

# Eero P Simoncelli

## List of Publications by Year in descending order

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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	Image Quality Assessment: From Error Visibility to Structural Similarity. IEEE Transactions on Image Processing, 2004, 13, 600-612.	6.0	34,925
2	Natural Image Statistics and Neural Representation. Annual Review of Neuroscience, 2001, 24, 1193-1216.	5.0	2,164
3	Image denoising using scale mixtures of gaussians in the wavelet domain. IEEE Transactions on Image Processing, 2003, 12, 1338-1351.	6.0	1,836
4	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
5	Spatio-temporal correlations and visual signalling in a complete neuronal population. Nature, 2008, 454, 995-999.	13.7	1,128
6	Motion illusions as optimal percepts. Nature Neuroscience, 2002, 5, 598-604.	7.1	865
7	A model of neuronal responses in visual area MT. Vision Research, 1998, 38, 743-761.	0.7	815
8	Natural signal statistics and sensory gain control. Nature Neuroscience, 2001, 4, 819-825.	7.1	685
9	Noise characteristics and prior expectations in human visual speed perception. Nature Neuroscience, 2006, 9, 578-585.	7.1	681
10	Cardinal rules: visual orientation perception reflects knowledge of environmental statistics. Nature Neuroscience, 2011, 14, 926-932.	7.1	495
11	Metamers of the ventral stream. Nature Neuroscience, 2011, 14, 1195-1201.	7.1	495
12	How MT cells analyze the motion of visual patterns. Nature Neuroscience, 2006, 9, 1421-1431.	7.1	483
13	Partitioning neuronal variability. Nature Neuroscience, 2014, 17, 858-865.	7.1	463
14	Spatiotemporal Elements of Macaque V1 Receptive Fields. Neuron, 2005, 46, 945-956.	3.8	388
15	Spike-triggered neural characterization. Journal of Vision, 2006, 6, 13.	0.1	336
16	Prediction and Decoding of Retinal Ganglion Cell Responses with a Probabilistic Spiking Model. Journal of Neuroscience, 2005, 25, 11003-11013.	1.7	319
17	Sound Texture Perception via Statistics of the Auditory Periphery: Evidence from Sound Synthesis. Neuron, 2011, 71, 926-940.	3.8	284
18	A functional and perceptual signature of the second visual area in primates. Nature Neuroscience, 2013, 16, 974-981.	7.1	277

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19	Reduced-reference image quality assessment using a wavelet-domain natural image statistic model. , 2005, , .		274
20	Vision and the statistics of the visual environment. Current Opinion in Neurobiology, 2003, 13, 144-149.	2.0	264
21	Motion illusions as optimal percepts. Nature Neuroscience, 2002, 5, 598-604.	7.1	253
22	Quality-aware images. IEEE Transactions on Image Processing, 2006, 15, 1680-1689.	6.0	241
23	Maximum Likelihood Estimation of a Stochastic Integrate-and-Fire Neural Encoding Model. Neural Computation, 2004, 16, 2533-2561.	1.3	224
24	Orthogonal Pyramid Transforms For Image Coding.. Proceedings of SPIE, 1987, 0845, 50.	0.8	202
25	Summary statistics in auditory perception. Nature Neuroscience, 2013, 16, 493-498.	7.1	201
26	Image Quality Assessment: Unifying Structure and Texture Similarity. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2020, PP, 1-1.	9.7	198
27	Differentiation of Discrete Multidimensional Signals. IEEE Transactions on Image Processing, 2004, 13, 496-508.	6.0	182
28	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
29	Recovery of Sparse Translation-Invariant Signals With Continuous Basis Pursuit. IEEE Transactions on Signal Processing, 2011, 59, 4735-4744.	3.2	169
30	Attention stabilizes the shared gain of V4 populations. ELife, 2015, 4, e08998.	2.8	167
31	Efficient Sensory Encoding and Bayesian Inference with Heterogeneous Neural Populations. Neural Computation, 2014, 26, 2103-2134.	1.3	159
32	Steerable wedge filters for local orientation analysis. IEEE Transactions on Image Processing, 1996, 5, 1377-1382.	6.0	150
33	Bayesian Denoising of Visual Images in the Wavelet Domain. Lecture Notes in Statistics, 1999, , 291-308.	0.1	147
34	End-to-end optimization of nonlinear transform codes for perceptual quality. , 2016, , .		138
35	Is the Homunculus â€œAwareâ€ of Sensory Adaptation?. Neural Computation, 2009, 21, 3271-3304.	1.3	131
36	A Model-Based Spike Sorting Algorithm for Removing Correlation Artifacts in Multi-Neuron Recordings. PLoS ONE, 2013, 8, e62123.	1.1	112

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37	Dimensionality reduction in neural models: An information-theoretic generalization of spike-triggered average and covariance analysis. <i>Journal of Vision</i> , 2006, 6, 9.	0.1	102
38	Efficient Coding of Spatial Information in the Primate Retina. <i>Journal of Neuroscience</i> , 2012, 32, 16256-16264.	1.7	94
39	Modeling the impact of common noise inputs on the network activity of retinal ganglion cells. <i>Journal of Computational Neuroscience</i> , 2012, 33, 97-121.	0.6	94
40	Maximum differentiation (MAD) competition: A methodology for comparing computational models of perceptual quantities. <i>Journal of Vision</i> , 2008, 8, 8-8.	0.1	93
41	A Convolutional Subunit Model for Neuronal Responses in Macaque V1. <i>Journal of Neuroscience</i> , 2015, 35, 14829-14841.	1.7	87
42	Selectivity and tolerance for visual texture in macaque V2. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2016, 113, E3140-9.	3.3	87
43	Comparison of Full-Reference Image Quality Models for Optimization of Image Processing Systems. <i>International Journal of Computer Vision</i> , 2021, 129, 1258-1281.	10.9	87
44	Nonlinear image representation for efficient perceptual coding. <i>IEEE Transactions on Image Processing</i> , 2006, 15, 68-80.	6.0	82
45	Nonlinear Extraction of Independent Components of Natural Images Using Radial Gaussianization. <i>Neural Computation</i> , 2009, 21, 1485-1519.	1.3	81
46	Perceptual image quality assessment using a normalized Laplacian pyramid. <i>IS&amp;T International Symposium on Electronic Imaging</i> , 2016, 28, 1-6.	0.3	78
47	Local velocity representation: evidence from motion adaptation. <i>Vision Research</i> , 1998, 38, 3899-3912.	0.7	77
48	Mapping nonlinear receptive field structure in primate retina at single cone resolution. <i>ELife</i> , 2015, 4, .	2.8	77
49	A unified framework and method for automatic neural spike identification. <i>Journal of Neuroscience Methods</i> , 2014, 222, 47-55.	1.3	76
50	Origin and Function of Tuning Diversity in Macaque Visual Cortex. <i>Neuron</i> , 2015, 88, 819-831.	3.8	75
51	Near-optimal integration of orientation information across saccades. <i>Journal of Vision</i> , 2015, 15, 8.	0.1	68
52	Statistical Modeling of Photographic Images. , 2005, , 431-441.		62
53	Modeling Multiscale Subbands of Photographic Images with Fields of Gaussian Scale Mixtures. <i>IEEE Transactions on Pattern Analysis and Machine Intelligence</i> , 2009, 31, 693-706.	9.7	59
54	Mechanisms of visual motion detection. <i>Nature Neuroscience</i> , 2000, 3, 64-68.	7.1	57

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55	Structural Approaches to Image Quality Assessment. , 2005, , 961-974.		51
56	Perceiving visual expansion without optic flow. Nature, 2001, 410, 816-819.	13.7	49
57	Optimal Denoising in Redundant Representations. IEEE Transactions on Image Processing, 2008, 17, 1342-1352.	6.0	47
58	Perceptually optimized image rendering. Journal of the Optical Society of America A: Optics and Image Science, and Vision, 2017, 34, 1511.	0.8	45
59	Biases in white noise analysis due to non-Poisson spike generation. Neurocomputing, 2003, 52-54, 109-115.	3.5	44
60	Dissociation of Choice Formation and Choice-Related Activity in Macaque Visual Cortex. Journal of Neuroscience, 2017, 37, 5195-5203.	1.7	44
61	Image denoising using a local Gaussian scale mixture model in the wavelet domain. , 2000, 4119, 363.		43
62	Image Modeling and Denoising With Orientation-Adapted Gaussian Scale Mixtures. IEEE Transactions on Image Processing, 2008, 17, 2089-2101.	6.0	43
63	Perceptual straightening of natural videos. Nature Neuroscience, 2019, 22, 984-991.	7.1	41
64	Visual motion aftereffects arise from a cascade of two isomorphic adaptation mechanisms. Journal of Vision, 2009, 9, 9-9.	0.1	37
65	Spike-triggered characterization of excitatory and suppressive stimulus dimensions in monkey V1. Neurocomputing, 2004, 58-60, 793-799.	3.5	36
66	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
67	Nonlinear image representation using divisive normalization. , 2008, 2008, 1-8.		31
68	Optimal inference explains the perceptual coherence of visual motion stimuli. Journal of Vision, 2011, 11, 14-14.	0.1	30
69	Representation of Naturalistic Image Structure in the Primate Visual Cortex. Cold Spring Harbor Symposia on Quantitative Biology, 2014, 79, 115-122.	2.0	30
70	Contextual modulation of sensitivity to naturalistic image structure in macaque V2. Journal of Neurophysiology, 2018, 120, 409-420.	0.9	30
71	Inference of nonlinear receptive field subunits with spike-triggered clustering. ELife, 2020, 9, .	2.8	30
72	Least Squares Estimation Without Priors or Supervision. Neural Computation, 2011, 23, 374-420.	1.3	29

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73	Sound texture synthesis via filter statistics. , 2009, , .		27
74	Blind Image Quality Assessment by Learning from Multiple Annotators. , 2019, , .		26
75	A Bayesian Model of Conditioned Perception. Advances in Neural Information Processing Systems, 2007, 2007, 1409-1416.	2.8	25
76	Comparing integrate-and-fire models estimated using intracellular and extracellular data. Neurocomputing, 2005, 65-66, 379-385.	3.5	24
77	Seeing patterns in the noise. Trends in Cognitive Sciences, 2003, 7, 51-53.	4.0	23
78	Neural Quadratic Discriminant Analysis: Nonlinear Decoding with V1-Like Computation. Neural Computation, 2016, 28, 2291-2319.	1.3	23
79	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
80	Implicit encoding of prior probabilities in optimal neural populations. Advances in Neural Information Processing Systems, 2010, 2010, 658-666.	2.8	23
81	Unsupervised Deep Video Denoising. , 2021, , .		22
82	Representing retinal image speed in visual cortex. Nature Neuroscience, 2001, 4, 461-462.	7.1	21
83	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
84	Image Denoising with an Orientation-Adaptive Gaussian Scale Mixture Model. , 2006, , .		15
85	Opposing effects of selectivity and invariance in peripheral vision. Nature Communications, 2021, 12, 4597.	5.8	15
86	Quantifying color image distortions based on adaptive spatio-chromatic signal decompositions. , 2009, , .		14
87	Statistically and perceptually motivated nonlinear image representation. , 2007, , .		13
88	Primary visual cortex straightens natural video trajectories. Nature Communications, 2021, 12, 5982.	5.8	12
89	Multiscale Denoising of Photographic Images. , 2009, , 241-261.		10
90	Slow gain fluctuations limit benefits of temporal integration in visual cortex. Journal of Vision, 2018, 18, 8.	0.1	9

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91	Sparse decomposition of transformation-invariant signals with continuous basis pursuit. , 2011, , .		8
92	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
93	Mapping spatial frequency preferences across human primary visual cortex. Journal of Vision, 2022, 22, 3.	0.1	8
94	Optimal Denoising in Redundant Bases. , 2007, , .		7
95	Compound Stimuli Reveal the Structure of Visual Motion Selectivity in Macaque MT Neurons. ENeuro, 2019, 6, ENEURO.0258-19.2019.	0.9	7
96	A Machine Learning Framework for Adaptive Combination of Signal Denoising Methods. , 2007, , .		5
97	Capturing Visual Image Properties with Probabilistic Models. , 2009, , 205-223.		4
98	Inhibitory interactions in MT receptive fields. Journal of Vision, 2010, 2, 413-413.	0.1	4
99	Nonseparable QMF Pyramids. Proceedings of SPIE, 1989, , .	0.8	3
100	Statistically Driven Sparse Image Approximation. Proceedings International Conference on Image Processing, 2007, , .	0.0	3
101	Geometrical and statistical properties of vision models obtained via maximum differentiation. Proceedings of SPIE, 2015, , .	0.8	3
102	Reducing statistical dependencies in natural signals using radial Gaussianization. Advances in Neural Information Processing Systems, 2008, 2008, 1009-1016.	2.8	3
103	Near-optimal integration of orientation information across saccadic eye movements. Journal of Vision, 2015, 15, 1306.	0.1	2
104	Random cascades on wavelet trees and their use in analyzing and modeling natural images. , 2000, , .		1
105	Learning sparse filter bank transforms with convolutional ICA. , 2014, , .		1
106	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
107	A two-stage model of V2 demonstrates efficient higher-order feature representation. Journal of Vision, 2021, 21, 2654.	0.1	1
108	Predicting perceptual distortion sensitivity with gain control models of LGN. Journal of Vision, 2017, 17, 776.	0.1	1

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109	A spike-triggered covariance method for characterizing divisive normalization models. <i>Journal of Vision</i> , 2010, 1, 450-450.	0.1	1
110	Opposing effects of summary statistics on peripheral discrimination. <i>Journal of Vision</i> , 2015, 15, 770.	0.1	1
111	Uncoupling choice formation and choice-correlated activity in early visual cortex. <i>Journal of Vision</i> , 2017, 17, 1271.	0.1	1
112	Perceptual straightening of natural video trajectories. <i>Journal of Vision</i> , 2017, 17, 402.	0.1	1
113	Mapping Spatial Frequency Preferences in the Human Visual Cortex. <i>Journal of Vision</i> , 2018, 18, 253.	0.1	1
114	A canonical computational model of cortical area V2. <i>Journal of Vision</i> , 2019, 19, 14b.	0.1	1
115	Hierarchical spike coding of sound. <i>Advances in Neural Information Processing Systems</i> , 2012, 2012, 3032-3040.	2.8	1
116	Testing a two-stage model of stimulus selectivity in macaque V2. <i>Journal of Vision</i> , 2020, 20, 1540.	0.1	1
117	Fechner and Stevens can co-exist under Fisher's roof. <i>Journal of Vision</i> , 2021, 21, 2170.	0.1	0
118	The texture centroid paradigm: A new method for isolating preattentive visual mechanisms. <i>Journal of Vision</i> , 2015, 15, 775.	0.1	0
119	Compound stimuli reveal velocity separability of spatiotemporal receptive fields in macaque area MT. <i>Journal of Vision</i> , 2015, 15, 485.	0.1	0
120	Sub-optimal Integration of Orientation Across Saccades. <i>Journal of Vision</i> , 2016, 16, 18.	0.1	0
121	Dynamic visual localization with moving dot clouds. <i>Journal of Vision</i> , 2017, 17, 1166.	0.1	0
122	Efficient coding of natural images with Nonlinear-Linear-Nonlinear cascade model. <i>Journal of Vision</i> , 2018, 18, 22.	0.1	0
123	Contrast-dependent spatial frequency selectivity in macaque V1 neurons explained with tuned contrast gain control. <i>Journal of Vision</i> , 2019, 19, 43a.	0.1	0
124	Differing mechanisms for contrast-dependent spatial frequency selectivity in macaque LGN and V1 neurons. <i>Journal of Vision</i> , 2020, 20, 1579.	0.1	0
125	Estimating scaling of retinal and cortical pooling using metamers. <i>Journal of Vision</i> , 2020, 20, 1398.	0.1	0