Christian Igel

List of Publications by Year
in descending order

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109	6,349	186209 28	98753 67
papers	citations	h-index	g-index

116	116	116	6565
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Covariance Matrix Adaptation for Multi-objective Optimization. Evolutionary Computation, 2007, 15, 1-28.	2.3	748
2	The German Traffic Sign Recognition Benchmark: A multi-class classification competition. , 2011, , .		587
3	Detection of traffic signs in real-world images: The German traffic sign detection benchmark. , 2013, , .		504
4	Empirical evaluation of the improved Rprop learning algorithms. Neurocomputing, 2003, 50, 105-123.	3.5	413
5	Evolutionary tuning of multiple SVM parameters. Neurocomputing, 2005, 64, 107-117.	3.5	395
6	Training restricted Boltzmann machines: An introduction. Pattern Recognition, 2014, 47, 25-39.	5.1	361
7	Deep Feature Learning for Knee Cartilage Segmentation Using a Triplanar Convolutional Neural Network. Lecture Notes in Computer Science, 2013, 16, 246-253.	1.0	332
8	An Introduction to Restricted Boltzmann Machines. Lecture Notes in Computer Science, 2012, , 14-36.	1.0	306
9	An unexpectedly large count of trees in the West African Sahara and Sahel. Nature, 2020, 587, 78-82.	13.7	212
10	Early detection of Alzheimer's disease using M<scp>RI</scp> hippocampal texture. Human Brain Mapping, 2016, 37, 1148-1161.	1.9	165
11	Differential diagnosis of mild cognitive impairment and Alzheimer's disease using structural MRI cortical thickness, hippocampal shape, hippocampal texture, and volumetry. NeuroImage: Clinical, 2017, 13, 470-482.	1.4	134
12	U-Sleep: resilient high-frequency sleep staging. Npj Digital Medicine, 2021, 4, 72.	5.7	117
13	A computational efficient covariance matrix update and a (1+1)-CMA for evolution strategies. , 2006, , .		111
14	Cross-Reactive Metal Ion Sensor Array in a Micro Titer Plate Format. Analytical Chemistry, 2003, 75, 4389-4396.	3.2	102
15	Efficient covariance matrix update for variable metric evolution strategies. Machine Learning, 2009, 75, 167-197.	3.4	96
16	Active learning with support vector machines. Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery, 2014, 4, 313-326.	4.6	83
17	A No-Free-Lunch Theorem for Non-Uniform Distributions of Target Functions. Mathematical Modelling and Algorithms, 2004, 3, 313-322.	0.5	80
18	On classes of functions for which No Free Lunch results hold. Information Processing Letters, 2003, 86, 317-321.	0.4	74

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19	Registration of CT and Intraoperative 3-D Ultrasound Images of the Spine Using Evolutionary and Gradient-Based Methods. IEEE Transactions on Evolutionary Computation, 2008, 12, 284-296.	7.5	65
20	Developing and validating COVID-19 adverse outcome risk prediction models from a bi-national European cohort of 5594 patients. Scientific Reports, 2021, 11, 3246.	1.6	62
21	Hoeffding and Bernstein races for selecting policies in evolutionary direct policy search. , 2009, , .		57
22	Neuroevolution strategies for episodic reinforcement learning. Journal of Algorithms, 2009, 64, 152-168.	0.9	57
23	A Dynamic Neural Field Model of Mesoscopic Cortical Activity Captured with Voltage-Sensitive Dye Imaging. PLoS Computational Biology, 2010, 6, e1000919.	1.5	53
24	Gradient-Based Adaptation of General Gaussian Kernels. Neural Computation, 2005, 17, 2099-2105.	1.3	52
25	Accurate Segmentation of Dental Panoramic Radiographs with U-NETS. , 2019, , .		51
26	One Network to Segment Them All: A General, Lightweight System for Accurate 3D Medical Image Segmentation. Lecture Notes in Computer Science, 2019, , 30-38.	1.0	49
27	Multi-Objective Optimization of Support Vector Machines. , 2006, , 199-220.		48
28	Multi-objective Model Selection for Support Vector Machines. Lecture Notes in Computer Science, 2005, , 534-546.	1.0	46
29	The International Workshop on Osteoarthritis Imaging Knee MRI Segmentation Challenge: A Multi-Institute Evaluation and Analysis Framework on a Standardized Dataset. Radiology: Artificial Intelligence, 2021, 3, e200078.	3.0	46
30	Improved step size adaptation for the MO-CMA-ES. , 2010, , .		40
31	Operator adaptation in evolutionary computation and its application to structure optimization of neural networks. Neurocomputing, 2003, 55, 347-361.	3.5	39
32	Gradient-Based Optimization of Kernel-Target Alignment for Sequence Kernels Applied to Bacterial Gene Start Detection. IEEE/ACM Transactions on Computational Biology and Bioinformatics, 2007, 4, 216-226.	1.9	39
33	Bounding the Bias of Contrastive Divergence Learning. Neural Computation, 2011, 23, 664-673.	1.3	38
34	EVOLUTIONARY MULTI-OBJECTIVE OPTIMISATION OF NEURAL NETWORKS FOR FACE DETECTION. International Journal of Computational Intelligence and Applications, 2004, 04, 237-253.	0.6	34
35	Speeding up many-objective optimization by Monte Carlo approximations. Artificial Intelligence, 2013, 204, 22-29.	3.9	30
36	Optimization of dynamic neural fields. Neurocomputing, 2001, 36, 225-233.	3.5	28

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37	Predicting electrical storms by remote monitoring of implantable cardioverter-defibrillator patients using machine learning. Europace, 2019, 21, 268-274.	0.7	28
38	Rprop Using the Natural Gradient. , 2005, , 259-272.		28
39	Empirical Analysis of the Divergence of Gibbs Sampling Based Learning Algorithms for Restricted Boltzmann Machines. Lecture Notes in Computer Science, 2010, , 208-217.	1.0	28
40	Evolution Strategies for Direct Policy Search. Lecture Notes in Computer Science, 2008, , 428-437.	1.0	27
41	Neutrality and self-adaptation. Natural Computing, 2003, 2, 117-132.	1.8	25
42	Steady-State Selection and Efficient Covariance Matrix Update in the Multi-objective CMA-ES. , 2007, , 171-185.		25
43	EVOLUTIONARY OPTIMIZATION OF SEQUENCE KERNELS FOR DETECTION OF BACTERIAL GENE STARTS. International Journal of Neural Systems, 2007, 17, 369-381.	3.2	23
44	Maximum Likelihood Model Selection for 1-Norm Soft Margin SVMs with Multiple Parameters. IEEE Transactions on Pattern Analysis and Machine Intelligence, 2010, 32, 1522-1528.	9.7	23
45	A No-Free-Lunch theorem for non-uniform distributions of target functions. Mathematical Modelling and Algorithms, 2005, 3, 313-322.	0.5	22
46	Second-Order SMO Improves SVM Online and Active Learning. Neural Computation, 2008, 20, 374-382.	1.3	21
47	Toward Registration of 3D Ultrasound and CT Images of the Spine in Clinical Praxis: Design and Evaluation of a Data Acquisition Protocol. Ultrasound in Medicine and Biology, 2009, 35, 1773-1782.	0.7	21
48	Task-dependent evolution of modularity in neural networks. Connection Science, 2002, 14, 219-229.	1.8	17
49	Scalarization versus indicator-based selection in multi-objective CMA evolution strategies. , 2008, , .		16
50	The flip-the-state transition operator for restricted Boltzmann machines. Machine Learning, 2013, 93, 53-69.	3.4	16
51	Reducing the Number of Fitness Evaluations in Graph Genetic Programming Using a Canonical Graph Indexed Database. Evolutionary Computation, 2007, 15, 199-221.	2.3	15
52	The logarithmic hypervolume indicator. , 2011, , .		15
53	Integrated Optimization of Long-Range Underwater Signal Detection, Feature Extraction, and Classification for Nuclear Treaty Monitoring. IEEE Transactions on Geoscience and Remote Sensing, 2016, 54, 3649-3659.	2.7	15
54	Unbounded Population MO-CMA-ES for the Bi-Objective BBOB Test Suite. , 2016, , .		15

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55	Adaptive pattern recognition in real-time video-based soccer analysis. Journal of Real-Time Image Processing, 2017, 13, 345-361.	2.2	15
56	Evolutionary Optimization of Neural Systems: The Use of Strategy Adaptation. , 2005, , 103-123.		15
57	A More Efficient Rank-one Covariance Matrix Update for Evolution Strategies. , 2015, , .		14
58	Separating Timing, Movement Conditions and Individual Differences in the Analysis of Human Movement. PLoS Computational Biology, 2016, 12, e1005092.	1.5	13
59	Sacrificing information for the greater good: how to select photometric bands for optimal accuracy. Monthly Notices of the Royal Astronomical Society, 2017, 464, 2577-2596.	1.6	13
60	Using machine learning for predicting intensive care unit resource use during the COVID-19 pandemic in Denmark. Scientific Reports, 2021, 11, 18959.	1.6	13
61	Multi-Objective Neural Network Optimization for Visual Object Detection. , 2006, , 629-655.		12
62	Recombination for Learning Strategy Parameters in the MO-CMA-ES. Lecture Notes in Computer Science, 2009, , 155-168.	1.0	11
63	A bound for the convergence rate of parallel tempering for sampling restricted Boltzmann machines. Theoretical Computer Science, 2015, 598, 102-117.	0.5	10
64	Variable Metric Reinforcement Learning Methods Applied to the Noisy Mountain Car Problem. Lecture Notes in Computer Science, 2008, , 136-150.	1.0	10
65	No Free Lunch Theorems: Limitations and Perspectives of Metaheuristics. Natural Computing Series, 2014, , 1-23.	2.2	10
66	Registration of bone structures in 3D ultrasound and CT data: Comparison of different optimization strategies. International Congress Series, 2005, 1281, 242-247.	0.2	9
67	Shape Index Descriptors Applied to Texture-Based Galaxy Analysis. , 2013, , .		9
68	Algorithms for estimating the partition function of restricted Boltzmann machines. Artificial Intelligence, 2020, 278, 103195.	3.9	9
69	<scp>Crossâ€Cohort</scp> Automatic Knee <scp>MRI</scp> Segmentation With <scp>Multiâ€Planar Uâ€Nets</scp>. Journal of Magnetic Resonance Imaging, 2022, 55, 1650-1663.	1.9	9
70	New Uncertainty Handling Strategies in Multi-objective Evolutionary Optimization. , 2010, , 260-269.		8
71	Training Big Random Forests with Little Resources. , 2018, , .		8
72	Real-Time Estimation of Optical Flow Based on Optimized Haar Wavelet Features. Lecture Notes in Computer Science, 2011, , 448-461.	1.0	8

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73	Uncertainty handling CMA-ES for reinforcement learning. , 2009, , .		7
74	Huge Music Archives on Mobile Devices. IEEE Signal Processing Magazine, 2011, 28, 24-39.	4.6	7
75	A Note on Generalization Loss When Evolving Adaptive Pattern Recognition Systems. IEEE Transactions on Evolutionary Computation, 2013, 17, 345-352.	7.5	7
76	Femoral cartilage segmentation in Knee MRI scans using two stage voxel classification. , 2013, 2013, 5469-72.		7
77	Evolutionary Adaptation of Nonlinear Dynamical Systems in Computational Neuroscience. Genetic Programming and Evolvable Machines, 2004, 5, 215-227.	1.5	6
78	Nearest neighbour regression outperforms model-based prediction of specific star formation rate. , 2013, , .		6
79	Machine learning for financial transaction classification across companies using characterâ€level word embeddings of text fields. Intelligent Systems in Accounting, Finance and Management, 2021, 28, 159-172.	2.8	6
80	Efficient update of the covariance matrix inverse in iterated linear discriminant analysis. Pattern Recognition Letters, 2010, 31, 1903-1907.	2.6	5
81	Introduction to the Special Issue on Machine Learning for Traffic Sign Recognition. IEEE Transactions on Intelligent Transportation Systems, 2012, 13, 1481-1483.	4.7	5
82	Qualitative and Quantitative Assessment of Step Size Adaptation Rules. , 2017, , .		5
83	Population-Contrastive-Divergence: Does consistency help with RBM training?. Pattern Recognition Letters, 2018, 102, 1-7.	2.6	5
84	Uncertainty Handling in Model Selection for Support Vector Machines. Lecture Notes in Computer Science, 2008, , 185-194.	1.0	5
85	Scaling up indicator-based MOEAs by approximating the least hypervolume contributor. , 2010, , .		4
86	Evolutionary Optimization of Sequence Kernels for Detection of Bacterial Gene Starts. Lecture Notes in Computer Science, 2006, , 827-836.	1.0	4
87	Evolving field models for inhibition effects in early vision. Neurocomputing, 2002, 44-46, 467-472.	3.5	3
88	Registrierung von Knochen in 3D-Ultraschall- und CT-Daten: Vergleich verschiedener Optimierungsverfahren. , 2005, , 345-349.		3
89	Cascaded classifier for large-scale data applied to automatic segmentation of articular cartilage. Proceedings of SPIE, 2012, , .	0.8	3
90	Linear feature selection in texture analysis - A PLS based method. Machine Vision and Applications, 2013, 24, 1435-1444.	1.7	3

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91	Impact of device programming on the success of the first anti-tachycardia pacing therapy: An anonymized large-scale study. PLoS ONE, 2019, 14, e0219533.	1.1	3
92	Genesis of Organic Computing Systems: Coupling Evolution and Learning. Understanding Complex Systems, 2009, , 141-166.	0.3	2
93	Resilient Approximation of Kernel Classifiers. Lecture Notes in Computer Science, 2007, , 139-148.	1.0	2
94	Chaining syllogism applied to fuzzy IF-THEN rules and rule bases. Lecture Notes in Computer Science, 1997, , 179-188.	1.0	2
95	Evolutionary Optimization ofWavelet Feature Sets for Real-Time Pedestrian Classification. , 2007, , .		1
96	Hydroacoustic Signal Classification Using Kernel Functions for Variable Feature Sets. , 2010, , .		1
97	Towards exaggerated image stereotypes. , 2011, , .		1
98	Evolutionary kernel machines. Evolutionary Intelligence, 2012, 5, 151-152.	2.3	1
99	Nearest neighbor classification using bottom-k sketches. , 2013, , .		1
100	Massively-parallel best subset selection for ordinary least-squares regression. , 2017, , .		1
101	On PAC-Bayesian bounds for random forests. Machine Learning, 2019, 108, 1503-1522.	3.4	1
102	Evolutionary Kernel Learning. , 2016, , 1-5.		1
103	Evolutionary Kernel Learning. , 2017, , 465-469.		1
104	Multi-Objective Optimization of Support Vector Machines. , 2006, , 199-220.		1
105	Evolutionary Optimization ofWavelet Feature Sets for Real-Time Pedestrian Classification. , 2007, , .		0
106	Learning â˜ Artificial Intelligence â˚© Cognitive Technologies â˚© Neural Computation â˚© â€¦. KI - Kunstliche Intelligenz, 2012, 26, 209-212.	2.2	0
107	Data, Knowledge, and Computation. KI - Kunstliche Intelligenz, 0, , 1.	2.2	0
108	Improved Working Set Selection for LaRank. Lecture Notes in Computer Science, 2011, , 327-334.	1.0	0

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109	Multi-Objective Neural Network Optimization for Visual Object Detection. , 2006, , 629-655.		0