Eero P Simoncelli

List of Publications by Year
in descending order

125 papers	54,030 citations	38720 50 h-index	39638 94 g-index
138 all docs	138 docs citations	138 times ranked	32390 citing authors

#	ARTICLE	IF	CITATIONS
1	Mapping spatial frequency preferences across human primary visual cortex. Journal of Vision, 2022, 22, 3.	0.1	8
2	Comparison of Full-Reference Image Quality Models for Optimization of Image Processing Systems. International Journal of Computer Vision, 2021, 129, 1258-1281.	10.9	87
3	Pinpointing the neural signatures of single-exposure visual recognition memory. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	8
4	Developing Deep Neural Network-based Denoising Techniques for Time-Resolved In Situ TEM of Catalyst Nanoparticles. Microscopy and Microanalysis, 2021, 27, 262-264.	0.2	1
5	Opposing effects of selectivity and invariance in peripheral vision. Nature Communications, 2021, 12, 4597.	5.8	15
6	A two-stage model of V2 demonstrates efficient higher-order feature representation. Journal of Vision, 2021, 21, 2654.	0.1	1
7	Developing and Evaluating Deep Neural Network-Based Denoising for Nanoparticle TEM Images with Ultra-Low Signal-to-Noise. Microscopy and Microanalysis, 2021, 27, 1431-1447.	0.2	23
8	Fechner and Stevens can co-exist under Fisher's roof. Journal of Vision, 2021, 21, 2170.	0.1	0
9	Primary visual cortex straightens natural video trajectories. Nature Communications, 2021, 12, 5982.	5.8	12
10	Unsupervised Deep Video Denoising. , 2021, , .		22
11	Image Quality Assessment: Unifying Structure and Texture Similarity. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2020, PP, 1-1.	9.7	198
12	Inference of nonlinear receptive field subunits with spike-triggered clustering. ELife, 2020, 9, .	2.8	30
13	Differing mechanisms for contrast-dependent spatial frequency selectivity in macaque LGN and V1 neurons. Journal of Vision, 2020, 20, 1579.	0.1	0
14	Testing a two-stage model of stimulus selectivity in macaque V2. Journal of Vision, 2020, 20, 1540.	0.1	1
15	Estimating scaling of retinal and cortical pooling using metamers. Journal of Vision, 2020, 20, 1398.	0.1	0
16	Blind Image Quality Assessment by Learning from Multiple Annotators. , 2019, , .		26
17	Perceptual straightening of natural videos. Nature Neuroscience, 2019, 22, 984-991.	7.1	41
18	Compound Stimuli Reveal the Structure of Visual Motion Selectivity in Macaque MT Neurons. ENeuro, 2019, 6, ENEURO.0258-19.2019.	0.9	7

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19	A canonical computational model of cortical area V2. Journal of Vision, 2019, 19, 14b.	0.1	1
20	Contrast-dependent spatial frequency selectivity in macaque V1 neurons explained with tuned contrast gain control. Journal of Vision, 2019, 19, 43a.	0.1	0
21	Contextual modulation of sensitivity to naturalistic image structure in macaque V2. Journal of Neurophysiology, 2018, 120, 409-420.	0.9	30
22	Slow gain fluctuations limit benefits of temporal integration in visual cortex. Journal of Vision, 2018, 18, 8.	0.1	9
23	Mapping Spatial Frequency Preferences in the Human Visual Cortex. Journal of Vision, 2018, 18, 253.	0.1	1
24	Efficient coding of natural images with Nonlinear-Linear-Nonlinear cascade model. Journal of Vision, 2018, 18, 22.	0.1	0
25	Dissociation of Choice Formation and Choice-Correlated Activity in Macaque Visual Cortex. Journal of Neuroscience, 2017, 37, 5195-5203.	1.7	44
26	Perceptually optimized image rendering. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2017, 34, 1511.	0.8	45
27	Predicting perceptual distortion sensitivity with gain control models of LGN. Journal of Vision, 2017, 17, 776.	0.1	1
28	Dynamic visual localization with moving dot clouds. Journal of Vision, 2017, 17, 1166.	0.1	0
29	Uncoupling choice formation and choice-correlated activity in early visual cortex. Journal of Vision, 2017, 17, 1271.	0.1	1
30	Perceptual straightening of natural video trajectories. Journal of Vision, 2017, 17, 402.	0.1	1
31	Perceptual image quality assessment using a normalized Laplacian pyramid. IS&T International Symposium on Electronic Imaging, 2016, 28, 1-6.	0.3	78
32	Neural Quadratic Discriminant Analysis: Nonlinear Decoding with V1-Like Computation. Neural Computation, 2016, 28, 2291-2319.	1.3	23
33	End-to-end optimization of nonlinear transform codes for perceptual quality. , 2016, , .		138
34	Selectivity and tolerance for visual texture in macaque V2. Proceedings of the National Academy of Sciences of the United States of America, 2016, 113, E3140-9.	3.3	87
35	Sub-optimal Integration of Orientation Across Saccades. Journal of Vision, 2016, 16, 18.	0.1	0
36	Near-optimal integration of orientation information across saccades. Journal of Vision, 2015, 15, 8.	0.1	68

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37	Geometrical and statistical properties of vision models obtained via maximum differentiation. Proceedings of SPIE, 2015, , .	0.8	3
38	A Convolutional Subunit Model for Neuronal Responses in Macaque V1. Journal of Neuroscience, 2015, 35, 14829-14841.	1.7	87
39	Origin and Function of Tuning Diversity in Macaque Visual Cortex. Neuron, 2015, 88, 819-831.	3.8	75
40	Near-optimal integration of orientation information across saccadic eye movements. Journal of Vision, 2015, 15, 1306.	0.1	2
41	Mapping nonlinear receptive field structure in primate retina at single cone resolution. ELife, 2015, 4, .	2.8	77
42	Attention stabilizes the shared gain of V4 populations. ELife, 2015, 4, e08998.	2.8	167
43	The texture centroid paradigm: A new method for isolating preattentive visual mechanisms. Journal of Vision, 2015, 15, 775.	0.1	0
44	Opposing effects of summary statistics on peripheral discrimination. Journal of Vision, 2015, 15, 770.	0.1	1
45	Compound stimuli reveal velocity separability of spatiotemporal receptive fields in macaque area MT. Journal of Vision, 2015, 15, 485.	0.1	0
46	Learning sparse filter bank transforms with convolutional ICA. , 2014, , .		1
47	Partitioning neuronal variability. Nature Neuroscience, 2014, 17, 858-865.	7.1	463
48	A unified framework and method for automatic neural spike identification. Journal of Neuroscience Methods, 2014, 222, 47-55.	1.3	76
49	Efficient Sensory Encoding and Bayesian Inference with Heterogeneous Neural Populations. Neural Computation, 2014, 26, 2103-2134.	1.3	159
50	Representation of Naturalistic Image Structure in the Primate Visual Cortex. Cold Spring Harbor Symposia on Quantitative Biology, 2014, 79, 115-122.	2.0	30
51	Summary statistics in auditory perception. Nature Neuroscience, 2013, 16, 493-498.	7.1	201
52	A functional and perceptual signature of the second visual area in primates. Nature Neuroscience, 2013, 16, 974-981.	7.1	277
53	A Model-Based Spike Sorting Algorithm for Removing Correlation Artifacts in Multi-Neuron Recordings. PLoS ONE, 2013, 8, e62123.	1.1	112
54	Efficient Coding of Spatial Information in the Primate Retina. Journal of Neuroscience, 2012, 32, 16256-16264.	1.7	94

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55	Modeling the impact of common noise inputs on the network activity of retinal ganglion cells. Journal of Computational Neuroscience, 2012, 33, 97-121.	0.6	94
56	Hierarchical spike coding of sound. Advances in Neural Information Processing Systems, 2012, 2012, 3032-3040.	2.8	1
57	Efficient and direct estimation of a neural subunit model for sensory coding. Advances in Neural Information Processing Systems, 2012, 25, 3113-3121.	2.8	19
58	Sparse decomposition of transformation-invariant signals with continuous basis pursuit. , 2011, , .		8
59	Cardinal rules: visual orientation perception reflects knowledge of environmental statistics. Nature Neuroscience, 2011, 14, 926-932.	7.1	495
60	Metamers of the ventral stream. Nature Neuroscience, 2011, 14, 1195-1201.	7.1	495
61	Sound Texture Perception via Statistics of the Auditory Periphery: Evidence from Sound Synthesis. Neuron, 2011, 71, 926-940.	3.8	284
62	Optimal inference explains the perceptual coherence of visual motion stimuli. Journal of Vision, 2011, 11, 14-14.	0.1	30
63	Least Squares Estimation Without Priors or Supervision. Neural Computation, 2011, 23, 374-420.	1.3	29
64	Recovery of Sparse Translation-Invariant Signals With Continuous Basis Pursuit. IEEE Transactions on Signal Processing, 2011, 59, 4735-4744.	3.2	169
65	Efficient coding of natural images with a population of noisy Linear-Nonlinear neurons. Advances in Neural Information Processing Systems, 2011, 24, 999-1007.	2.8	32
66	Inhibitory interactions in MT receptive fields. Journal of Vision, 2010, 2, 413-413.	0.1	4
67	A spike-triggered covariance method for characterizing divisive normalization models. Journal of Vision, 2010, 1, 450-450.	0.1	1
68	Implicit encoding of prior probabilities in optimal neural populations. Advances in Neural Information Processing Systems, 2010, 2010, 658-666.	2.8	23
69	Multiscale Denoising of Photographic Images. , 2009, , 241-261.		10
70	Quantifying color image distortions based on adaptive spatio-chromatic signal decompositions. , 2009, , .		14
71	Nonlinear Extraction of Independent Components of Natural Images Using Radial Gaussianization. Neural Computation, 2009, 21, 1485-1519.	1.3	81
72	Visual motion aftereffects arise from a cascade of two isomorphic adaptation mechanisms. Journal of Vision, 2009, 9, 9-9.	0.1	37

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73	Is the Homunculus "Aware" of Sensory Adaptation?. Neural Computation, 2009, 21, 3271-3304.	1.3	131
74	Sound texture synthesis via filter statistics. , 2009, , .		27
75	Modeling Multiscale Subbands of Photographic Images with Fields of Gaussian Scale Mixtures. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2009, 31, 693-706.	9.7	59
76	Capturing Visual Image Properties with Probabilistic Models. , 2009, , 205-223.		4
77	Spatio-temporal correlations and visual signalling in a complete neuronal population. Nature, 2008, 454, 995-999.	13.7	1,128
78	Optimal Denoising in Redundant Representations. IEEE Transactions on Image Processing, 2008, 17, 1342-1352.	6.0	47
79	Nonlinear image representation using divisive normalization. , 2008, 2008, 1-8.		31
80	Image Modeling and Denoising With Orientation-Adapted Gaussian Scale Mixtures. IEEE Transactions on Image Processing, 2008, 17, 2089-2101.	6.0	43
81	Maximum differentiation (MAD) competition: A methodology for comparing computational models of perceptual quantities. Journal of Vision, 2008, 8, 8-8.	0.1	93
82	Reducing statistical dependencies in natural signals using radial Gaussianization. Advances in Neural Information Processing Systems, 2008, 2008, 1009-1016.	2.8	3
83	Statistically Driven Sparse Image Approximation. Proceedings International Conference on Image Processing, 2007, , .	0.0	3
84	Optimal Denoising in Redundant Bases. , 2007, , .		7
85	A Machine Learning Framework for Adaptive Combination of Signal Denoising Methods. , 2007, , .		5
86	Statistically and perceptually motivated nonlinear image representation. , 2007, , .		13
87	A Bayesian Model of Conditioned Perception. Advances in Neural Information Processing Systems, 2007, 2007, 1409-1416.	2.8	25
88	Nonlinear image representation for efficient perceptual coding. IEEE Transactions on Image Processing, 2006, 15, 68-80.	6.0	82
89	Quality-aware images. IEEE Transactions on Image Processing, 2006, 15, 1680-1689.	6.0	241
90	Spike-triggered neural characterization. Journal of Vision, 2006, 6, 13.	0.1	336

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91	Noise characteristics and prior expectations in human visual speed perception. Nature Neuroscience, 2006, 9, 578-585.	7.1	681
92	How MT cells analyze the motion of visual patterns. Nature Neuroscience, 2006, 9, 1421-1431.	7.1	483
93	Image Denoising with an Orientation-Adaptive Gaussian Scale Mixture Model. , 2006, , .		15
94	Dimensionality reduction in neural models: An information-theoretic generalization of spike-triggered average and covariance analysis. Journal of Vision, 2006, 6, 9.	0.1	102
95	Comparing integrate-and-fire models estimated using intracellular and extracellular data. Neurocomputing, 2005, 65-66, 379-385.	3.5	24
96	Statistical Modeling of Photographic Images. , 2005, , 431-441.		62
97	Reduced-reference image quality assessment using a wavelet-domain natural image statistic model. , 2005, , .		274
98	Spatiotemporal Elements of Macaque V1 Receptive Fields. Neuron, 2005, 46, 945-956.	3.8	388
99	Structural Approaches to Image Quality Assessment. , 2005, , 961-974.		51
100	Prediction and Decoding of Retinal Ganglion Cell Responses with a Probabilistic Spiking Model. Journal of Neuroscience, 2005, 25, 11003-11013.	1.7	319
101	Differentiation of Discrete Multidimensional Signals. IEEE Transactions on Image Processing, 2004, 13, 496-508.	6.0	182
102	Maximum Likelihood Estimation of a Stochastic Integrate-and-Fire Neural Encoding Model. Neural Computation, 2004, 16, 2533-2561.	1.3	224
103	Spike-triggered characterization of excitatory and suppressive stimulus dimensions in monkey V1. Neurocomputing, 2004, 58-60, 793-799.	3.5	36
104	Image Quality Assessment: From Error Visibility to Structural Similarity. IEEE Transactions on Image Processing, 2004, 13, 600-612.	6.0	34,925
105	Biases in white noise analysis due to non-Poisson spike generation. Neurocomputing, 2003, 52-54, 109-115.	3.5	44
106	Vision and the statistics of the visual environment. Current Opinion in Neurobiology, 2003, 13, 144-149.	2.0	264
107	Image denoising using scale mixtures of gaussians in the wavelet domain. IEEE Transactions on Image Processing, 2003, 12, 1338-1351.	6.0	1,836
108	Seeing patterns in the noise. Trends in Cognitive Sciences, 2003, 7, 51-53.	4.0	23

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109	Motion illusions as optimal percepts. Nature Neuroscience, 2002, 5, 598-604.	7.1	865
110	Motion illusions as optimal percepts. Nature Neuroscience, 2002, 5, 598-604.	7.1	253
111	Random Cascades on Wavelet Trees and Their Use in Analyzing and Modeling Natural Images. Applied and Computational Harmonic Analysis, 2001, 11, 89-123.	1.1	175
112	Natural Image Statistics and Neural Representation. Annual Review of Neuroscience, 2001, 24, 1193-1216.	5.0	2,164
113	Representing retinal image speed in visual cortex. Nature Neuroscience, 2001, 4, 461-462.	7.1	21
114	Natural signal statistics and sensory gain control. Nature Neuroscience, 2001, 4, 819-825.	7.1	685
115	Perceiving visual expansion without optic flow. Nature, 2001, 410, 816-819.	13.7	49
116	Random cascades on wavelet trees and their use in analyzing and modeling natural images. , 2000, , .		1
117	Mechanisms of visual motion detection. Nature Neuroscience, 2000, 3, 64-68.	7.1	57
118	A Parametric Texture Model Based on Joint Statistics of Complex Wavelet Coefficients. International Journal of Computer Vision, 2000, 40, 49-70.	10.9	1,375
119	Image denoising using a local Gaussian scale mixture model in the wavelet domain. , 2000, 4119, 363.		43
120	Bayesian Denoising of Visual Images in the Wavelet Domain. Lecture Notes in Statistics, 1999, , 291-308.	0.1	147
121	A model of neuronal responses in visual area MT. Vision Research, 1998, 38, 743-761.	0.7	815
122	Local velocity representation: evidence from motion adaptation. Vision Research, 1998, 38, 3899-3912.	0.7	77
123	Steerable wedge filters for local orientation analysis. IEEE Transactions on Image Processing, 1996, 5, 1377-1382.	6.0	150
124	Nonseparable QMF Pyramids. Proceedings of SPIE, 1989, , .	0.8	3
125	Orthogonal Pyramid Transforms For Image Coding.. Proceedings of SPIE, 1987, 0845, 50.	0.8	202