Christoph Adami

List of Publications by Year
in descending order

149 papers	9,120 citations	57758 44 h-index	46799 89 g-index
160 all docs	160 docs citations	160 times ranked	6707 citing authors

#	Article	IF	Citations
1	Making Artificial Brains: Components, Topology, and Optimization. Artificial Life, 2022, , 1-10.	1.3	1
2	Emergence of functional information from multivariate correlations. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2022, 380, .	3.4	1
3	Information Fragmentation, Encryption and Information Flow in Complex Biological Networks. Entropy, 2022, 24, 735.	2.2	3
4	Information-theoretic characterization of the complete genotype-phenotype map of a complex pre-biotic world. Physics of Life Reviews, 2021, 38, 111-114.	2.8	2
5	Escape from the Prisonerâ€™s Dilemma. Inference, 2021, 6, .	0.0	0
6	A Brief History of Artificial Intelligence Research. Artificial Life, 2021, 27, 131-137.	1.3	5
7	The Evolutionary Origin of Associative Learning. American Naturalist, 2020, 195, E1-E19.	2.1	14
8	Markovian and Non-Markovian Quantum Measurements. Foundations of Physics, 2020, 50, 1008-1055.	1.3	3
9	The Surprising Creativity of Digital Evolution: A Collection of Anecdotes from the Evolutionary Computation and Artificial Life Research Communities. Artificial Life, 2020, 26, 274-306.	1.3	88
10	Moderate Amounts of Epistasis are Not Evolutionarily Stable in Small Populations. Journal of Molecular Evolution, 2020, 88, 435-444.	1.8	6
11	Can Transfer Entropy Infer Information Flow in Neuronal Circuits for Cognitive Processing?. Entropy, 2020, 22, 385.	2.2	8
12	Cryptic Information Transfer in Differently-Trained Recurrent Neural Networks. , 2020, , .		5
13	Mapping the Peaks: Fitness Landscapes of the Fittest and the Flattest. Artificial Life, 2019, 25, 250-262.	1.3	4
14	The structure of evolved representations across different substrates for artificial intelligence. , 2018, , .		8
15	Evolution leads to a diversity of motion-detection neuronal circuits. , 2018, , .		1
16	Thermodynamics of evolutionary games. Physical Review E, 2018, 97, 062136.	2.1	16
17	Quantum information theory of the Bell-state quantum eraser. Physical Review A, 2017, 95, .	2.5	6
18	Origin of life in a digital microcosm. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2017, 375, 20160350.	3.4	3

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19	Evolution of drift robustness in small populations. Nature Communications, 2017, 8, 1012.	12.8	33
20	A genome wide dosage suppressor network reveals genomic robustness. Nucleic Acids Research, 2017, 45, 255-270.	14.5	13
21	The evolution of logic circuits for the purpose of protein contact map prediction. PeerJ, 2017, 5, e3139.	2.0	5
22	Information-Theoretic Neuro-Correlates Boost Evolution of Cognitive Systems. Entropy, 2016, 18, 6.	2.2	15
23	Different Evolutionary Paths to Complexity for Small and Large Populations of Digital Organisms. PLoS Computational Biology, 2016, 12, e1005066.	3.2	21
24	Evolution of Genome Size in Asexual Digital Organisms. Scientific Reports, 2016, 6, 25786.	3.3	17
25	Evolutionary game theory using agent-based methods. Physics of Life Reviews, 2016, 19, 1-26.	2.8	143
26	Evolution of sustained foraging in three-dimensional environments with physics. Genetic Programming and Evolvable Machines, 2016, 17, 359-390.	2.2	3
27	One-Shot Decoupling and Page Curves from a Dynamical Model for Black Hole Evaporation. Physical Review Letters, 2016, 116, 101301.	7.8	8
28	The reasonable effectiveness of agent-based simulations in evolutionary game theory. Physics of Life Reviews, 2016, 19, 38-42.	2.8	7
29	Evolvability Tradeoffs in Emergent Digital Replicators. Artificial Life, 2016, 22, 483-498.	1.3	5
30	Evolution of Swarming Behavior Is Shaped by How Predators Attack. Artificial Life, 2016, 22, 299-318.	1.3	29
31	What is information? <sup />. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2016, 374, 20150230.	3.4	41
32	Strong Selection Significantly Increases Epistatic Interactions in the Long-Term Evolution of a Protein. PLoS Genetics, 2016, 12, e1005960.	3.5	29
33	Flies as Ship Captains? Digital Evolution Unravels Selective Pressures to Avoid Collision in Drosophila. , 2016, , .		3
34	Evolution of Active Categorical Image Classification via Saccadic Eye Movement. Lecture Notes in Computer Science, 2016, , 581-590.	1.3	3
35	Exploring the coevolution of predator and prey morphology and behavior. , 2016, , .		2
36	Shared Information between Residues Is Sufficient to Detect Pairwise Epistasis in a Protein. PLoS Genetics, 2016, 12, e1006471.	3.5	0

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37	Exploring the evolution of a trade-off between vigilance and foraging in group-living organisms. Royal Society Open Science, 2015, 2, 150135.	2.4	40
38	The Engine of Complexity: Evolution as Computation. By John E. Mayfield. New York: Columbia University Press. $34.50. xv + 398 p.; ill.; index. ISBN: 978-0-231-16304-0. 2013.. Quarterly Review of Biology, 2015, 90, 90-91.	0.1	0
39	Black holes as bosonic Gaussian channels. Physical Review D, 2015, 92, .	4.7	12
40	Discovery and information-theoretic characterization of transcription factor binding sites that act cooperatively. Physical Biology, 2015, 12, 056004.	1.8	3
41	Punishment in public goods games leads to meta-stable phase transitions and hysteresis. Physical Biology, 2015, 12, 046005.	1.8	21
42	Differentially-Expressed Pseudogenes in HIV-1 Infection. Viruses, 2015, 7, 5191-5205.	3.3	12
43	Robots with instincts. Nature, 2015, 521, 426-427.	27.8	35
44	Black holes are almost optimal quantum cloners. Journal of Physics A: Mathematical and Theoretical, 2015, 48, 23FT01.	2.1	5
45	Information-Theoretic Considerations Concerning the Origin of Life. Origins of Life and Evolution of Biospheres, 2015, 45, 309-317.	1.9	20
46	Risk sensitivity as an evolutionary adaptation. Scientific Reports, 2015, 5, 8242.	3.3	43
47	Evolution of Integrated Causal Structures in Animats Exposed to Environments of Increasing Complexity. PLoS Computational Biology, 2014, 10, e1003966.	3.2	71
48	Classical information transmission capacity of quantum black holes. Classical and Quantum Gravity, 2014, 31, 075015.	4.0	15
49	Trade-offs drive resource specialization and the gradual establishment of ecotypes. BMC Evolutionary Biology, 2014, 14, 113.	3.2	9
50	The capacity of black holes to transmit quantum information. Journal of High Energy Physics, 2014, 2014, 1.	4.7	19
51	Predicting Evolution and Visualizing High-Dimensional Fitness Landscapes. Emergence, Complexity and Computation, 2014, , 509-526.	0.3	13
52	Evolutionary instability of zero-determinant strategies demonstrates that winning is not everything. Nature Communications, 2013, 4, 2193.	12.8	150
53	The Evolution of Representation in Simple Cognitive Networks. Neural Computation, 2013, 25, 2079-2107.	2.2	57
54	Critical interplay between density-dependent predation and evolution of the selfish herd. , 2013, , .		14

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55	Predator confusion is sufficient to evolve swarming behaviour. Journal of the Royal Society Interface, 2013, 10, 20130305.	3.4	111
56	Artificial Evolution. , 2013, , 39-42.		0
57	Impact of epistasis and pleiotropy on evolutionary adaptation. Proceedings of the Royal Society B: Biological Sciences, 2012, 279, 247-256.	2.6	85
58	Adaptive walks on the fitness landscape of music. Proceedings of the National Academy of Sciences of the United States of America, 2012, 109, 11898-11899.	7.1	2
59	Evolution and stability of altruist strategies in microbial games. Physical Review E, 2012, 85, 011914.	2.1	21
60	Sequence dependence of isothermal DNA amplification via EXPAR. Nucleic Acids Research, 2012, 40, e87-e87.	14.5	96
61	The use of information theory in evolutionary biology. Annals of the New York Academy of Sciences, 2012, 1256, 49-65.	3.8	72
62	Robust Monomer-Distribution Biosignatures in Evolving Digital Biota. Astrobiology, 2011, 11, 959-968.	3.0	4
63	Monomer Abundance Distribution Patterns as a Universal Biosignature: Examples from Terrestrial and Digital Life. Journal of Molecular Evolution, 2011, 72, 283-295.	1.8	38
64	Information Content of Colored Motifs in Complex Networks. Artificial Life, 2011, 17, 375-390.	1.3	25
65	Integrated Information Increases with Fitness in the Evolution of Animats. PLoS Computational Biology, 2011, 7, e1002236.	3.2	84
66	Toward a Fully Relativistic Theory of Quantum Information. , 2011, , 71-102.		3
67	Colored Motifs Reveal Computational Building Blocks in the C. elegans Brain. PLoS ONE, 2011, 6, e17013.	2.5	28
68	Modularity and anti-modularity in networks with arbitrary degree distribution. Biology Direct, 2010, 5, 32.	4.6	16
69	Critical Dynamics in the Evolution of Stochastic Strategies for the Iterated Prisoner's Dilemma. PLoS Computational Biology, 2010, 6, e1000948.	3.2	23
70	Measuring Representation. , 2010, , .		1
71	Evolution of Complex Modular Biological Networks. PLoS Computational Biology, 2008, 4, e23.	3.2	145
72	PHILOSOPHY OF MIND: Who Watches the Watcher?. Science, 2007, 316, 1125-1126.	12.6	0

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73	Evolving Virtual Creatures and Catapults. Artificial Life, 2007, 13, 139-157.	1.3	46
74	Information Theory, Evolution, and the Origin of Life. By HubertÂPÂ Yockey. Cambridge and New York: Cambridge University Press. $60.00. xi + 259 p; ill.; index. ISBN: 0â€“521â€“80293â€“8. 2005.. Quarterly Review of Biology, 2006, 81, 62-62.	0.1	0
75	COMPUTER SCIENCE: What Do Robots Dream Of?. Science, 2006, 314, 1093-1094.	12.6	48
76	Digital genetics: unravelling the genetic basis of evolution. Nature Reviews Genetics, 2006, 7, 109-118.	16.3	103
77	Selection for mutational robustness in finite populations. Journal of Theoretical Biology, 2006, 243, 181-190.	1.7	35
78	EVOLUTION: Reducible Complexity. Science, 2006, 312, 61-63.	12.6	20
79	Three Weeks with Hans Bethe. , 2006, , 45-110.		2
80	Random matrix model of adiabatic quantum computing. Physical Review A, 2005, 71, .	2.5	10
81	Why highly expressed proteins evolve slowly. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 14338-14343.	7.1	738
82	Evolutionary computation technologies for space systems. , 2005, , .		25
83	Thermodynamic prediction of protein neutrality. Proceedings of the National Academy of Sciences of the United States of America, 2005, 102, 606-611.	7.1	320
84	Adaptive Radiation from Resource Competition in Digital Organisms. Science, 2004, 305, 84-86.	12.6	110
85	Evolution of Robustness in Digital Organisms. Artificial Life, 2004, 10, 167-179.	1.3	32
86	Experiments in Digital Evolution (Editors' Introduction to the Special Issue). Artificial Life, 2004, 10, 117-122.	1.3	7
87	Bifurcation into Functional Niches in Adaptation. Artificial Life, 2004, 10, 135-144.	1.3	5
88	Influence of Chance, History, and Adaptation on Digital Evolution. Artificial Life, 2004, 10, 181-190.	1.3	26
89	Evolutionary rate depends on number of protein-protein interactions independently of gene expression level: response. BMC Evolutionary Biology, 2004, 4, 14.	3.2	48
90	Information theory in molecular biology. Physics of Life Reviews, 2004, 1, 3-22.	2.8	171

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91	Towards photostatistics from photon-number discriminating detectors. Journal of Modern Optics, 2004, 51, 1517-1528.	1.3	36
92	Stability and the Evolvability of Function in a Model Protein. Biophysical Journal, 2004, 86, 2758-2764.	0.5	95
93	Modelling Stochastic Clonal Interference. Natural Computing Series, 2004, , 21-38.	2.2	6
94	Towards photostatistics from photon-number discriminating detectors. Journal of Modern Optics, 2004, 51, 1517-1528.	1.3	4
95	Apparent dependence of protein evolutionary rate on number of interactions is linked to biases in protein-protein interactions data sets. BMC Evolutionary Biology, 2003, 3, 21.	3.2	123
96	Compensatory mutations cause excess of antagonistic epistasis in RNA secondary structure folding. BMC Evolutionary Biology, 2003, 3, 3.	3.2	61
97	Evolution of mutational robustness. Mutation Research - Fundamental and Molecular Mechanisms of Mutagenesis, 2003, 522, 3-11.	1.0	116
98	The evolutionary origin of complex features. Nature, 2003, 423, 139-144.	27.8	643
99	Selective pressures on genomes in molecular evolution. Journal of Theoretical Biology, 2003, 222, 477-483.	1.7	51
100	Entangled light in moving frames. Physical Review A, 2003, 68, .	2.5	64
101	Entangled light in moving frames. , 2003, , .		4
102	Critical and near-critical branching processes. Physical Review E, 2002, 66, 011907.	2.1	24
103	Quantum Entanglement of Moving Bodies. Physical Review Letters, 2002, 89, 270402.	7.8	234
104	Design of evolvable computer languages. IEEE Transactions on Evolutionary Computation, 2002, 6, 420-424.	10.0	27
105	The biology of digital organisms. Trends in Ecology and Evolution, 2002, 17, 528-532.	8.7	86
106	What is complexity?. BioEssays, 2002, 24, 1085-1094.	2.5	306
107	Viral evolution under the pressure of an adaptive immune system: Optimal mutation rates for viral escape. Complexity, 2002, 8, 28-33.	1.6	44
108	Sequence complexity in Darwinian evolution. Complexity, 2002, 8, 49-56.	1.6	30

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109	Optimal adaptive performance and delocalization in NK fitness landscapes. Physica A: Statistical Mechanics and Its Applications, 2002, 304, 495-506.	2.6	28
110	Evolution of Genetic Organization in Digital Organisms. Natural Computing Series, 2002, , 296-313.	2.2	5
111	Evolution of digital organisms at high mutation rates leads to survival of the flattest. Nature, 2001, 412, 331-333.	27.8	548
112	Interaction between directional epistasis and average mutational effects. Proceedings of the Royal Society B: Biological Sciences, 2001, 268, 1469-1474.	2.6	100
113	Complex Langevin equation and the many-fermion problem. Physical Review C, 2001, 63, .	2.9	12
114	Physical complexity of symbolic sequences. Physica D: Nonlinear Phenomena, 2000, 137, 62-69.	2.8	107
115	Open Problems in Artificial Life. Artificial Life, 2000, 6, 363-376.	1.3	235
116	A Developmental Model for the Evolution of Artificial Neural Networks. Artificial Life, 2000, 6, 189-218.	1.3	68
117	Evolution of biological complexity. Proceedings of the National Academy of Sciences of the United States of America, 2000, 97, 4463-4468.	7.1	435
118	A simple explanation for taxon abundance patterns. Proceedings of the National Academy of Sciences of the United States of America, 1999, 96, 15017-15019.	7.1	29
119	Quantum extension of conditional probability. Physical Review A, 1999, 60, 893-897.	2.5	65
120	Reduction criterion for separability. Physical Review A, 1999, 60, 898-909.	2.5	118
121	Genome complexity, robustness and genetic interactions in digital organisms. Nature, 1999, 400, 661-664.	27.8	255
122	Evolution of Differentiated Expression Patterns in Digital Organisms. Lecture Notes in Computer Science, 1999, , 129-138.	1.3	4
123	Information theory of quantum entanglement and measurement. Physica D: Nonlinear Phenomena, 1998, 120, 62-81.	2.8	99
124	Optical simulation of quantum logic. Physical Review A, 1998, 57, R1477-R1480.	2.5	262
125	Introduction to Artificial Life. , 1998, , .		264
126	Negative Entropy in Quantum Information Theory. , 1997, , 77-84.		36

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127	von Neumann capacity of noisy quantum channels. Physical Review A, 1997, 56, 3470-3483.	2.5	152
128	Negative Entropy and Information in Quantum Mechanics. Physical Review Letters, 1997, 79, 5194-5197.	7.8	324
129	Learning and complexity in genetic auto-adaptive systems. Physica D: Nonlinear Phenomena, 1995, 80, 154-170.	2.8	28
130	Self-organized criticality in living systems. Physics Letters, Section A: General, Atomic and Solid State Physics, 1995, 203, 29-32.	2.1	73
131	Abundance-distributions in artificial life and stochastic models: â€œage and areaâ€•revisited. Lecture Notes in Computer Science, 1995, , 503-514.	1.3	3
132	On Modeling Life. Artificial Life, 1994, 1, 429-438.	1.3	9
133	Matter under extreme conditions. Physics Reports, 1993, 234, 1-71.	25.6	88
134	Isospin violation in QCD sum rules for baryons. Physical Review D, 1993, 48, 2304-2312.	4.7	18
135	Order of the QCD transition and QCD sum rules. Physical Review D, 1992, 46, 478-481.	4.7	16
136	Finite-temperature QCD sum rules for the nucleon. Physical Review D, 1992, 45, 4312-4322.	4.7	26
137	Isospin breaking in nuclear physics: The Nolen-Schiffer effect. Zeitschrift FÃ¼r Physik A, 1991, 340, 93-100.	0.9	42
138	QCD sum rules at low temperature. Physical Review D, 1991, 43, 921-932.	4.7	56
139	Charmonium disintegration by field ionization. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 1989, 217, 5-8.	4.1	3
140	Charmonium disintegration by field-ionization. Nuclear Physics A, 1989, 498, 501-506.	1.5	1
141	Soliton quantization in chiral models with vector mesons. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 1988, 215, 387-391.	4.1	7
142	The width of the Î”-isobar in chiral soliton models. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 1988, 213, 373-375.	4.1	20
143	From Entropy to Information: Biased Typewriters and the Origin of Life. , 0, , 130-154.		5
144	Evolved digital ecosystems: Dynamic steady state, not optimal fixed point. , 0, , .		5

#	Article	IF	Citations
145	Evolution of an artificial visual cortex for image recognition. , 0, , .		5
146	Exploring Conditions That Select for the Evolution of Cooperative Group Foraging. , 0, , .		1
147	Does self-replication imply evolvability?. , 0, , .		4
148	More Bang For Your Buck: Quorum-Sensing Capabilities Improve the Efficacy of Suicidal Altruism. , 0, , .		0
149	Evolving an optimal group size in groups of prey under predation. , 0, , .		1