

Ivan Oseledets

List of Publications by Year in descending order

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121
papers

5,022
citations

201674

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95266

68
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123
all docs

123
docs citations

123
times ranked

2312
citing authors

#	ARTICLE	IF	CITATIONS
1	Tensor-Train Decomposition. SIAM Journal of Scientific Computing, 2011, 33, 2295-2317.	2.8	1,401
2	Unifying time evolution and optimization with matrix product states. Physical Review B, 2016, 94, .	3.2	387
3	TT-cross approximation for multidimensional arrays. Linear Algebra and Its Applications, 2010, 432, 70-88.	0.9	324
4	Breaking the Curse of Dimensionality, Or How to Use SVD in Many Dimensions. SIAM Journal of Scientific Computing, 2009, 31, 3744-3759.	2.8	312
5	Tensor Networks for Dimensionality Reduction and Large-scale Optimization: Part 1 Low-Rank Tensor Decompositions. Foundations and Trends in Machine Learning, 2016, 9, 249-429.	69.0	255
6	Approximation of $2^{\text{dimes}} \times 2^{\text{d}}$ Matrices Using Tensor Decomposition. SIAM Journal on Matrix Analysis and Applications, 2010, 31, 2130-2145.	1.4	150
7	Tucker Dimensionality Reduction of Three-Dimensional Arrays in Linear Time. SIAM Journal on Matrix Analysis and Applications, 2008, 30, 939-956.	1.4	146
8	Tensor Networks for Dimensionality Reduction and Large-scale Optimization: Part 2 Applications and Future Perspectives. Foundations and Trends in Machine Learning, 2017, 9, 249-429.	69.0	128
9	Time Integration of Tensor Trains. SIAM Journal on Numerical Analysis, 2015, 53, 917-941.	2.3	117
10	Solution of Linear Systems and Matrix Inversion in the TT-Format. SIAM Journal of Scientific Computing, 2012, 34, A2718-A2739.	2.8	111
11	A projector-splitting integrator for dynamical low-rank approximation. BIT Numerical Mathematics, 2014, 54, 171-188.	2.0	94
12	Fast Solution of Parabolic Problems in the Tensor Train/Quantized Tensor Train Format with Initial Application to the Fokker-Planck Equation. SIAM Journal of Scientific Computing, 2012, 34, A3016-A3038.	2.8	75
13	Enabling High-Dimensional Hierarchical Uncertainty Quantification by ANOVA and Tensor-Train Decomposition. IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, 2015, 34, 63-76.	2.7	75
14	Constructive Representation of Functions in Low-Rank Tensor Formats. Constructive Approximation, 2013, 37, 1-18.	3.0	72
15	Computation of extreme eigenvalues in higher dimensions using block tensor train format. Computer Physics Communications, 2014, 185, 1207-1216.	7.5	66
16	Tensor methods and recommender systems. Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery, 2017, 7, e1201.	6.8	61
17	AA-ICP: Iterative Closest Point with Anderson Acceleration. , 2018, , .		58
18	Calculating vibrational spectra of molecules using tensor train decomposition. Journal of Chemical Physics, 2016, 145, 124101.	3.0	49

#	ARTICLE	IF	CITATIONS
19	Quantics-TT Collocation Approximation of Parameter-Dependent and Stochastic Elliptic PDEs. Computational Methods in Applied Mathematics, 2010, 10, 376-394.	0.8	46
20	DMRG Approach to Fast Linear Algebra in the TT-Format. Computational Methods in Applied Mathematics, 2011, 11, 382-393.	0.8	39
21	Linear algebra for tensor problems. Computing (Vienna/New York), 2009, 85, 169-188.	4.8	38
22	Randomized Algorithms for Computation of Tucker Decomposition and Higher Order SVD (HOSVD). IEEE Access, 2021, 9, 28684-28706.	4.2	36
23	Stable Low-Rank Tensor Decomposition for Compression of Convolutional Neural Network. Lecture Notes in Computer Science, 2020, , 522-539.	1.3	36
24	Fast adaptive interpolation of multi-dimensional arrays in tensor train format. , 2011, , .		34
25	Tensor properties of multilevel Toeplitz and related matrices. Linear Algebra and Its Applications, 2006, 412, 1-21.	0.9	33
26	QTT approximation of elliptic solution operators in higher dimensions. Russian Journal of Numerical Analysis and Mathematical Modelling, 2011, 26, .	0.6	32
27	Fast Multidimensional Convolution in Low-Rank Tensor Formats via Cross Approximation. SIAM Journal of Scientific Computing, 2015, 37, A565-A582.	2.8	32
28	Low-rank retractions: a survey and new results. Computational Optimization and Applications, 2015, 62, 5-29.	1.6	31
29	Approximation of matrices with logarithmic number of parameters. Doklady Mathematics, 2009, 80, 653-654.	0.6	30
30	Fast Toeplitz linear system inversion for solving two-dimensional acoustic inverse problem. Journal of Inverse and Ill-Posed Problems, 2015, 23, 687-700.	1.0	28
31	A new tensor decomposition. Doklady Mathematics, 2009, 80, 495-496.	0.6	27
32	Rectangular maximum-volume submatrices and their applications. Linear Algebra and Its Applications, 2018, 538, 187-211.	0.9	26
33	A computationally efficient technique for the solution of multi-dimensional PBMs of granulation via tensor decomposition. Computers and Chemical Engineering, 2014, 61, 234-244.	3.8	24
34	Cross approximation in tensor electron density computations. Numerical Linear Algebra With Applications, 2010, 17, 935-952.	1.6	21
35	Adaptive algorithm for quantum circuit simulation. Physical Review A, 2020, 101, .	2.5	21
36	Tensor-Train Ranks for Matrices and Their Inverses. Computational Methods in Applied Mathematics, 2011, 11, 394-403.	0.8	19

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37	Machine learning for LC-MS medicinal plants identification. <i>Chemometrics and Intelligent Laboratory Systems</i> , 2016, 156, 174-180.	3.5	18
38	A unifying approach to the construction of circulant preconditioners. <i>Linear Algebra and Its Applications</i> , 2006, 418, 435-449.	0.9	17
39	Employing fingerprinting of medicinal plants by means of LC-MS and machine learning for species identification task. <i>Scientific Reports</i> , 2018, 8, 17053.	3.3	17
40	Neural-Based Hierarchical Approach for Detailed Dominant Forest Species Classification by Multispectral Satellite Imagery. <i>IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing</i> , 2021, 14, 1810-1820.	4.9	17
41	Tree Species Mapping on Sentinel-2 Satellite Imagery with Weakly Supervised Classification and Object-Wise Sampling. <i>Forests</i> , 2021, 12, 1413.	2.1	17
42	Grid-based electronic structure calculations: The tensor decomposition approach. <i>Journal of Computational Physics</i> , 2016, 312, 19-30.	3.8	16
43	QTT-finite-element approximation for multiscale problems I: model problems in one dimension. <i>Advances in Computational Mathematics</i> , 2017, 43, 411-442.	1.6	16
44	MixChannel: Advanced Augmentation for Multispectral Satellite Images. <i>Remote Sensing</i> , 2021, 13, 2181.	4.0	16
45	Estimation of the Canopy Height Model From Multispectral Satellite Imagery With Convolutional Neural Networks. <i>IEEE Access</i> , 2022, 10, 34116-34132.	4.2	16
46	Minimization methods for approximating tensors and their comparison. <i>Computational Mathematics and Mathematical Physics</i> , 2006, 46, 1641-1650.	0.8	15
47	Black-box learning of multigrid parameters. <i>Journal of Computational and Applied Mathematics</i> , 2020, 368, 112524.	2.0	15
48	Recursive decomposition of multidimensional tensors. <i>Doklady Mathematics</i> , 2009, 80, 460-462.	0.6	14
49	Wedderburn Rank Reduction and Krylov Subspace Method for Tensor Approximation. Part 1: Tucker Case. <i>SIAM Journal of Scientific Computing</i> , 2012, 34, A1-A27.	2.8	14
50	Application of machine learning to viscoplastic flow modeling. <i>Physics of Fluids</i> , 2018, 30, .	4.0	14
51	Algebraic Wavelet Transform via Quantics Tensor Train Decomposition. <i>SIAM Journal of Scientific Computing</i> , 2011, 33, 1315-1328.	2.8	13
52	Fifty Shades of Ratings. , 2016, , .		13
53	Natural Erosion of Sandstone as Shape Optimisation. <i>Scientific Reports</i> , 2017, 7, 17301.	3.3	13
54	XtremeAugment: Getting More From Your Data Through Combination of Image Collection and Image Augmentation. <i>IEEE Access</i> , 2022, 10, 24010-24028.	4.2	13

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55	Object-Based Augmentation for Building Semantic Segmentation: Ventura and Santa Rosa Case Study. , 2021, , .		12
56	Augmentation-Based Methodology for Enhancement of Trees Map Detalization on a Large Scale. Remote Sensing, 2022, 14, 2281.	4.0	12
57	Lower bounds for separable approximations of the Hilbert kernel. Sbornik Mathematics, 2007, 198, 425-432.	0.6	11
58	Optimal Karatsuba-like formulae for certain bilinear forms in GF(2). Linear Algebra and Its Applications, 2008, 429, 2052-2066.	0.9	11
59	Superfast Inversion of Two-Level Toeplitz Matrices Using Newton Iteration and Tensor-Displacement Structure. , 2007, , 229-240.		11
60	Generation of the NIR Spectral Band for Satellite Images with Convolutional Neural Networks. Sensors, 2021, 21, 5646.	3.8	11
61	Iterative representing set selection for nested cross approximation. Numerical Linear Algebra With Applications, 2016, 23, 230-248.	1.6	10
62	IceVisionSet: lossless video dataset collected on Russian winter roads with traffic sign annotations. , 2019, , .		10
63	Fast Simultaneous Orthogonal Reduction to Triangular Matrices. SIAM Journal on Matrix Analysis and Applications, 2009, 31, 316-330.	1.4	9
64	Improved n-Term Karatsuba-Like Formulas in GF(2). IEEE Transactions on Computers, 2011, 60, 1212-1216.	3.4	9
65	Randomized algorithms for fast computation of low rank tensor ring model. Machine Learning: Science and Technology, 2021, 2, 011001.	5.0	9
66	Cross Tensor Approximation Methods for Compression and Dimensionality Reduction. IEEE Access, 2021, 9, 150809-150838.	4.2	9
67	Fitting high-dimensional potential energy surface using active subspace and tensor train (AS+TT) method. Journal of Chemical Physics, 2015, 143, 174107.	3.0	8
68	A new approach for sparse Bayesian channel estimation in SCMA uplink systems. , 2016, , .		8
69	Jacobi–Davidson Method on Low-Rank Matrix Manifolds. SIAM Journal of Scientific Computing, 2018, 40, A1149-A1170.	2.8	8
70	Solution of the Fokker–Planck Equation by Cross Approximation Method in the Tensor Train Format. Frontiers in Artificial Intelligence, 2021, 4, 668215.	3.4	8
71	A reciprocal preconditioner for structured matrices arising from elliptic problems with jumping coefficients. Linear Algebra and Its Applications, 2012, 436, 2980-3007.	0.9	7
72	Latency Estimation Tool and Investigation of Neural Networks Inference on Mobile GPU. Computers, 2021, 10, 104.	3.3	7

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73	Riemannian Optimization for Skip-Gram Negative Sampling. , 2017, , .		7
74	Approximation of Toeplitz matrices by sums of circulants and small-rank matrices. Doklady Mathematics, 2006, 73, 100-101.	0.6	6
75	Iterative across-time solution of linear differential equations: Krylov subspace versus waveform relaxation. Computers and Mathematics With Applications, 2014, 67, 2088-2098.	2.7	6
76	Preconditioners for hierarchical matrices based on their extended sparse form. Russian Journal of Numerical Analysis and Mathematical Modelling, 2016, 31, .	0.6	6
77	A low-rank approach to the computation of path integrals. Journal of Computational Physics, 2016, 305, 557-574.	3.8	6
78	Robust topology optimization using a posteriori error estimator for the finite element method. Structural and Multidisciplinary Optimization, 2018, 58, 1619-1632.	3.5	6
79	Desingularization of Bounded-Rank Matrix Sets. SIAM Journal on Matrix Analysis and Applications, 2018, 39, 451-471.	1.4	6
80	Thermal dissociation and H/D exchange of streptavidin tetramers at atmospheric pressure. International Journal of Mass Spectrometry, 2018, 427, 100-106.	1.5	6
81	Compress and Eliminate Solver for Symmetric Positive Definite Sparse Matrices. SIAM Journal of Scientific Computing, 2018, 40, A1742-A1762.	2.8	6
82	Low-rank Riemannian eigensolver for high-dimensional Hamiltonians. Journal of Computational Physics, 2019, 396, 718-737.	3.8	6
83	Optimization of Water Quality Monitoring Networks Using Metaheuristic Approaches: Moscow Region Use Case. Water (Switzerland), 2021, 13, 888.	2.7	6
84	Tensor-based multiuser detection and intra-cell interference mitigation in LTE PUCCH. , 2013, , .		5
85	Fast low-rank approximations of multidimensional integrals in ion-atomic collisions modelling. Numerical Linear Algebra With Applications, 2015, 22, 1147-1160.	1.6	5
86	Convergence analysis of projected fixed-point iteration on a low-rank matrix manifold. Numerical Linear Algebra With Applications, 2018, 25, e2140.	1.6	5
87	The DEPOSIT computer code based on the low rank approximations. Computer Physics Communications, 2014, 185, 2801-2802.	7.5	4
88	Efficient Rectangular Maximal-Volume Algorithm for Rating Elicitation in Collaborative Filtering. , 2016, , .		4
89	Sensitivity Analysis of Soil Parameters in Crop Model Supported with High-Throughput Computing. Lecture Notes in Computer Science, 2020, , 731-741.	1.3	4
90	The tensor structure of the inverse of a banded Toeplitz matrix. Doklady Mathematics, 2009, 80, 669-670.	0.6	3

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91	Fast orthogonalization to the kernel of the discrete gradient operator with application to Stokes problem. <i>Linear Algebra and Its Applications</i> , 2010, 432, 1492-1500.	0.9	3
92	Scalable topology optimization with the kernel-independent fast multipole method. <i>Engineering Analysis With Boundary Elements</i> , 2017, 83, 123-132.	3.7	3
93	Evolutionary Structural Optimization Algorithm Based on FFT-JVIE Solver for Inverse Design of Wave Devices. , 2018, , .		3
94	Dynamic Modeling of User Preferences for Stable Recommendations. , 2021, , .		3
95	Use of Divided Differences and B Splines for Constructing Fast Discrete Transforms of Wavelet Type on Nonuniform Grids. <i>Mathematical Notes</i> , 2005, 77, 686-694.	0.4	2
96	The integral operator with logarithmic kernel has only one positive eigenvalue. <i>Linear Algebra and Its Applications</i> , 2008, 428, 1560-1564.	0.9	2
97	Matrix inversion cases with size-independent tensor rank estimates. <i>Linear Algebra and Its Applications</i> , 2009, 431, 558-570.	0.9	2
98	Tensor train decomposition for low-parametric representation of high-dimensional arrays and functions: Review of recent results. , 2011, , .		2
99	Low-Rank Tensor Structure of Solutions to Elliptic Problems with Jumping Coefficients. <i>Journal of Computational Mathematics</i> , 2012, 30, 14-23.	0.4	2
100	Representation of quasiseparable matrices using excluded sums and equivalent charges. <i>Linear Algebra and Its Applications</i> , 2012, 436, 699-708.	0.9	2
101	From Low-Rank Approximation to a Rational Krylov Subspace Method for the Lyapunov Equation. <i>SIAM Journal on Matrix Analysis and Applications</i> , 2015, 36, 1622-1637.	1.4	2
102	Rectangular submatrices of maximum volume and their computation. <i>Doklady Mathematics</i> , 2015, 91, 267-268.	0.6	2
103	Tensor Train Spectral Method for Learning of Hidden Markov Models (HMM). <i>Computational Methods in Applied Mathematics</i> , 2019, 19, 93-99.	0.8	2
104	Approximate Solution of Linear Systems with Laplace-like Operators via Cross Approximation in the Frequency Domain. <i>Computational Methods in Applied Mathematics</i> , 2019, 19, 137-145.	0.8	2
105	A New Multi-objective Approach to Optimize Irrigation Using a Crop Simulation Model and Weather History. <i>Lecture Notes in Computer Science</i> , 2021, , 75-88.	1.3	2
106	Time- and memory-efficient representation of complex mesoscale potentials. <i>Journal of Computational Physics</i> , 2017, 343, 110-114.	3.8	2
107	Engineering optimization with the fast boundary element method. <i>WIT Transactions on Modelling and Simulation</i> , 2015, , .	0.0	2
108	BLACK-BOX SOLVER FOR ONE-DIMENSIONAL MULTISCALE MODELLING USING THE QTT FORMAT. , 2016, , .		2

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109	Tensor Completion via Gaussian Process–Based Initialization. SIAM Journal of Scientific Computing, 2020, 42, A3812-A3824.	2.8	2
110	Integration of oscillating functions in a quasi-three-dimensional electrodynamic problem. Computational Mathematics and Mathematical Physics, 2009, 49, 292-303.	0.8	1
111	Fast topological-shape optimization with boundary elements in two dimensions. Russian Journal of Numerical Analysis and Mathematical Modelling, 2017, 32, .	0.6	1
112	TT-TSDF: Memory-Efficient TSDF with Low-Rank Tensor Train Decomposition. , 2020, , .		1
113	Regulation-based probabilistic substance quality index and automated geo-spatial modeling for water quality assessment. Scientific Reports, 2021, 11, 23822.	3.3	1
114	Successes and problems of machine learning. , 2022, , .		1
115	Chapter 5: Model Reduction for High-Dimensional Parametric Problems by Tensor Techniques. , 2017, , 227-257.		0
116	Towards solving lippmann-schwinger integral equation in 2D with polylogarithmic complexity with quantized tensor train decomposition. , 2017, , .		0
117	Vico-Greengard-Ferrando quadratures in the tensor solver for integral equations. , 2017, , .		0
118	QTT-isogeometric solver in two dimensions. Journal of Computational Physics, 2021, 424, 109835.	3.8	0
119	How to optimize preconditioners for the conjugate gradient method: a stochastic approach. Keldysh Institute Preprints, 2018, , 1-26.	0.2	0
120	Matrix Factorization for Collaborative Recommendations. , 2018, , 35-78.		0
121	Predicting dynamical system evolution with residual neural networks. Keldysh Institute Preprints, 2019, , 1-26.	0.2	0