

# Eero P Simoncelli

## List of Publications by Year in Descending Order

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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.

122  
papers

35,628  
citations

48  
h-index

138  
g-index

138  
ext. papers

45,372  
ext. citations

7.4  
avg, IF

7.44  
L-index

#	Paper	IF	Citations
122	Mapping spatial frequency preferences across human primary visual cortex.. <i>Journal of Vision</i> , <b>2022</b> , 22, 3	0.4	2
121	Primary visual cortex straightens natural video trajectories. <i>Nature Communications</i> , <b>2021</b> , 12, 5982	17.4	1
120	Pinpointing the neural signatures of single-exposure visual recognition memory. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2021</b> , 118,	11.5	1
119	Comparison of Full-Reference Image Quality Models for Optimization of Image Processing Systems. <i>International Journal of Computer Vision</i> , <b>2021</b> , 129, 1-24	10.6	21
118	Developing Deep Neural Network-based Denoising Techniques for Time-Resolved In Situ TEM of Catalyst Nanoparticles. <i>Microscopy and Microanalysis</i> , <b>2021</b> , 27, 262-264	0.5	
117	Opposing effects of selectivity and invariance in peripheral vision. <i>Nature Communications</i> , <b>2021</b> , 12, 4597	17.4	2
116	A two-stage model of V2 demonstrates efficient higher-order feature representation. <i>Journal of Vision</i> , <b>2021</b> , 21, 2654	0.4	0
115	Fechner and Stevens can co-exist under Fisher's roof. <i>Journal of Vision</i> , <b>2021</b> , 21, 2170	0.4	
114	Unsupervised Deep Video Denoising <b>2021</b> ,		2
113	Image Quality Assessment: Unifying Structure and Texture Similarity. <i>IEEE Transactions on Pattern Analysis and Machine Intelligence</i> , <b>2020</b> , PP,	13.3	48
112	Differing mechanisms for contrast-dependent spatial frequency selectivity in macaque LGN and V1 neurons. <i>Journal of Vision</i> , <b>2020</b> , 20, 1579	0.4	
111	Testing a two-stage model of stimulus selectivity in macaque V2. <i>Journal of Vision</i> , <b>2020</b> , 20, 1540	0.4	
110	Estimating scaling of retinal and cortical pooling using metamers. <i>Journal of Vision</i> , <b>2020</b> , 20, 1398	0.4	
109	Inference of nonlinear receptive field subunits with spike-triggered clustering. <i>ELife</i> , <b>2020</b> , 9,	8.9	13
108	Blind Image Quality Assessment by Learning from Multiple Annotators <b>2019</b> ,		13
107	Perceptual straightening of natural videos. <i>Nature Neuroscience</i> , <b>2019</b> , 22, 984-991	25.5	21
106	Compound Stimuli Reveal the Structure of Visual Motion Selectivity in Macaque MT Neurons. <i>ENeuro</i> , <b>2019</b> , 6,	3.9	1

105	A canonical computational model of cortical area V2. <i>Journal of Vision</i> , <b>2019</b> , 19, 14b	0.4	0
104	Contrast-dependent spatial frequency selectivity in macaque V1 neurons explained with tuned contrast gain control. <i>Journal of Vision</i> , <b>2019</b> , 19, 43a	0.4	
103	Slow gain fluctuations limit benefits of temporal integration in visual cortex. <i>Journal of Vision</i> , <b>2018</b> , 18, 8	0.4	8
102	Mapping Spatial Frequency Preferences in the Human Visual Cortex. <i>Journal of Vision</i> , <b>2018</b> , 18, 253	0.4	1
101	Efficient coding of natural images with Nonlinear-Linear-Nonlinear cascade model. <i>Journal of Vision</i> , <b>2018</b> , 18, 22	0.4	
100	Contextual modulation of sensitivity to naturalistic image structure in macaque V2. <i>Journal of Neurophysiology</i> , <b>2018</b> , 120, 409-420	3.2	17
99	Dissociation of Choice Formation and Choice-Related Activity in Macaque Visual Cortex. <i>Journal of Neuroscience</i> , <b>2017</b> , 37, 5195-5203	6.6	22
98	Perceptually optimized image rendering. <i>Journal of the Optical Society of America A: Optics and Image Science, and Vision</i> , <b>2017</b> , 34, 1511-1525	1.8	29
97	Predicting perceptual distortion sensitivity with gain control models of LGN. <i>Journal of Vision</i> , <b>2017</b> , 17, 776	0.4	1
96	Dynamic visual localization with moving dot clouds. <i>Journal of Vision</i> , <b>2017</b> , 17, 1166	0.4	
95	Uncoupling choice formation and choice-related activity in early visual cortex. <i>Journal of Vision</i> , <b>2017</b> , 17, 1271	0.4	
94	Perceptual straightening of natural video trajectories. <i>Journal of Vision</i> , <b>2017</b> , 17, 402	0.4	1
93	End-to-end optimization of nonlinear transform codes for perceptual quality <b>2016</b> ,		50
92	Selectivity and tolerance for visual texture in macaque V2. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2016</b> , 113, E3140-9	11.5	58
91	Perceptual image quality assessment using a normalized Laplacian pyramid. <i>IS&amp;T International Symposium on Electronic Imaging</i> , <b>2016</b> , 2016, 1-6	1	39
90	Neural Quadratic Discriminant Analysis: Nonlinear Decoding with V1-Like Computation. <i>Neural Computation</i> , <b>2016</b> , 28, 2291-2319	2.9	14
89	A Convolutional Subunit Model for Neuronal Responses in Macaque V1. <i>Journal of Neuroscience</i> , <b>2015</b> , 35, 14829-41	6.6	55
88	Origin and Function of Tuning Diversity in Macaque Visual Cortex. <i>Neuron</i> , <b>2015</b> , 88, 819-31	13.9	47

87	Near-optimal integration of orientation information across saccades. <i>Journal of Vision</i> , <b>2015</b> , 15, 8	0.4	54
86	Geometrical and statistical properties of vision models obtained via maximum differentiation <b>2015</b> ,		2
85	Mapping nonlinear receptive field structure in primate retina at single cone resolution. <i>ELife</i> , <b>2015</b> , 4,	8.9	59
84	Attention stabilizes the shared gain of V4 populations. <i>ELife</i> , <b>2015</b> , 4, e08998	8.9	113
83	Author response: Attention stabilizes the shared gain of V4 populations <b>2015</b> ,		5
82	Partitioning neuronal variability. <i>Nature Neuroscience</i> , <b>2014</b> , 17, 858-65	25.5	311
81	A unified framework and method for automatic neural spike identification. <i>Journal of Neuroscience Methods</i> , <b>2014</b> , 222, 47-55	3	55
80	Efficient sensory encoding and Bayesian inference with heterogeneous neural populations. <i>Neural Computation</i> , <b>2014</b> , 26, 2103-34	2.9	96
79	Representation of Naturalistic Image Structure in the Primate Visual Cortex. <i>Cold Spring Harbor Symposia on Quantitative Biology</i> , <b>2014</b> , 79, 115-22	3.9	16
78	Summary statistics in auditory perception. <i>Nature Neuroscience</i> , <b>2013</b> , 16, 493-8	25.5	138
77	A functional and perceptual signature of the second visual area in primates. <i>Nature Neuroscience</i> , <b>2013</b> , 16, 974-81	25.5	196
76	A model-based spike sorting algorithm for removing correlation artifacts in multi-neuron recordings. <i>PLoS ONE</i> , <b>2013</b> , 8, e62123	3.7	80
75	Efficient coding of spatial information in the primate retina. <i>Journal of Neuroscience</i> , <b>2012</b> , 32, 16256-646.6		68
74	Modeling the impact of common noise inputs on the network activity of retinal ganglion cells. <i>Journal of Computational Neuroscience</i> , <b>2012</b> , 33, 97-121	1.4	70
73	Hierarchical spike coding of sound. <i>Advances in Neural Information Processing Systems</i> , <b>2012</b> , 2012, 3032-3040		0
72	Efficient and direct estimation of a neural subunit model for sensory coding. <i>Advances in Neural Information Processing Systems</i> , <b>2012</b> , 25, 3113-3121	2.2	17
71	Cardinal rules: visual orientation perception reflects knowledge of environmental statistics. <i>Nature Neuroscience</i> , <b>2011</b> , 14, 926-32	25.5	334
70	Metamers of the ventral stream. <i>Nature Neuroscience</i> , <b>2011</b> , 14, 1195-201	25.5	354

69	Sound texture perception via statistics of the auditory periphery: evidence from sound synthesis. <i>Neuron</i> , <b>2011</b> , 71, 926-40	13.9	203
68	Optimal inference explains the perceptual coherence of visual motion stimuli. <i>Journal of Vision</i> , <b>2011</b> , 11,	0.4	22
67	Sparse decomposition of transformation-invariant signals with continuous basis pursuit <b>2011</b> ,		5
66	Least squares estimation without priors or supervision. <i>Neural Computation</i> , <b>2011</b> , 23, 374-420	2.9	15
65	Recovery of sparse translation-invariant signals with continuous basis pursuit. <i>IEEE Transactions on Signal Processing</i> , <b>2011</b> , 59,	4.8	124
64	Efficient coding of natural images with a population of noisy Linear-Nonlinear neurons. <i>Advances in Neural Information Processing Systems</i> , <b>2011</b> , 24, 999-1007	2.2	21
63	Implicit encoding of prior probabilities in optimal neural populations. <i>Advances in Neural Information Processing Systems</i> , <b>2010</b> , 2010, 658-666	2.2	19
62	Multiscale Denoising of Photographic Images <b>2009</b> , 241-261		6
61	Quantifying color image distortions based on adaptive spatio-chromatic signal decompositions <b>2009</b> ,		9
60	Nonlinear extraction of independent components of natural images using radial gaussianization. <i>Neural Computation</i> , <b>2009</b> , 21, 1485-519	2.9	54
59	Visual motion aftereffects arise from a cascade of two isomorphic adaptation mechanisms. <i>Journal of Vision</i> , <b>2009</b> , 9, 9.1-14	0.4	25
58	Is the homunculus "aware" of sensory adaptation?. <i>Neural Computation</i> , <b>2009</b> , 21, 3271-304	2.9	97
57	Sound texture synthesis via filter statistics <b>2009</b> ,		21
56	Modeling multiscale subbands of photographic images with fields of Gaussian scale mixtures. <i>IEEE Transactions on Pattern Analysis and Machine Intelligence</i> , <b>2009</b> , 31, 693-706	13.3	47
55	Capturing Visual Image Properties with Probabilistic Models <b>2009</b> , 205-223		3
54	Spatio-temporal correlations and visual signalling in a complete neuronal population. <i>Nature</i> , <b>2008</b> , 454, 995-9	50.4	826
53	Optimal denoising in redundant representations. <i>IEEE Transactions on Image Processing</i> , <b>2008</b> , 17, 1342-527	5.7	37
52	Nonlinear Image Representation Using Divisive Normalization. <i>Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition</i> , <b>2008</b> , 2008, 1-8	6	12

51	Image modeling and denoising with orientation-adapted Gaussian scale mixtures. <i>IEEE Transactions on Image Processing</i> , <b>2008</b> , 17, 2089-101	8.7	38
50	Maximum differentiation (MAD) competition: a methodology for comparing computational models of perceptual quantities. <i>Journal of Vision</i> , <b>2008</b> , 8, 8.1-13	0.4	63
49	Reducing statistical dependencies in natural signals using radial Gaussianization. <i>Advances in Neural Information Processing Systems</i> , <b>2008</b> , 2008, 1009-1016	2.2	3
48	A Machine Learning Framework for Adaptive Combination of Signal Denoising Methods <b>2007</b> ,		3
47	Statistically Driven Sparse Image Approximation. <i>Proceedings International Conference on Image Processing</i> , <b>2007</b> ,	1.6	1
46	Optimal Denoising in Redundant Bases <b>2007</b> ,		6
45	Statistically and perceptually motivated nonlinear image representation <b>2007</b> ,		10
44	A Bayesian Model of Conditioned Perception. <i>Advances in Neural Information Processing Systems</i> , <b>2007</b> , 2007, 1409-1416	2.2	21
43	Image Denoising with an Orientation-Adaptive Gaussian Scale Mixture Model <b>2006</b> ,		11
42	Dimensionality reduction in neural models: an information-theoretic generalization of spike-triggered average and covariance analysis. <i>Journal of Vision</i> , <b>2006</b> , 6, 414-28	0.4	87
41	Nonlinear image representation for efficient perceptual coding. <i>IEEE Transactions on Image Processing</i> , <b>2006</b> , 15, 68-80	8.7	61
40	Quality-aware images. <i>IEEE Transactions on Image Processing</i> , <b>2006</b> , 15, 1680-9	8.7	187
39	Spike-triggered neural characterization. <i>Journal of Vision</i> , <b>2006</b> , 6, 484-507	0.4	263
38	Noise characteristics and prior expectations in human visual speed perception. <i>Nature Neuroscience</i> , <b>2006</b> , 9, 578-85	25.5	530
37	How MT cells analyze the motion of visual patterns. <i>Nature Neuroscience</i> , <b>2006</b> , 9, 1421-31	25.5	391
36	Reduced-reference image quality assessment using a wavelet-domain natural image statistic model <b>2005</b> ,		173
35	Spatiotemporal elements of macaque v1 receptive fields. <i>Neuron</i> , <b>2005</b> , 46, 945-56	13.9	325
34	Structural Approaches to Image Quality Assessment <b>2005</b> , 961-974		27

33	Prediction and decoding of retinal ganglion cell responses with a probabilistic spiking model. <i>Journal of Neuroscience</i> , <b>2005</b> , 25, 11003-13	6.6	254
32	Comparing integrate-and-fire models estimated using intracellular and extracellular data. <i>Neurocomputing</i> , <b>2005</b> , 65-66, 379-385	5.4	21
31	Statistical Modeling of Photographic Images <b>2005</b> , 431-441		40
30	Differentiation of discrete multidimensional signals. <i>IEEE Transactions on Image Processing</i> , <b>2004</b> , 13, 496-508	8.7	119
29	Maximum likelihood estimation of a stochastic integrate-and-fire neural encoding model. <i>Neural Computation</i> , <b>2004</b> , 16, 2533-61	2.9	205
28	Spike-triggered characterization of excitatory and suppressive stimulus dimensions in monkey V1. <i>Neurocomputing</i> , <b>2004</b> , 58-60, 793-799	5.4	28
27	Image quality assessment: from error visibility to structural similarity. <i>IEEE Transactions on Image Processing</i> , <b>2004</b> , 13, 600-12	8.7	21719
26	Biases in white noise analysis due to non-Poisson spike generation. <i>Neurocomputing</i> , <b>2003</b> , 52-54, 109-115	5.4	36
25	Vision and the statistics of the visual environment. <i>Current Opinion in Neurobiology</i> , <b>2003</b> , 13, 144-9	7.6	216
24	Image denoising using scale mixtures of Gaussians in the wavelet domain. <i>IEEE Transactions on Image Processing</i> , <b>2003</b> , 12, 1338-51	8.7	1414
23	Seeing patterns in the noise. <i>Trends in Cognitive Sciences</i> , <b>2003</b> , 7, 51-53	14	21
22	Directly Invertible Nonlinear Divisive Normalization Pyramid for Image Representation. <i>Lecture Notes in Computer Science</i> , <b>2003</b> , 331-340	0.9	1
21	Motion illusions as optimal percepts. <i>Nature Neuroscience</i> , <b>2002</b> , 5, 598-604	25.5	742
20	Random Cascades on Wavelet Trees and Their Use in Analyzing and Modeling Natural Images. <i>Applied and Computational Harmonic Analysis</i> , <b>2001</b> , 11, 89-123	3.1	135
19	Natural image statistics and neural representation. <i>Annual Review of Neuroscience</i> , <b>2001</b> , 24, 1193-216	17	1659
18	Natural signal statistics and sensory gain control. <i>Nature Neuroscience</i> , <b>2001</b> , 4, 819-25	25.5	560
17	Perceiving visual expansion without optic flow. <i>Nature</i> , <b>2001</b> , 410, 816-9	50.4	38
16	Mechanisms of visual motion detection. <i>Nature Neuroscience</i> , <b>2000</b> , 3, 64-8	25.5	48

15	A Parametric Texture Model Based on Joint Statistics of Complex Wavelet Coefficients. <i>International Journal of Computer Vision</i> , <b>2000</b> , 40, 49-70	10.6	957
14	Image denoising using a local Gaussian scale mixture model in the wavelet domain <b>2000</b> , 4119, 363		22
13	Bayesian Denoising of Visual Images in the Wavelet Domain. <i>Lecture Notes in Statistics</i> , <b>1999</b> , 291-308	2.9	87
12	A model of neuronal responses in visual area MT. <i>Vision Research</i> , <b>1998</b> , 38, 743-61	2.1	664
11	Local velocity representation: evidence from motion adaptation. <i>Vision Research</i> , <b>1998</b> , 38, 3899-912	2.1	70
10	Optimally rotation-equivariant directional derivative kernels. <i>Lecture Notes in Computer Science</i> , <b>1997</b> , 207-214	0.9	27
9	Steerable wedge filters for local orientation analysis. <i>IEEE Transactions on Image Processing</i> , <b>1996</b> , 5, 1377-82	8.7	109
8	Nonseparable QMF Pyramids <b>1989</b> ,		1
7	Orthogonal Pyramid Transforms For Image Coding. <b>1987</b> , 0845, 50		109
6	Learning efficient task-dependent representations with synaptic plasticity		1
5	Motion illusions as optimal percepts		112
4	Inference of Nonlinear Spatial Subunits in Primate Retina with Spike-Triggered Clustering		2
3	Flexible and accurate decoding of neural populations through stochastic comodulation		1
2	Targeted comodulation supports flexible and accurate decoding in V1		1
1	Developing and Evaluating Deep Neural Network-Based Denoising for Nanoparticle TEM Images with Ultra-Low Signal-to-Noise. <i>Microscopy and Microanalysis</i> , 1-17	0.5	5