

Michael Elad

List of Publications by Year in descending order

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169
papers

31,256
citations

19657

61
h-index

22166

113
g-index

173
all docs

173
docs citations

173
times ranked

15924
citing authors

#	ARTICLE	IF	CITATIONS
1	Image Denoising Via Sparse and Redundant Representations Over Learned Dictionaries. IEEE Transactions on Image Processing, 2006, 15, 3736-3745.	9.8	4,197
2	Optimally sparse representation in general (nonorthogonal) dictionaries via ℓ_1 minimization. Proceedings of the National Academy of Sciences of the United States of America, 2003, 100, 2197-2202.	7.1	2,396
3	From Sparse Solutions of Systems of Equations to Sparse Modeling of Signals and Images. SIAM Review, 2009, 51, 34-81.	9.5	1,972
4	Sparse and Redundant Representations. , 2010, , .		1,834
5	Fast and Robust Multiframe Super Resolution. IEEE Transactions on Image Processing, 2004, 13, 1327-1344.	9.8	1,689
6	Sparse Representation for Color Image Restoration. IEEE Transactions on Image Processing, 2008, 17, 53-69.	9.8	1,360
7	On Single Image Scale-Up Using Sparse-Representations. Lecture Notes in Computer Science, 2012, , 711-730.	1.3	1,303
8	Dictionaries for Sparse Representation Modeling. Proceedings of the IEEE, 2010, 98, 1045-1057.	21.3	1,018
9	ESPIRiT—an eigenvalue approach to autocalibrating parallel MRI: Where SENSE meets GRAPPA. Magnetic Resonance in Medicine, 2014, 71, 990-1001.	3.0	864
10	Image decomposition via the combination of sparse representations and a variational approach. IEEE Transactions on Image Processing, 2005, 14, 1570-1582.	9.8	798
11	Optimized Projections for Compressed Sensing. IEEE Transactions on Signal Processing, 2007, 55, 5695-5702.	5.3	668
12	On the origin of the bilateral filter and ways to improve it. IEEE Transactions on Image Processing, 2002, 11, 1141-1151.	9.8	634
13	A Variational Framework for Retinex. International Journal of Computer Vision, 2003, 52, 7-23.	15.6	558
14	Analysis versus synthesis in signal priors. Inverse Problems, 2007, 23, 947-968.	2.0	549
15	On the Role of Sparse and Redundant Representations in Image Processing. Proceedings of the IEEE, 2010, 98, 972-982.	21.3	541
16	Advances and challenges in super-resolution. International Journal of Imaging Systems and Technology, 2004, 14, 47-57.	4.1	526
17	Double Sparsity: Learning Sparse Dictionaries for Sparse Signal Approximation. IEEE Transactions on Signal Processing, 2010, 58, 1553-1564.	5.3	511
18	The Little Engine That Could: Regularization by Denoising (RED). SIAM Journal on Imaging Sciences, 2017, 10, 1804-1844.	2.2	486

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19	Analysis K-SVD: A Dictionary-Learning Algorithm for the Analysis Sparse Model. IEEE Transactions on Signal Processing, 2013, 61, 661-677.	5.3	417
20	Learning Multiscale Sparse Representations for Image and Video Restoration. Multiscale Modeling and Simulation, 2008, 7, 214-241.	1.6	396
21	A Statistical Prediction Model Based on Sparse Representations for Single Image Super-Resolution. IEEE Transactions on Image Processing, 2014, 23, 2569-2582.	9.8	349
22	L1-L2 Optimization in Signal and Image Processing. IEEE Signal Processing Magazine, 2010, 27, 76-88.	5.6	348
23	Redundant Multiscale Transforms and Their Application for Morphological Component Separation. Advances in Imaging and Electron Physics, 2004, 132, 287-348.	0.2	336
24	Image Sequence Denoising via Sparse and Redundant Representations. IEEE Transactions on Image Processing, 2009, 18, 27-35.	9.8	331
25	Calibrationless parallel imaging reconstruction based on structured low-rank matrix completion. Magnetic Resonance in Medicine, 2014, 72, 959-970.	3.0	286
26	Compression of facial images using the K-SVD algorithm. Journal of Visual Communication and Image Representation, 2008, 19, 270-282.	2.8	284
27	Super-Resolution Without Explicit Subpixel Motion Estimation. IEEE Transactions on Image Processing, 2009, 18, 1958-1975.	9.8	283
28	Multiframe demosaicing and super-resolution of color images. IEEE Transactions on Image Processing, 2006, 15, 141-159.	9.8	262
29	On the Uniqueness of Nonnegative Sparse Solutions to Underdetermined Systems of Equations. IEEE Transactions on Information Theory, 2008, 54, 4813-4820.	2.4	210
30	Why Simple Shrinkage Is Still Relevant for Redundant Representations?. IEEE Transactions on Information Theory, 2006, 52, 5559-5569.	2.4	208
31	On the uniqueness of overcomplete dictionaries, and a practical way to retrieve them. Linear Algebra and Its Applications, 2006, 416, 48-67.	0.9	198
32	Multi-Scale Patch-Based Image Restoration. IEEE Transactions on Image Processing, 2016, 25, 249-261.	9.8	192
33	Coordinate and subspace optimization methods for linear least squares with non-quadratic regularization. Applied and Computational Harmonic Analysis, 2007, 23, 346-367.	2.2	190
34	Image Processing Using Smooth Ordering of its Patches. IEEE Transactions on Image Processing, 2013, 22, 2764-2774.	9.8	183
35	Coherence-Based Performance Guarantees for Estimating a Sparse Vector Under Random Noise. IEEE Transactions on Signal Processing, 2010, 58, 5030-5043.	5.3	181
36	Improving Dictionary Learning: Multiple Dictionary Updates and Coefficient Reuse. IEEE Signal Processing Letters, 2013, 20, 79-82.	3.6	178

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37	Sparse and Redundant Representation Modeling—What Next?. IEEE Signal Processing Letters, 2012, 19, 922-928.	3.6	166
38	Audio Inpainting. IEEE Transactions on Audio Speech and Language Processing, 2012, 20, 922-932.	3.2	156
39	A Plurality of Sparse Representations Is Better Than the Sparsest One Alone. IEEE Transactions on Information Theory, 2009, 55, 4701-4714.	2.4	139
40	Down-scaling for better transform compression. IEEE Transactions on Image Processing, 2003, 12, 1132-1144.	9.8	138
41	On the stability of the basis pursuit in the presence of noise. Signal Processing, 2006, 86, 511-532.	3.7	138
42	Unsupervised Single Image Dehazing Using Dark Channel Prior Loss. IEEE Transactions on Image Processing, 2020, 29, 2692-2701.	9.8	137
43	Multi-Scale Dictionary Learning Using Wavelets. IEEE Journal on Selected Topics in Signal Processing, 2011, 5, 1014-1024.	10.8	136
44	Sparse and Redundant Modeling of Image Content Using an Image-Signature-Dictionary. SIAM Journal on Imaging Sciences, 2008, 1, 228-247.	2.2	115
45	Retinex by Two Bilateral Filters. Lecture Notes in Computer Science, 2005, , 217-229.	1.3	109
46	Exploiting Statistical Dependencies in Sparse Representations for Signal Recovery. IEEE Transactions on Signal Processing, 2012, 60, 2286-2303.	5.3	106
47	Single Image Interpolation Via Adaptive Nonlocal Sparsity-Based Modeling. IEEE Transactions on Image Processing, 2014, 23, 3085-3098.	9.8	105
48	Boosting of Image Denoising Algorithms. SIAM Journal on Imaging Sciences, 2015, 8, 1187-1219.	2.2	105
49	Style Transfer Via Texture Synthesis. IEEE Transactions on Image Processing, 2017, 26, 2338-2351.	9.8	102
50	Poisson inverse problems by the Plug-and-Play scheme. Journal of Visual Communication and Image Representation, 2016, 41, 96-108.	2.8	97
51	Theoretical Foundations of Deep Learning via Sparse Representations: A Multilayer Sparse Model and Its Connection to Convolutional Neural Networks. IEEE Signal Processing Magazine, 2018, 35, 72-89.	5.6	91
52	Sparsity-Based Poisson Denoising With Dictionary Learning. IEEE Transactions on Image Processing, 2014, 23, 5057-5069.	9.8	87
53	Super Resolution With Probabilistic Motion Estimation. IEEE Transactions on Image Processing, 2009, 18, 1899-1904.	9.8	85
54	Sparse Coding with Anomaly Detection. Journal of Signal Processing Systems, 2015, 79, 179-188.	2.1	77

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55	Working Locally Thinking Globally: Theoretical Guarantees for Convolutional Sparse Coding. IEEE Transactions on Signal Processing, 2017, 65, 5687-5701.	5.3	76
56	Trainlets: Dictionary Learning in High Dimensions. IEEE Transactions on Signal Processing, 2016, 64, 3180-3193.	5.3	72
57	The Generalized Eigenvalue Problem for Nonsquare Pencils Using a Minimal Perturbation Approach. SIAM Journal on Matrix Analysis and Applications, 2005, 27, 582-601.	1.4	71
58	Example-Based Regularization Deployed to Super-Resolution Reconstruction of a Single Image. Computer Journal, 2008, 52, 15-30.	2.4	70
59	Example-based single document image super-resolution: a global MAP approach with outlier rejection. Multidimensional Systems and Signal Processing, 2007, 18, 103-121.	2.6	69
60	Closed-Form MMSE Estimation for Signal Denoising Under Sparse Representation Modeling Over a Unitary Dictionary. IEEE Transactions on Signal Processing, 2010, 58, 3471-3484.	5.3	66
61	Generalized Tree-Based Wavelet Transform. IEEE Transactions on Signal Processing, 2011, 59, 4199-4209.	5.3	66
62	Turning a denoiser into a super-resolver using plug and play priors. , 2016, , .		64
63	MCALab: Reproducible Research in Signal and Image Decomposition and Inpainting. Computing in Science and Engineering, 2010, 12, 44-63.	1.2	63
64	Deep K-SVD Denoising. IEEE Transactions on Image Processing, 2021, 30, 5944-5955.	9.8	63
65	Space-dependent color gamut mapping: a variational approach. IEEE Transactions on Image Processing, 2005, 14, 796-803.	9.8	58
66	Postprocessing of Compressed Images via Sequential Denoising. IEEE Transactions on Image Processing, 2016, 25, 3044-3058.	9.8	55
67	Linearized Kernel Dictionary Learning. IEEE Journal on Selected Topics in Signal Processing, 2016, 10, 726-739.	10.8	55
68	Dual Graph Regularized Dictionary Learning. IEEE Transactions on Signal and Information Processing Over Networks, 2016, 2, 611-624.	2.8	55
69	On Multi-Layer Basis Pursuit, Efficient Algorithms and Convolutional Neural Networks. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2020, 42, 1968-1980.	13.9	50
70	Multi-Layer Convolutional Sparse Modeling: Pursuit and Dictionary Learning. IEEE Transactions on Signal Processing, 2018, , 1-1.	5.3	47
71	RIP-Based Near-Oracle Performance Guarantees for SP, CoSaMP, and IHT. IEEE Transactions on Signal Processing, 2012, 60, 1465-1468.	5.3	46
72	K-SVD dictionary-learning for the analysis sparse model. , 2012, , .		45

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73	Rejection based classifier for face detection. Pattern Recognition Letters, 2002, 23, 1459-1471.	4.2	44
74	Spatially-Adaptive Reconstruction in Computed Tomography Using Neural Networks. IEEE Transactions on Medical Imaging, 2015, 34, 1474-1485.	8.9	44
75	Low Bit-Rate Compression of Facial Images. IEEE Transactions on Image Processing, 2007, 16, 2379-2383.	9.8	43
76	Bi-l 0-l 2 -norm regularization for blind motion deblurring. Journal of Visual Communication and Image Representation, 2015, 33, 42-59.	2.8	43
77	Cross-Modal Localization via Sparsity. IEEE Transactions on Signal Processing, 2007, 55, 1390-1404.	5.3	42
78	Cospase analysis modeling - uniqueness and algorithms. , 2011, , .		41
79	Dictionary Learning for Analysis-Synthesis Thresholding. IEEE Transactions on Signal Processing, 2014, 62, 5962-5972.	5.3	41
80	A constrained matching pursuit approach to audio declipping. , 2011, , .		37
81	Unified Single-Image and Video Super-Resolution via Denoising Algorithms. IEEE Transactions on Image Processing, 2019, 28, 6063-6076.	9.8	34
82	Regularization by Denoising via Fixed-Point Projection (RED-PRO). SIAM Journal on Imaging Sciences, 2021, 14, 1374-1406.	2.2	34
83	Redundant Wavelets on Graphs and High Dimensional Data Clouds. IEEE Signal Processing Letters, 2012, 19, 291-294.	3.6	33
84	Performance Guarantees of the Thresholding Algorithm for the Cospase Analysis Model. IEEE Transactions on Information Theory, 2013, 59, 1832-1845.	2.4	32
85	Linear-Time Subspace Clustering via Bipartite Graph Modeling. IEEE Transactions on Neural Networks and Learning Systems, 2015, 26, 2234-2246.	11.3	31
86	Multiscale Sparse Image Representation with Learned Dictionaries. , 2007, , .		29
87	Expected Patch Log Likelihood with a Sparse Prior. Lecture Notes in Computer Science, 2015, , 99-111.	1.3	29
88	Probabilistic Subspace Clustering Via Sparse Representations. IEEE Signal Processing Letters, 2013, 20, 63-66.	3.6	28
89	Patch Craft: Video Denoising by Deep Modeling and Patch Matching. , 2021, , .		28
90	A Local Block Coordinate Descent Algorithm for the CSC Model. , 2019, , .		27

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91	On MMSE and MAP Denoising Under Sparse Representation Modeling Over a Unitary Dictionary. IEEE Transactions on Signal Processing, 2011, 59, 3526-3535.	5.3	26
92	Self-content-based audio inpainting. Signal Processing, 2015, 111, 61-72.	3.7	25
93	A General Iterative Regularization Framework For Image Denoising. , 2006, , .		23
94	Image denoising through multi-scale learnt dictionaries. , 2014, , .		23
95	Patch-Ordering-Based Wavelet Frame and Its Use in Inverse Problems. IEEE Transactions on Image Processing, 2014, 23, 2779-2792.	9.8	23
96	Con-Patch: When a Patch Meets Its Context. IEEE Transactions on Image Processing, 2016, 25, 3967-3978.	9.8	23
97	Large Inpainting of Face Images With Trainlets. IEEE Signal Processing Letters, 2016, 23, 1839-1843.	3.6	23
98	Facial Image Compression using Patch-Ordering-Based Adaptive Wavelet Transform. IEEE Signal Processing Letters, 2014, 21, 1270-1274.	3.6	22
99	Sparse coding with anomaly detection. , 2013, , .		21
100	Clutter Mitigation in Echocardiography Using Sparse Signal Separation. International Journal of Biomedical Imaging, 2015, 2015, 1-18.	3.9	21
101	Sparse non-negative solution of a linear system of equations is unique. , 2008, , .		20
102	Image denoising using NL-means via smooth patch ordering. , 2013, , .		20
103	Improving the k-svd facial image compression using a linear deblocking method. , 2008, , .		19
104	Improving K-SVD denoising by post-processing its method-noise. , 2013, , .		18
105	Improved denoising of images using modelling of a redundant contourlet transform. , 2005, , .		17
106	LIDIA: Lightweight Learned Image Denoising with Instance Adaptation. , 2020, , .		16
107	A Shrinkage Learning Approach for Single Image Super-Resolution with Overcomplete Representations. Lecture Notes in Computer Science, 2010, , 622-635.	1.3	14
108	Multi-Layer Sparse Coding: The Holistic Way. SIAM Journal on Mathematics of Data Science, 2019, 1, 46-77.	1.8	14

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109	On the uniqueness of non-negative sparse & redundant representations. Proceedings of the IEEE International Conference on Acoustics, Speech, and Signal Processing, 2008, , .	1.8	13
110	Patch Ordering as a Regularization for Inverse Problems in Image Processing. SIAM Journal on Imaging Sciences, 2016, 9, 287-319.	2.2	12
111	Better Compression With Deep Pre-Editing. IEEE Transactions on Image Processing, 2021, 30, 6673-6685.	9.8	12
112	From Exact to Approximate Solutions. , 2010, , 79-109.		12
113	On the Design of Filters for Gradient-Based Motion Estimation. Journal of Mathematical Imaging and Vision, 2005, 23, 345-365.	1.3	11
114	Recovery of cosparse signals with Greedy Analysis Pursuit in the presence of noise. , 2011, , .		11
115	On MAP and MMSE estimators for the co-sparse analysis model. , 2014, 28, 57-74.		11
116	MMSE Approximation For Sparse Coding Algorithms Using Stochastic Resonance. IEEE Transactions on Signal Processing, 2019, 67, 4597-4610.	5.3	11
117	Acceleration of RED via vector extrapolation. Journal of Visual Communication and Image Representation, 2019, 63, 102575.	2.8	11
118	Finding GEMS: Multi-Scale Dictionaries For High-Dimensional Graph Signals. IEEE Transactions on Signal Processing, 2019, 67, 1889-1901.	5.3	11
119	Structure-aware classification using supervised dictionary learning. , 2017, , .		10
120	Pursuit Algorithms â€“ Practice. , 2010, , 35-54.		9
121	Other Applications. , 2010, , 309-357.		9
122	Variations on the Convolutional Sparse Coding Model. IEEE Transactions on Signal Processing, 2020, 68, 519-528.	5.3	9
123	Can we allow linear dependencies in the dictionary in the sparse synthesis framework?. , 2013, , .		8
124	Optimized Pre-Compensating Compression. IEEE Transactions on Image Processing, 2018, 27, 4798-4809.	9.8	8
125	Deep Energy: Task Driven Training of Deep Neural Networks. IEEE Journal on Selected Topics in Signal Processing, 2021, 15, 324-338.	10.8	8
126	Learned Greedy Method (LGM): A novel neural architecture for sparse coding and beyond. Journal of Visual Communication and Image Representation, 2021, 77, 103095.	2.8	8

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127	The Quest for a Dictionary. , 2010, , 227-246.		8
128	Automatic parameter setting for iterative shrinkage methods. , 2008, , .		7
129	Patch based reconstruction of undersampled data (PROUD) for high signal-to-noise ratio and high frame rate contrast enhanced liver imaging. Magnetic Resonance in Medicine, 2015, 74, 1587-1597.	3.0	7
130	Adversarial Noise Attacks of Deep Learning Architectures: Stability Analysis via Sparse-Modeled Signals. Journal of Mathematical Imaging and Vision, 2020, 62, 313-327.	1.3	7
131	Denosing of image patches via sparse representations with learned statistical dependencies. , 2011, , .		6
132	Restoration by Compression. IEEE Transactions on Signal Processing, 2018, 66, 5833-5847.	5.3	6
133	Another step toward demystifying deep neural networks. Proceedings of the National Academy of Sciences of the United States of America, 2020, 117, 27070-27072.	7.1	6
134	Algorithms for signal separation exploiting sparse representations, with application to texture image separation. , 2008, , .		5
135	Sparsity-Seeking Methods in Signal Processing. , 2010, , 169-184.		5
136	On the Global-Local Dichotomy in Sparsity Modeling. Applied and Numerical Harmonic Analysis, 2017, , 1-53.	0.3	5
137	Adaptive filtered-back-projection for computed tomography. , 2008, , .		4
138	Example-based cross-modal denoising. , 2012, , .		4
139	Sparsity based poisson inpainting. , 2014, , .		4
140	Fusion of ultrasound harmonic imaging with clutter removal using sparse signal separation. , 2015, , .		4
141	System-Aware Compression. , 2018, , .		4
142	Theoretical guarantees for graph sparse coding. Applied and Computational Harmonic Analysis, 2020, 49, 698-725.	2.2	4
143	Biblio: automatic meta-data extraction. International Journal on Document Analysis and Recognition, 2007, 10, 113-126.	3.4	3
144	Closed-form mmse estimator for denoising signals under sparse representation modelling. , 2008, , .		3

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145	Uniqueness and Uncertainty. , 2010, , 17-33.		3
146	Introduction to the issue on Adaptive Sparse Representation of Data and Applications in Signal and Image Processing. IEEE Journal on Selected Topics in Signal Processing, 2011, 5, 893-895.	10.8	3
147	Sparse signal separation with an off-line learned dictionary for clutter reduction in echocardiography. , 2014, , .		3
148	Image restoration via successive compression. , 2016, , .		3
149	Graph-constrained supervised dictionary learning for multi-label classification. , 2016, , .		3
150	Example-Based Image Synthesis via Randomized Patch-Matching. IEEE Transactions on Image Processing, 2018, 27, 220-235.	9.8	3
151	Compression for Multiple Reconstructions. , 2018, , .		3
152	Direct adaptive algorithms for CT reconstruction. , 2009, , .		2
153	Iterative-Shrinkage Algorithms. , 2010, , 111-136.		2
154	Learned Shrinkage Approach for Low-Dose Reconstruction in Computed Tomography. International Journal of Biomedical Imaging, 2013, 2013, 1-20.	3.9	2
155	Reconstruction of highly under-sampled dynamic MRI using sparse representation of 1D temporal snippets. , 2015, , .		2
156	Gaussian mixture diffusion. , 2016, , .		2
157	Dictionary Learning for High Dimensional Graph Signals. , 2018, , .		2
158	Analysis of Basis Pursuit via Capacity Sets. Journal of Fourier Analysis and Applications, 2008, 14, 688-711.	1.0	1
159	Near-Oracle Performance Guarantees for Greedy-Like Methods. , 2010, , .		1
160	Towards Average Performance Analysis. , 2010, , 137-151.		1
161	The Dantzig-Selector Algorithm. , 2010, , 153-166.		1
162	Image Denoising. , 2010, , 273-307.		1

#	ARTICLE	IF	CITATIONS
163	SOS Boosting for Image Deblurring Algorithms. , 2019, , .		1
164	Pursuit Algorithms â€“ Guarantees. , 2010, , 55-77.		1
165	Image Denoising Via Sparse and Redundant Representations Over Learned Dictionaries. , 0, .		1
166	Prologue to Sparsity Issue. Journal of Fourier Analysis and Applications, 2008, 14, 607-608.	1.0	0
167	Iterative signal recovery from incomplete samples. Communications of the ACM, 2010, 53, 92-92.	4.5	0
168	Image Compression â€“ Facial Images. , 2010, , 247-271.		0
169	MAP versus MMSE Estimation. , 2010, , 201-225.		0