Nihat Ay

List of Publications by Year
in descending order

73 papers	1,866 citations	279487 23 h-index	276539 41 g-index
76 all docs	76 docs citations	76 times ranked	1266 citing authors

#	Article	IF	Citations
1	INFORMATION FLOWS IN CAUSAL NETWORKS. International Journal of Modeling, Simulation, and Scientific Computing, 2008, 11, 17-41.	0.9	197
2	Quantifying Unique Information. Entropy, 2014, 16, 2161-2183.	1.1	174
3	Information Geometry. Ergebnisse Der Mathematik Und Ihrer Grenzgebiete, 2017, , .	0.3	152
4	Higher Coordination With Less Controlâ€"A Result of Information Maximization in the Sensorimotor Loop. Adaptive Behavior, 2010, 18, 338-355.	1.1	81
5	Robustness and complexity co-constructed in multimodal signalling networks. Philosophical Transactions of the Royal Society B: Biological Sciences, 2007, 362, 441-447.	1.8	68
6	Autonomy: An information theoretic perspective. BioSystems, 2008, 91, 331-345.	0.9	68
7	Information Driven Self-Organization of Complex Robotic Behaviors. PLoS ONE, 2013, 8, e63400.	1.1	66
8	The information theory of individuality. Theory in Biosciences, 2020, 139, 209-223.	0.6	65
9	Information geometry and sufficient statistics. Probability Theory and Related Fields, 2015, 162, 327-364.	0.9	62
10	Refinements of Universal Approximation Results for Deep Belief Networks and Restricted Boltzmann Machines. Neural Computation, 2011, 23, 1306-1319.	1.3	58
11	Information Geometry on Complexity and Stochastic Interaction. Entropy, 2015, 17, 2432-2458.	1.1	58
12	Quantifying Morphological Computation. Entropy, 2013, 15, 1887-1915.	1.1	56
13	A geometric approach to complexity. Chaos, 2011, 21, 037103.	1.0	45
14	A Novel Approach to Canonical Divergences within Information Geometry. Entropy, 2015, 17, 8111-8129.	1.1	43
15	Information-driven self-organization: the dynamical system approach to autonomous robot behavior. Theory in Biosciences, 2012, 131, 161-179.	0.6	36
16	Dynamical properties of strongly interacting Markov chains. Neural Networks, 2003, 16, 1483-1497.	3.3	32
17	Information-Theoretic Inference of Common Ancestors. Entropy, 2015, 17, 2304-2327.	1.1	30
18	Evaluating Morphological Computation in Muscle and DC-Motor Driven Models of Hopping Movements. Frontiers in Robotics and AI, 2016, 3, .	2.0	30

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19	An Information-Geometric Approach to a Theory of Pragmatic Structuring. Annals of Probability, 2002, 30, 416.	0.8	28
20	Guided self-organization: perceptionâ€“action loops of embodied systems. Theory in Biosciences, 2012, 131, 125-127.	0.6	26
21	Finite State Automata Resulting from Temporal Information Maximization and a Temporal Learning Rule. Neural Computation, 2005, 17, 2258-2290.	1.3	25
22	Effective Complexity and Its Relation to Logical Depth. IEEE Transactions on Information Theory, 2010, 56, 4593-4607.	1.5	25
23	COMPARISON BETWEEN DIFFERENT METHODS OF LEVEL IDENTIFICATION. International Journal of Modeling, Simulation, and Scientific Computing, 2014, 17, 1450007.	0.9	25
24	Locality of Global Stochastic Interaction in Directed Acyclic Networks. Neural Computation, 2002, 14, 2959-2980.	1.3	23
25	Morphological Computation: Synergy of Body and Brain. Entropy, 2017, 19, 456.	1.1	23
26	Geometric robustness theory and biological networks. Theory in Biosciences, 2006, 125, 93-121.	0.6	22
27	Phase transitions in least-effort communications. Journal of Statistical Mechanics: Theory and Experiment, 2010, 2010, P11025.	0.9	22
28	â€œMore Is Differentâ€•in Functional Magnetic Resonance Imaging: A Review of Recent Data Analysis Techniques. Brain Connectivity, 2013, 3, 223-239.	0.8	20
29	A Theory of Cheap Control in Embodied Systems. PLoS Computational Biology, 2015, 11, e1004427.	1.5	20
30	Comparing Information-Theoretic Measures of Complexity in Boltzmann Machines. Entropy, 2017, 19, 310.	1.1	18
31	The Umwelt of an embodied agentâ€”a measure-theoretic definition. Theory in Biosciences, 2015, 134, 105-116.	0.6	16
32	Support sets in exponential families and oriented matroid theory. International Journal of Approximate Reasoning, 2011, 52, 613-626.	1.9	15
33	Dually Flat Manifolds and Global Information Geometry. Open Systems and Information Dynamics, 2002, 09, 195-200.	0.5	14
34	Maximizing the Divergence from a Hierarchical Model of Quantum States. Open Systems and Information Dynamics, 2015, 22, 1550006.	0.5	14
35	Multi-Information in the Thermodynamic Limit. Journal of Statistical Physics, 2004, 115, 949-976.	0.5	13
36	Zipfâ€™s Law: Balancing Signal Usage Cost and Communication Efficiency. PLoS ONE, 2015, 10, e0139475.	1.1	13

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37	On a Notion of Linear Replicator Equations. Journal of Dynamics and Differential Equations, 2005, 17, 427-451.	1.0	12
38	ON THE GENERATIVE NATURE OF PREDICTION. International Journal of Modeling, Simulation, and Scientific Computing, 2009, 12, 169-194.	0.9	12
39	On the Fisher Metric of Conditional Probability Polytopes. Entropy, 2014, 16, 3207-3233.	1.1	11
40	Closure measures for coarse-graining of the tent map. Chaos, 2014, 24, 013136.	1.0	11
41	Spatial and temporal stochastic interaction in neuronal assemblies. Theory in Biosciences, 2003, 122, 5-18.	0.6	10
42	Duality versus dual flatness in quantum information geometry. Journal of Mathematical Physics, 2003, 44, 1512-1518.	0.5	10
43	A refinement of the common cause principle. Discrete Applied Mathematics, 2009, 157, 2439-2457.	0.5	10
44	Reductions of Hidden Information Sources. Journal of Statistical Physics, 2005, 120, 659-684.	0.5	9
45	On the Cross-Disciplinary Nature of Guided Self-Organisation. Emergence, Complexity and Computation, 2014, , 3-15.	0.2	9
46	On the Causal Structure of the Sensorimotor Loop. Emergence, Complexity and Computation, 2014, , 261-294.	0.2	9
47	Stochastic interaction in associative nets. Neurocomputing, 2005, 65-66, 387-392.	3.5	8
48	An information theoretic approach to system differentiation on the basis of statistical dependencies between subsystems. Physica A: Statistical Mechanics and Its Applications, 2007, 378, 1-10.	1.2	8
49	Robustness, canalyzing functions and systems design. Theory in Biosciences, 2014, 133, 63-78.	0.6	8
50	Canonical Divergence for Measuring Classical and Quantum Complexity. Entropy, 2019, 21, 435.	1.1	7
51	Selection Criteria for Neuromanifolds of Stochastic Dynamics. , 2013, , 147-154.		7
52	Effective Complexity of Stationary Process Realizations. Entropy, 2011, 13, 1200-1211.	1.1	5
53	Temporal infomax leads to almost deterministic dynamical systems. Neurocomputing, 2003, 52-54, 461-466.	3.5	4
54	Temporal Infomax on Markov chains with input leads to finite state automata. Neurocomputing, 2003, 52-54, 431-436.	3.5	4

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55	On the locality of the natural gradient for learning in deep Bayesian networks. Information Geometry, 2023, 6, 1-49.	0.8	4
56	High-resolution multiple-unit EEG in cat auditory cortex reveals large spatio-temporal stochastic interactions. BioSystems, 2007, 89, 190-197.	0.9	3
57	Towards a canonical divergence within information geometry. Information Geometry, 2021, 4, 65-130.	0.8	3
58	Approaching a large deviation theory for complex systems. Nonlinear Dynamics, 2021, 106, 2537.	2.7	3
59	Complexity as Causal Information Integration. Entropy, 2020, 22, 1107.	1.1	3
60	A temporal learning rule in recurrent systems supports high spatio-temporal stochastic interactions. Neurocomputing, 2006, 69, 1199-1202.	3.5	2
61	Ingredients for robustness. Theory in Biosciences, 2020, 139, 309-318.	0.6	2
62	Operator-theoretic Identification of Closed Sub-systems of Dynamical Systems. Discontinuity, Nonlinearity, and Complexity, 2015, 4, 91-109.	0.1	2
63	Geometric Design Principles for Brains of Embodied Agents. KI - Kunstliche Intelligenz, 2015, 29, 389-399.	2.2	1
64	Information flow in learning a coin-tossing game. Nonlinear Theory and Its Applications IEICE, 2016, 7, 118-125.	0.4	1
65	Parametrisation Independence of the Natural Gradient in Overparametrised Systems. Lecture Notes in Computer Science, 2021, , 726-735.	1.0	1
66	Standard Divergence in Manifold of Dual Affine Connections. Lecture Notes in Computer Science, 2015, , 320-325.	1.0	1
67	How Morphological Computation Shapes Integrated Information in Embodied Agents. Frontiers in Psychology, 2021, 12, 716433.	1.1	1
68	Invariance properties of the natural gradient in overparametrised systems. Information Geometry, 2023, 6, 51-67.	0.8	1
69	Probabilistic design principles for robust multi-modal communication networks. , 2010, , 255-268.		0
70	Process Dimension of Classical and Non-Commutative Processes. Open Systems and Information Dynamics, 2012, 19, 1250007.	0.5	0
71	Fields of Application of Information Geometry. Ergebnisse Der Mathematik Und Ihrer Grenzgebiete, 2017, , 295-360.	0.3	0
72	Canonical Divergence for Flat Î±-Connections: Classical and Quantum. Entropy, 2019, 21, 831.	1.1	0

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73	Confounding Ghost Channels and Causality: A New Approach to Causal Information Flows. Vietnam Journal of Mathematics, 2021, 49, 547.	0.4	0