Eero P Simoncelli

List of Publications by Citations

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	Image quality assessment: from error visibility to structural similarity. *IEEE Transactions on Image Processing*, **2004**, 13, 600-12	8.7	21719
121	Natural image statistics and neural representation. *Annual Review of Neuroscience*, **2001**, 24, 1193-216	17	1659
120	Image denoising using scale mixtures of Gaussians in the wavelet domain. *IEEE Transactions on Image Processing*, **2003**, 12, 1338-51	8.7	1414
119	A Parametric Texture Model Based on Joint Statistics of Complex Wavelet Coefficients. *International Journal of Computer Vision*, **2000**, 40, 49-70	10.6	957
118	Spatio-temporal correlations and visual signalling in a complete neuronal population. *Nature*, **2008**, 454, 995-9	50.4	826
117	Motion illusions as optimal percepts. *Nature Neuroscience*, **2002**, 5, 598-604	25.5	742
116	A model of neuronal responses in visual area MT. *Vision Research*, **1998**, 38, 743-61	2.1	664
115	Natural signal statistics and sensory gain control. *Nature Neuroscience*, **2001**, 4, 819-25	25.5	560
114	Noise characteristics and prior expectations in human visual speed perception. *Nature Neuroscience* , **2006**, 9, 578-85	25.5	530
113	How MT cells analyze the motion of visual patterns. *Nature Neuroscience*, **2006**, 9, 1421-31	25.5	391
112	Metamers of the ventral stream. *Nature Neuroscience*, **2011**, 14, 1195-201	25.5	354
111	Cardinal rules: visual orientation perception reflects knowledge of environmental statistics. *Nature Neuroscience*, **2011**, 14, 926-32	25.5	334
110	Spatiotemporal elements of macaque v1 receptive fields. *Neuron*, **2005**, 46, 945-56	13.9	325
109	Partitioning neuronal variability. *Nature Neuroscience*, **2014**, 17, 858-65	25.5	311
108	Spike-triggered neural characterization. *Journal of Vision*, **2006**, 6, 484-507	0.4	263
107	Prediction and decoding of retinal ganglion cell responses with a probabilistic spiking model. *Journal of Neuroscience*, **2005**, 25, 11003-13	6.6	254
106	Vision and the statistics of the visual environment. *Current Opinion in Neurobiology*, **2003**, 13, 144-9	7.6	216

105	Maximum likelihood estimation of a stochastic integrate-and-fire neural encoding model. *Neural Computation*, **2004**, 16, 2533-61	2.9	205
104	Sound texture perception via statistics of the auditory periphery: evidence from sound synthesis. *Neuron*, **2011**, 71, 926-40	13.9	203
103	A functional and perceptual signature of the second visual area in primates. *Nature Neuroscience*, **2013**, 16, 974-81	25.5	196
102	Quality-aware images. *IEEE Transactions on Image Processing*, **2006**, 15, 1680-9	8.7	187
101	Reduced-reference image quality assessment using a wavelet-domain natural image statistic model **2005**,		173
100	Summary statistics in auditory perception. *Nature Neuroscience*, **2013**, 16, 493-8	25.5	138
99	Random Cascades on Wavelet Trees and Their Use in Analyzing and Modeling Natural Images. *Applied and Computational Harmonic Analysis*, **2001**, 11, 89-123	3.1	135
98	Recovery of sparse translation-invariant signals with continuous basis pursuit. *IEEE Transactions on Signal Processing*, **2011**, 59,	4.8	124
97	Differentiation of discrete multidimensional signals. *IEEE Transactions on Image Processing*, **2004**, 13, 496-508	8.7	119
96	Attention stabilizes the shared gain of V4 populations. *ELife*, **2015**, 4, e08998	8.9	113
95	Motion illusions as optimal percepts		112
94	Steerable wedge filters for local orientation analysis. *IEEE Transactions on Image Processing*, **1996**, 5, 1377-82	8.7	109
93	Orthogonal Pyramid Transforms For Image Coding. **1987**, 0845, 50		109
92	Is the homunculus "aware" of sensory adaptation?. *Neural Computation*, **2009**, 21, 3271-304	2.9	97
91	Efficient sensory encoding and Bayesian inference with heterogeneous neural populations. *Neural Computation*, **2014**, 26, 2103-34	2.9	96
90	Dimensionality reduction in neural models: an information-theoretic generalization of spike-triggered average and covariance analysis. *Journal of Vision*, **2006**, 6, 414-28	0.4	87
89	Bayesian Denoising of Visual Images in the Wavelet Domain. *Lecture Notes in Statistics*, **1999**, 291-308	2.9	87
88	A model-based spike sorting algorithm for removing correlation artifacts in multi-neuron recordings. *PLoS ONE*, **2013**, 8, e62123	3.7	80

87	Modeling the impact of common noise inputs on the network activity of retinal ganglion cells. *Journal of Computational Neuroscience*, **2012**, 33, 97-121	1.4	70
86	Local velocity representation: evidence from motion adaptation. *Vision Research*, **1998**, 38, 3899-912	2.1	70
85	Efficient coding of spatial information in the primate retina. *Journal of Neuroscience*, **2012**, 32, 16256-646.6		68
84	Maximum differentiation (MAD) competition: a methodology for comparing computational models of perceptual quantities. *Journal of Vision*, **2008**, 8, 8.1-13	0.4	63
83	Nonlinear image representation for efficient perceptual coding. *IEEE Transactions on Image Processing*, **2006**, 15, 68-80	8.7	61
82	Mapping nonlinear receptive field structure in primate retina at single cone resolution. *ELife*, **2015**, 4,	8.9	59
81	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	11.5	58
80	A Convolutional Subunit Model for Neuronal Responses in Macaque V1. *Journal of Neuroscience*, **2015**, 35, 14829-41	6.6	55
79	A unified framework and method for automatic neural spike identification. *Journal of Neuroscience Methods*, **2014**, 222, 47-55	3	55
78	Near-optimal integration of orientation information across saccades. *Journal of Vision*, **2015**, 15, 8	0.4	54
77	Nonlinear extraction of independent components of natural images using radial gaussianization. *Neural Computation*, **2009**, 21, 1485-519	2.9	54
76	End-to-end optimization of nonlinear transform codes for perceptual quality **2016**,		50
75	Mechanisms of visual motion detection. *Nature Neuroscience*, **2000**, 3, 64-8	25.5	48
74	Image Quality Assessment: Unifying Structure and Texture Similarity. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, **2020**, PP,	13.3	48
73	Origin and Function of Tuning Diversity in Macaque Visual Cortex. *Neuron*, **2015**, 88, 819-31	13.9	47
72	Modeling multiscale subbands of photographic images with fields of Gaussian scale mixtures. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, **2009**, 31, 693-706	13.3	47
71	Statistical Modeling of Photographic Images **2005**, 431-441		40
70	Perceptual image quality assessment using a normalized Laplacian pyramid. *IS&T International Symposium on Electronic Imaging*, **2016**, 2016, 1-6	1	39

69	Image modeling and denoising with orientation-adapted Gaussian scale mixtures. *IEEE Transactions on Image Processing*, **2008**, 17, 2089-101	8.7	38
68	Perceiving visual expansion without optic flow. *Nature*, **2001**, 410, 816-9	50.4	38
67	Optimal denoising in redundant representations. *IEEE Transactions on Image Processing*, **2008**, 17, 1342-52	8.7	37
66	Biases in white noise analysis due to non-Poisson spike generation. *Neurocomputing*, **2003**, 52-54, 109-115	5.4	36
65	Perceptually optimized image rendering. *Journal of the Optical Society of America A: Optics and Image Science, and Vision*, **2017**, 34, 1511-1525	1.8	29
64	Spike-triggered characterization of excitatory and suppressive stimulus dimensions in monkey V1. *Neurocomputing*, **2004**, 58-60, 793-799	5.4	28
63	Structural Approaches to Image Quality Assessment **2005**, 961-974		27
62	Optimally rotation-equivariant directional derivative kernels. *Lecture Notes in Computer Science*, **1997**, 207-214	0.9	27
61	Visual motion aftereffects arise from a cascade of two isomorphic adaptation mechanisms. *Journal of Vision*, **2009**, 9, 9.1-14	0.4	25
60	Dissociation of Choice Formation and Choice-Correlated Activity in Macaque Visual Cortex. *Journal of Neuroscience*, **2017**, 37, 5195-5203	6.6	22
59	Optimal inference explains the perceptual coherence of visual motion stimuli. *Journal of Vision*, **2011**, 11,	0.4	22
58	Image denoising using a local Gaussian scale mixture model in the wavelet domain **2000**, 4119, 363		22
57	Perceptual straightening of natural videos. *Nature Neuroscience*, **2019**, 22, 984-991	25.5	21
56	Sound texture synthesis via filter statistics **2009**,		21
55	Seeing patterns in the noise. *Trends in Cognitive Sciences*, **2003**, 7, 51-53	14	21
54	Comparing integrate-and-fire models estimated using intracellular and extracellular data. *Neurocomputing*, **2005**, 65-66, 379-385	5.4	21
53	A Bayesian Model of Conditioned Perception. *Advances in Neural Information Processing Systems*, **2007**, 2007, 1409-1416	2.2	21
52	Efficient coding of natural images with a population of noisy Linear-Nonlinear neurons. *Advances in Neural Information Processing Systems*, **2011**, 24, 999-1007	2.2	21

51	Comparison of Full-Reference Image Quality Models for Optimization of Image Processing Systems. *International Journal of Computer Vision*, **2021**, 129, 1-24	10.6	21
50	Implicit encoding of prior probabilities in optimal neural populations. *Advances in Neural Information Processing Systems*, **2010**, 2010, 658-666	2.2	19
49	Efficient and direct estimation of a neural subunit model for sensory coding. *Advances in Neural Information Processing Systems*, **2012**, 25, 3113-3121	2.2	17
48	Contextual modulation of sensitivity to naturalistic image structure in macaque V2. *Journal of Neurophysiology*, **2018**, 120, 409-420	3.2	17
47	Representation of Naturalistic Image Structure in the Primate Visual Cortex. *Cold Spring Harbor Symposia on Quantitative Biology*, **2014**, 79, 115-22	3.9	16
46	Least squares estimation without priors or supervision. *Neural Computation*, **2011**, 23, 374-420	2.9	15
45	Neural Quadratic Discriminant Analysis: Nonlinear Decoding with V1-Like Computation. *Neural Computation*, **2016**, 28, 2291-2319	2.9	14
44	Blind Image Quality Assessment by Learning from Multiple Annotators **2019**,		13
43	Inference of nonlinear receptive field subunits with spike-triggered clustering. *ELife*, **2020**, 9,	8.9	13
42	Nonlinear Image Representation Using Divisive Normalization. *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition*, **2008**, 2008, 1-8	6	12
41	Image Denoising with an Orientation-Adaptive Gaussian Scale Mixture Model **2006**,		11
40	Statistically and perceptually motivated nonlinear image representation **2007**,		10
39	Quantifying color image distortions based on adaptive spatio-chromatic signal decompositions **2009**,		9
38	Slow gain fluctuations limit benefits of temporal integration in visual cortex. *Journal of Vision*, **2018** , 18, 8	0.4	8
37	Multiscale Denoising of Photographic Images **2009**, 241-261		6
36	Optimal Denoising in Redundant Bases **2007**,		6
35	Sparse decomposition of transformation-invariant signals with continuous basis pursuit **2011**,		5
34	Author response: Attention stabilizes the shared gain of V4 populations **2015**,		5

33	Developing and Evaluating Deep Neural Network-Based Denoising for Nanoparticle TEM Images with Ultra-Low Signal-to-Noise. *Microscopy and Microanalysis*,1-17	0.5	5
32	A Machine Learning Framework for Adaptive Combination of Signal Denoising Methods **2007**,		3
31	Reducing statistical dependencies in natural signals using radial Gaussianization. *Advances in Neural Information Processing Systems*, **2008**, 2008, 1009-1016	2.2	3
30	Capturing Visual Image Properties with Probabilistic Models **2009**, 205-223		3
29	Geometrical and statistical properties of vision models obtained via maximum differentiation **2015**,		2
28	Inference of Nonlinear Spatial Subunits in Primate Retina with Spike-Triggered Clustering		2
27	Opposing effects of selectivity and invariance in peripheral vision. *Nature Communications*, **2021**, 12, 4597	17.4	2
26	Mapping spatial frequency preferences across human primary visual cortex.. *Journal of Vision*, **2022**, 22, 3	0.4	2
25	Unsupervised Deep Video Denoising **2021**,		2
24	Statistically Driven Sparse Image Approximation. *Proceedings International Conference on Image Processing*, **2007**,	1.6	1
23	Nonseparable QMF Pyramids **1989**,		1
22	Predicting perceptual distortion sensitivity with gain control models of LGN. *Journal of Vision*, **2017**, 17, 776	0.4	1
21	Compound Stimuli Reveal the Structure of Visual Motion Selectivity in Macaque MT Neurons. *ENeuro*, **2019**, 6,	3.9	1
20	Primary visual cortex straightens natural video trajectories. *Nature Communications*, **2021**, 12, 5982	17.4	1
19	Directly Invertible Nonlinear Divisive Normalization Pyramid for Image Representation. *Lecture Notes in Computer Science*, **2003**, 331-340	0.9	1
18	Mapping Spatial Frequency Preferences in the Human Visual Cortex. *Journal of Vision*, **2018**, 18, 253	0.4	1
17	Learning efficient task-dependent representations with synaptic plasticity		1
16	Flexible and accurate decoding of neural populations through stochastic comodulation		1

15	Perceptual straightening of natural video trajectories. *Journal of Vision*, **2017**, 17, 402	0.4	1
14	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,	11.5	1
13	Targeted comodulation supports flexible and accurate decoding in V1		1
12	Hierarchical spike coding of sound. *Advances in Neural Information Processing Systems*, **2012**, 2012, 3032-3040	2.2	0
11	A canonical computational model of cortical area V2. *Journal of Vision*, **2019**, 19, 14b	0.4	0
10	A two-stage model of V2 demonstrates efficient higher-order feature representation. *Journal of Vision*, **2021**, 21, 2654	0.4	0
9	Differing mechanisms for contrast-dependent spatial frequency selectivity in macaque LGN and V1 neurons. *Journal of Vision*, **2020**, 20, 1579	0.4	
8	Testing a two-stage model of stimulus selectivity in macaque V2. *Journal of Vision*, **2020**, 20, 1540	0.4	
7	Estimating scaling of retinal and cortical pooling using metamers. *Journal of Vision*, **2020**, 20, 1398	0.4	
6	Efficient coding of natural images with Nonlinear-Linear-Nonlinear cascade model. *Journal of Vision* , **2018**, 18, 22	0.4	
5	Contrast-dependent spatial frequency selectivity in macaque V1 neurons explained with tuned contrast gain control. *Journal of Vision*, **2019**, 19, 43a	0.4	
4	Dynamic visual localization with moving dot clouds. *Journal of Vision*, **2017**, 17, 1166	0.4	
3	Uncoupling choice formation and choice-correlated activity in early visual cortex. *Journal of Vision*, **2017**, 17, 1271	0.4	
2	Developing Deep Neural Network-based Denoising Techniques for Time-Resolved In Situ TEM of Catalyst Nanoparticles. *Microscopy and Microanalysis*, **2021**, 27, 262-264	0.5	
1	Fechner and Stevens can co-exist under Fisher's roof. *Journal of Vision*, **2021**, 21, 2170	0.4	