurons in the Insect Visual System. Current Biology, 2007, 17, 569-578.	3.9	76
14	Neural Summation in the Hawkmoth Visual System Extends the Limits of Vision in Dim Light. Current Biology, 2016, 26, 821-826.	3.9	75
15	Spatio-temporal properties of motion detectors matched to low image velocities in hovering insects. Vision Research, 1997, 37, 3427-3439.	1.4	71
16	Neural mechanisms underlying target detection in a dragonfly centrifugal neuron. Journal of Experimental Biology, 2007, 210, 3277-3284.	1.7	69
17	Feature detection and the hypercomplex property in insects. Trends in Neurosciences, 2009, 32, 383-391.	8.6	69
18	Temperature and the temporal resolving power of fly photoreceptors. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 2000, 186, 399-407.	1.6	65

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19	Small object detection neurons in female hoverflies. Proceedings of the Royal Society B: Biological Sciences, 2006, 273, 1211-1216.	2.6	58
20	Contrast sensitivity of insect motion detectors to natural images. Journal of Vision, 2008, 8, 32.	0.3	57
21	Contrast sensitivity and the detection of moving patterns and features. Philosophical Transactions of the Royal Society B: Biological Sciences, 2014, 369, 20130043.	4.0	57
22	A predictive focus of gain modulation encodes target trajectories in insect vision. ELife, 2017, 6, .	6.0	55
23	Wide-field motion tuning in nocturnal hawkmoths. Proceedings of the Royal Society B: Biological Sciences, 2010, 277, 853-860.	2.6	53
24	Sexual Dimorphism in the Hoverfly Motion Vision Pathway. Current Biology, 2008, 18, 661-667.	3.9	52
25	Insect perception of illusory contours. Philosophical Transactions of the Royal Society B: Biological Sciences, 1992, 337, 59-64.	4.0	50
26	Neurogenic potential of dental pulp stem cells isolated from murine incisors. Stem Cell Research and Therapy, 2014, 5, 30.	5.5	49
27	Three-dimensional functional human neuronal networks in uncompressed low-density electrospun fiber scaffolds. Nanomedicine: Nanotechnology, Biology, and Medicine, 2017, 13, 1563-1573.	3.3	49
28	Local and Large-Range Inhibition in Feature Detection. Journal of Neuroscience, 2009, 29, 14143-14150.	3.6	46
29	Correlation between OFF and ON Channels Underlies Dark Target Selectivity in an Insect Visual System. Journal of Neuroscience, 2013, 33, 13225-13232.	3.6	46
30	Velocity constancy and models for wide-field visual motion detection in insects. Biological Cybernetics, 2005, 93, 275-287.	1.3	43
31	Spatial facilitation by a high-performance dragonfly target-detecting neuron. Biology Letters, 2011, 7, 588-592.	2.3	41
32	Discrimination of Features in Natural Scenes by a Dragonfly Neuron. Journal of Neuroscience, 2011, 31, 7141-7144.	3.6	40
33	Facilitation of dragonfly target-detecting neurons by slow moving features on continuous paths. Frontiers in Neural Circuits, 2012, 6, 79.	2.8	39
34	Performance of an insect-inspired target tracker in natural conditions. Bioinspiration and Biomimetics, 2017, 12, 025006.	2.9	38
35	An autonomous robot inspired by insect neurophysiology pursues moving features in natural environments. Journal of Neural Engineering, 2017, 14, 046030.	3.5	34
36	Visual acuity of the honey bee retina and the limits for feature detection. Scientific Reports, 2017, 7, 45972.	3.3	32

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37	Vision in dim light: highlights and challenges. Philosophical Transactions of the Royal Society B: Biological Sciences, 2017, 372, 20160062.	4.0	31
38	Hawkmoth lamina monopolar cells act as dynamic spatial filters to optimize vision at different light levels. Science Advances, 2020, 6, eaaz8645.	10.3	27
39	A Target-Detecting Visual Neuron in the Dragonfly Locks on to Selectively Attended Targets. Journal of Neuroscience, 2019, 39, 8497-8509.	3.6	26
40	Motion Adaptation and the Velocity Coding of Natural Scenes. Current Biology, 2010, 20, 994-999.	3.9	24
41	Local and global responses of insect motion detectors to the spatial structure of natural scenes. Journal of Vision, 2011, 11, 20-20.	0.3	24
42	Performance of a Bio-Inspired Model for the Robust Detection of Moving Targets in High Dynamic Range Natural Scenes. Journal of Computational and Theoretical Nanoscience, 2010, 7, 911-920.	0.4	23
43	Rapid contrast gain reduction following motion adaptation. Journal of Experimental Biology, 2011, 214, 4000-4009.	1.7	23
44	Afterimages in fly motion vision. Vision Research, 2002, 42, 1701-1714.	1.4	22
45	Photoreceptor processing improves salience facilitating small target detection in cluttered scenes. Journal of Vision, 2008, 8, 8-8.	0.3	21
46	Local feedback mediated via amacrine cells in the insect optic lobe. Journal of Comparative Physiology A: Neuroethology, Sensory, Neural, and Behavioral Physiology, 1992, 171, 447.	1.6	20
47	Implementation of an elaborated neuromorphic model of a biological photoreceptor. Biological Cybernetics, 2008, 98, 357-369.	1.3	19
48	The motion after-effect: local and global contributions to contrast sensitivity. Proceedings of the Royal Society B: Biological Sciences, 2009, 276, 1545-1554.	2.6	18
49	Properties of predictive gain modulation in a dragonfly visual neuron. Journal of Experimental Biology, 2019, 222, .	1.7	17
50	Biomimetic Motion Detection. , 2007, , .		15
51	Properties of neuronal facilitation that improve target tracking in natural pursuit simulations. Journal of the Royal Society Interface, 2015, 12, 20150083.	3.4	15
52	Comparison of Transparency and Shrinkage During Clearing of Insect Brains Using Media With Tunable Refractive Index. Frontiers in Neuroanatomy, 2020, 14, 599282.	1.7	15
53	Resolving the Trade-off Between Visual Sensitivity and Spatial Acuityâ€"Lessons from Hawkmoths. Integrative and Comparative Biology, 2017, 57, 1093-1103.	2.0	14
54	Differential Tuning to Visual Motion Allows Robust Encoding of Optic Flow in the Dragonfly. Journal of Neuroscience, 2019, 39, 8051-8063.	3.6	13

#	ARTICLE	IF	CITATIONS
55	Man-made velocity estimators based on insect vision. Smart Materials and Structures, 2005, 14, 413-424.	3.5	11
56	Bio-inspired pixel-wise adaptive imaging. , 2006, 6414, 302.		10
57	Biomimetic target detection: Modeling 2nd order correlation of OFF and ON channels. , 2013, , .		10
58	Implementation of visual motion detection with contrast adaptation. , 2001, , .		9
59	Elaborated Reichardt correlators for velocity estimation tasks. , 2002, , .		9
60	Discrete implementation of biologically inspired image processing for target detection. , 2011, , .		9
61	Modelling the temporal response properties of an insect small target motion detector. , 2011, , .		8
62	Temporal and spatial adaptation of transient responses to local features. Frontiers in Neural Circuits, 2012, 6, 74.	2.8	8
63	Acute Application of Imidacloprid Alters the Sensitivity of Direction Selective Motion Detecting Neurons in an Insect Pollinator. Frontiers in Physiology, 2021, 12, 682489.	2.8	8
64	Effect of spatial sampling on pattern noise in insect-based motion detection. , 2005, , .		7
65	Bio-inspired small target discrimination in high dynamic range natural scenes. , 2008, , .		7
66	Modeling pattern noise in responses of fly motion detectors to naturalistic scenes. , 2005, , .		5
67	Bio-inspired optical rotation sensor. , 2006, , .		5
68	Bio-inspired target detection in natural scenes: optimal thresholds and ego-motion. , 2008, , .		5
69	Characterization of a neuromorphic motion detection chip based on insect visual system. , 2009, , .		5
70	Bio-inspired model for robust motion detection under noisy conditions. , 2010, , .		5
71	Photoreceptor signalling is sufficient to explain the detectability threshold of insect aerial pursuers. Journal of Experimental Biology, 2017, 220, 4364-4369.	1.7	5
72	Dragonfly Neurons Selectively Attend to Targets Within Natural Scenes. Frontiers in Cellular Neuroscience, 2022, 16, 857071.	3.7	5

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73	Computational models for spatiotemporal filtering strategies in insect motion vision at low light levels. , 2011, , .		4
74	Insect-based visual motion detection with contrast adaptation. , 2005, , .		3
75	Implementation of saturation for modelling pattern noise using naturalistic stimuli. , 2006, 6414, 539.		3
76	Assessing the naturalness of scenes: An approach using statistics of local features. , 2008, , .		3
77	Applications for bio-inspired visual processing algorithms. , 2008, , .		3
78	Bio-inspired feature extraction and enhancement of targets moving against visual clutter during closed loop pursuit. , 2013, , .		3
79	Quantifying asynchrony of multiple cameras using aliased optical devices. , 2015, , .		3
80	Bio-inspired analog circuitry model of insect photoreceptor cells. , 2005, , .		3
81	Biomimetic visual detection based on insect neurobiology. , 2001, , .		2
82	Computational models reveal non-linearity in integration of local motion signals by insect motion detectors viewing natural scenes. , 2011, , .		2
83	Salience invariance with divisive normalization in higher-order insect neurons. , 2016, , .		2
84	A new, fluorescence-based method for visualizing the pseudopupil and assessing optical acuity in the dark compound eyes of honeybees and other insects. Scientific Reports, 2021, 11, 21267.	3.3	2
85	Implementation of an adaptive photodetector circuit inspired by insect visual systems. , 2005, 5649, 839.		1
86	A Biologically Inspired Facilitation Mechanism Enhances the Detection and Pursuit of Targets of Varying Contrast. , 2014, , .		1
87	Performance assessment of an insect-inspired target tracking model in background clutter. , 2014, , .		1
88	Multi-focal video fusion with a beam splitter prism. , 2015, , .		1
89	Robustness and Real-Time Performance of an Insect Inspired Target Tracking Algorithm Under Natural Conditions. , 2015, , .		1
90	Multisensory Perception: Pinpointing Visual Enhancement by Appropriate Odors. Current Biology, 2015, 25, R196-R198.	3.9	1

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91	A new fossil evaniid wasp from Eocene Baltic amber, with highly modified compound eyes unique within the Hymenoptera. Journal of Paleontology, 2018, 92, 189-195.	0.8	1
92	Modeling Nonlinear Dendritic Processing of Facilitation in a Dragonfly Target-Tracking Neuron. Frontiers in Neural Circuits, 2021, 15, 684872.	2.8	1
93	Velocity estimation and comparison of two insect-vision-based motion-detection models. , 2003, 5062, 401.		0
94	Effects of nonlinear elaborations on the performance of a Reichardt correlator. , 2004, , .		0
95	A 16 pixel yaw sensor for velocity estimation. , 2005, 6036, 309.		0
96	Characterization of insect vision based collision avoidance models using a video camera. , 2005, , .		0
97	Effects of compressive nonlinearity on insect-based motion detection. , 2005, , .		0
98	Insect vision. , 2008, , .		0
99	Modeling inhibitory interactions shaping neural responses of target neurons to multiple features. , 2011, , .		0
100	Can a competitive neural network explain selective attention in insect target tracking neurons?. , 2013, , .		0