Ivan Tyukin

List of Publications by Year in descending order

91 papers	1,445 citations	394421 19 h-index	377865 34 g-index
94 all docs	94 docs citations	94 times ranked	873 citing authors

#	Article	IF	Citations
1	Semi-passivity and synchronization of diffusively coupled neuronal oscillators. Physica D: Nonlinear Phenomena, 2009, 238, 2119-2128.	2.8	116
2	Advances in Data Preprocessing for Biomedical Data Fusion: An Overview of the Methods, Challenges, and Prospects. Information Fusion, 2021, 76, 376-421.	19.1	106
3	Approximation with random bases: Pro et Contra. Information Sciences, 2016, 364-365, 129-145.	6.9	93
4	Blessing of dimensionality: mathematical foundations of the statistical physics of data. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2018, 376, 20170237.	3.4	89
5	Adaptation and Parameter Estimation in Systems With Unstable Target Dynamics and Nonlinear Parametrization. IEEE Transactions on Automatic Control, 2007, 52, 1543-1559.	5.7	85
6	Adaptive observers and parameter estimation for a class of systems nonlinear in the parameters. Automatica, 2013, 49, 2409-2423.	5.0	79
7	Correction of AI systems by linear discriminants: Probabilistic foundations. Information Sciences, 2018, 466, 303-322.	6.9	51
8	How Deep Should be the Depth of Convolutional Neural Networks: a Backyard Dog Case Study. Cognitive Computation, 2020, 12, 388-397.	5.2	48
9	The unreasonable effectiveness of small neural ensembles in high-dimensional brain. Physics of Life Reviews, 2019, 29, 55-88.	2.8	46
10	Adaptive control with nonconvex parameterization. IEEE Transactions on Automatic Control, 2003, 48, 554-567.	5.7	41
11	Feasibility of random basis function approximators for modeling and control. , 2009, , .		41
12	Stochastic separation theorems. Neural Networks, 2017, 94, 255-259.	5.9	41
13	Scikit-Dimension: A Python Package for Intrinsic Dimension Estimation. Entropy, 2021, 23, 1368.	2.2	40
14	High-Dimensional Brain in a High-Dimensional World: Blessing of Dimensionality. Entropy, 2020, 22, 82.	2.2	35
15	High-Dimensional Brain: A Tool for Encoding and Rapid Learning of Memories by Single Neurons. Bulletin of Mathematical Biology, 2019, 81, 4856-4888.	1.9	32
16	Invariant template matching in systems with spatiotemporal coding: A matter of instability. Neural Networks, 2009, 22, 425-449.	5.9	25
17	The economics of motion perception and invariants of visual sensitivity. Journal of Vision, 2007, 7, 8.	0.3	24
18	Self-organisation of small-world networks by adaptive rewiring in response to graph diffusion. Scientific Reports, 2017, 7, 13158.	3.3	22

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19	The Blessing of Dimensionality: Separation Theorems in the Thermodynamic Limit**The work is partially supported by Innovate UK, Technology Strategy Board, Knowledge Transfer Partnership grant KTP009890. IFAC-PapersOnLine, 2016, 49, 64-69.	0.9	21
20	Sufficient conditions for synchronization in an ensemble of hindmarsh and rose neurons: passivity-based approach. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2004, 37, 441-446.	0.4	20
21	Knowledge Transfer Between Artificial Intelligence Systems. Frontiers in Neurorobotics, 2018, 12, 49.	2.8	20
22	Spatially constrained adaptive rewiring in cortical networks creates spatially modular small world architectures. Cognitive Neurodynamics, 2014, 8, 479-497.	4.0	19
23	One-trial correction of legacy AI systems and stochastic separation theorems. Information Sciences, 2019, 484, 237-254.	6.9	19
24	Nonuniform Small-Gain Theorems for Systems with Unstable Invariant Sets. SIAM Journal on Control and Optimization, 2008, 47, 849-882.	2.1	18
25	Observers for Canonic Models of Neural Oscillators. Mathematical Modelling of Natural Phenomena, 2010, 5, 146-184.	2.4	18
26	On Adversarial Examples and Stealth Attacks in Artificial Intelligence Systems. , 2020, , .		18
27	Adaptation Algorithms in Finite form for Nonlinear Dynamic Objects. Automation and Remote Control, 2003, 64, 951-974.	0.8	16
28	STATE AND PARAMETER ESTIMATION FOR CANONIC MODELS OF NEURAL OSCILLATORS. International Journal of Neural Systems, 2010, 20, 193-207.	5.2	16
29	Fast social-like learning of complex behaviors based on motor motifs. Physical Review E, 2018, 97, 052308.	2.1	13
30	Fast construction of correcting ensembles for legacy Artificial Intelligence systems: Algorithms and a case study. Information Sciences, 2019, 485, 230-247.	6.9	12
31	Parameter Estimation of Sigmoid Superpositions: Dynamical System Approach. Neural Computation, 2003, 15, 2419-2455.	2.2	11
32	Leaders Do Not Look Back, or Do They?. Mathematical Modelling of Natural Phenomena, 2015, 10, 212-231.	2.4	10
33	Sensory optimization by stochastic tuning.. Psychological Review, 2013, 120, 798-816.	3.8	9
34	Learning optimization for decision tree classification of non-categorical data with information gain impurity criterion. , 2014, , .		9
35	General stochastic separation theorems with optimal bounds. Neural Networks, 2021, 138, 33-56.	5.9	9
36	Demystification of Few-shot and One-shot Learning. , 2021, , .		9

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37	Blessing of dimensionality at the edge and geometry of few-shot learning. Information Sciences, 2021, 564, 124-143.	6.9	9
38	High-Dimensional Separability for One- and Few-Shot Learning. Entropy, 2021, 23, 1090.	2.2	9
39	Exploring Automated Pottery Identification [Arch-I-Scan]. Internet Archaeology, 2018, , .	0.4	9
40	Adaptive and Phase Selective Spike Timing Dependent Plasticity in Synaptically Coupled Neuronal Oscillators. PLoS ONE, 2012, 7, e30411.	2.5	7
41	Coupling-modulated multi-stability and coherent dynamics in directed networks of heterogeneous nonlinear oscillators with modular topology. IFAC-PapersOnLine, 2016, 49, 62-67.	0.9	7
42	Universal principles justify the existence of concept cells. Scientific Reports, 2020, 10, 7889.	3.3	7
43	Finite form realizations of adaptive control algorithms. , 2003, , .		7
44	Adaptive algorithms in finite form for nonconvex parameterized systems with low-triangular structure. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2004, 37, 261-266.	0.4	6
45	Lyapunov-like Conditions of Forward Invariance and Boundedness for a Class of Unstable Systems. SIAM Journal on Control and Optimization, 2013, 51, 2306-2334.	2.1	6
46	On the Applicability Conditions for the Algorithms of Adaptive Control in Nonconvex Problems. Automation and Remote Control, 2002, 63, 262-279.	0.8	5
47	Adaptive Classification of Temporal Signals in Fixed-Weight Recurrent Neural Networks: An Existence Proof. Neural Computation, 2008, 20, 2564-2596.	2.2	5
48	Kernel Stochastic Separation Theorems and Separability Characterizations of Kernel Classifiers. , 2019, , .		5
49	Swirlonic state of active matter. Scientific Reports, 2020, 10, 16783.	3.3	5
50	State and Parameter Estimation for Systems in Non-canonical Adaptive Observer Form. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2008, 41, 14372-14378.	0.4	4
51	Simple model of complex dynamics of activity patterns in developing networks of neuronal cultures. PLoS ONE, 2019, 14, e0218304.	2.5	4
52	Symphony of high-dimensional brain. Physics of Life Reviews, 2019, 29, 115-119.	2.8	4
53	Myocardial Infarction Detection and Quantification Based on a Convolution Neural Network with Online Error Correction Capabilities. , 2020, , .		4
54	Fast Sampling of Evolving Systems with Periodic Trajectories. Mathematical Modelling of Natural Phenomena, 2016, 11, 73-88.	2.4	3

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55	Tackling Rare False-Positives in Face Recognition: A Case Study. , 2018, , .		3
56	Linear stability analysis of the flow between rotating cylinders of wide gap. European Journal of Mechanics, B/Fluids, 2018, 72, 567-575.	2.5	3
57	Implementation of the Prony Method for Signal Deconvolution. IFAC-PapersOnLine, 2019, 52, 269-273.	0.9	3
58	A new method for adaptive brake control. , 0, , .		2
59	Scene analysis assisting for AWB using binary decision trees and average image metrics. , 2014, , .		2
60	Adaptive Observers for Nonlinearly Parameterized Systems Subjected to Parametric Constraints. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 10869-10874.	0.4	2
61	Directed cycles and multi-stability of coherent dynamics in systems of coupled nonlinear oscillators. IFAC-PapersOnLine, 2015, 48, 19-24.	0.9	2
62	Decentralized Adaptation in Interconnected Uncertain Systems with Nonlinear Parametrization. , 2006, , 251-270.		2
63	Adaptive control on manifolds with RBF neural networks. , 0, , .		1
64	ADAPTATION AND NONLINEAR PARAMETRIZATION: NONLINEAR DYNAMICS PROSPECTIVE. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2005, 38, 223-228.	0.4	1
65	Unsupervised adaptive optimization of motion-sensitive systems guided by measurement uncertainty. , 2007, , .		1
66	Natural Frequency Adaptation as a Mechanism for Phase Synchronization in Neural Systems. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2011, 44, 11755-11760.	0.4	1
67	Precise Self-tuning of Spiking Patterns in Coupled Neuronal Oscillators. Mathematical Modelling of Natural Phenomena, 2012, 7, 67-94.	2.4	1
68	Further results on Lyapunov-like conditions of forward invariance and boundedness for a class of unstable systems. , 2014, , .		1
69	Simple model of complex bursting dynamics in developing networks of neuronal cultures. IFAC-PapersOnLine, 2016, 49, 68-73.	0.9	1
70	Explicit Parameter-dependent Representations of Periodic Solutions for a Class of Nonlinear Systems. IFAC-PapersOnLine, 2017, 50, 4001-4007.	0.9	1
71	Efficiency of Shallow Cascades for Improving Deep Learning AI Systems. , 2018, , .		1
72	Bringing the Blessing of Dimensionality to the Edge. , 2019, , .		1

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73	Learning from Scarce Information: Using Synthetic Data to Classify Roman Fine Ware Pottery. Entropy, 2021, 23, 1140.	2.2	1
74	The problem of adaptation in dynamical systems. , 0, , 44-80.		0
75	Algorithms of adaptive regulation and adaptation in dynamical systems in the presence of nonlinear parametrization and/or possibly unstable target dynamics. , 0, , 151-262.		0
76	State and parameter estimation of neural oscillators. , 0, , 350-386.		0
77	On a problem of time-varying learning rate influence on the adaptive system dynamics. , 0, , .		0
78	On the choice of coupling in a system of coupled maps: structure implies features. , 0, , .		0
79	ADAPTIVE REGULATION TO INVARIANT SETS. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2005, 38, 19-24.	0.4	0
80	Non-uniform small-gain theorems for systems with unstable invariant sets. , 2008, , .		0
81	Non-uniform Small-gain Theorems for Systems with Critical and Slow Relaxations. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2008, 41, 6269-6276.	0.4	0
82	Adaptive template matching in systems for processing of visual information. , 0, , 294-349.		0
83	Making Sense of Unstable Convergence in the Problem of Adaptive Observer Design: Case Study. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2011, 44, 14324-14329.	0.4	0
84	Explicit reduced-order integral formulations of state and parameter estimation problems for a class of nonlinear systems. , 2013, , .		0
85	Proof of concept: a spatial modular small-world self-organises by adaptive rewiring. BMC Neuroscience, 2015, 16, .	1.9	0
86	Phase Selective Oscillations in Two Noise Driven Synaptically Coupled Spiking Neurons. International Journal of Bifurcation and Chaos in Applied Sciences and Engineering, 2015, 25, 1540005.	1.7	0
87	Complex Dynamics, Synchronization, and Emergent Behaviour in Neural Systems and Networks. Mathematical Modelling of Natural Phenomena, 2017, 12, 1-3.	2.4	0
88	Fast Numerical Evaluation of Periodic Solutions for a Class of Nonlinear Systems and Its Applications for Parameter Estimation Problems. Communications in Computer and Information Science, 2018, , 137-151.	0.5	0
89	Using Convolutional Neural Networks to Distinguish Different Sign Language Alphanumerics. Proceedings of the International Neural Networks Society, 2020, , 276-285.	0.6	0
90	Neural Networks for the Retrieval of Methane from the Sentinel-5 Precursor Satellite. , 2020, , .		0

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91	Optimal Measurement of Visual Motion Across Spatial and Temporal Scales. Intelligent Systems Reference Library, 2015, , 211-238.	1.2	0