Thomas Schmickl

List of Publications by Year
in descending order

146 papers	2,266 citations	304701 22 h-index	315719 38 g-index
154 all docs	154 docs citations	154 times ranked	1414 citing authors

#	Article	IF	Citations
1	Re-embodiment of Honeybee Aggregation Behavior in an Artificial Micro-Robotic System. Adaptive Behavior, 2009, 17, 237-259.	1.9	156
2	Get in touch: cooperative decision making based on robot-to-robot collisions. Autonomous Agents and Multi-Agent Systems, 2009, 18, 133-155.	2.1	133
3	Standard methods for behavioural studies of<i>Apis mellifera</i>. Journal of Apicultural Research, 2013, 52, 1-58.	1.5	122
4	Inner nest homeostasis in a changing environment with special emphasis on honey bee brood nursing and pollen supply. Apidologie, 2004, 35, 249-263.	2.0	103
5	Swarm Intelligence and cyber-physical systems: Concepts, challenges and future trends. Swarm and Evolutionary Computation, 2021, 60, 100762.	8.1	91
6	HoPoMo: A model of honeybee intracolonial population dynamics and resource management. Ecological Modelling, 2007, 204, 219-245.	2.5	83
7	CoCoRo -- The Self-Aware Underwater Swarm. , 2011, , .		67
8	Dynamics of Collective Decision Making of Honeybees in Complex Temperature Fields. PLoS ONE, 2013, 8, e76250.	2.5	55
9	Symbiotic robot organisms. , 2008, , .		54
10	Costs of Environmental Fluctuations and Benefits of Dynamic Decentralized Foraging Decisions in Honey Bees. Adaptive Behavior, 2004, 12, 263-277.	1.9	45
11	Adaptive collective decision-making in limited robot swarms without communication. International Journal of Robotics Research, 2013, 32, 35-55.	8.5	44
12	Two different approaches to a macroscopic model of a bio-inspired robotic swarm. Robotics and Autonomous Systems, 2009, 57, 913-921.	5.1	43
13	Antbots: A Feasible Visual Emulation of Pheromone Trails for Swarm Robots. Lecture Notes in Computer Science, 2010, , 84-94.	1.3	40
14	Robots mediating interactions between animals for interspecies collective behaviors. Science Robotics, 2019, 4, .	17.6	40
15	Analysis of emergent symmetry breaking in collective decision making. Neural Computing and Applications, 2012, 21, 207-218.	5.6	39
16	Interaction of robot swarms using the honeybee-inspired control algorithm BEECLUST. Mathematical and Computer Modelling of Dynamical Systems, 2012, 18, 87-100.	2.2	38
17	Collective Perception in a Robot Swarm. , 2006, , 144-157.		31
18	Flora Robotica - Mixed Societies of Symbiotic Robot-Plant Bio-Hybrids. , 2015, , .		31

#	ARTICLE	IF	CITATIONS
19	Division of labor in a swarm of autonomous underwater robots by improved partitioning social inhibition. Adaptive Behavior, 2016, 24, 87-101.	1.9	31
20	A Minimalist Flocking Algorithm for Swarm Robots. Lecture Notes in Computer Science, 2011, , 375-382.	1.3	30
21	A Navigation Algorithm for Swarm Robotics Inspired by Slime Mold Aggregation. , 2006, , 1-13.		27
22	Potential of Heterogeneity in Collective Behaviors: A Case Study on Heterogeneous Swarms. Lecture Notes in Computer Science, 2015, , 201-217.	1.3	27
23	How regulation based on a common stomach leads to economic optimization of honeybee foraging. Journal of Theoretical Biology, 2016, 389, 274-286.	1.7	26
24	A hormone-based controller for evolutionary multi-modular robotics: From single modules to gait learning. , 2010, , .		25
25	Development of a New Method to Track Multiple Honey Bees with Complex Behaviors on a Flat Laboratory Arena. PLoS ONE, 2014, 9, e84656.	2.5	25
26	Integral feedback control is at the core of task allocation and resilience of insect societies. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 13180-13185.	7.1	25
27	Optimisation of a honeybee-colony's energetics via social learning based on queuing delays. Connection Science, 2008, 20, 193-210.	3.0	24
28	Swarm-intelligent foraging in honeybees: benefits and costs of task-partitioning and environmental fluctuations. Neural Computing and Applications, 2012, 21, 251-268.	5.6	24
29	Resilience of honeybee colonies via common stomach: A model of self-regulation of foraging. PLoS ONE, 2017, 12, e0188004.	2.5	24
30	From honeybees to robots and back: division of labour based on partitioning social inhibition. Bioinspiration and Biomimetics, 2015, 10, 066005.	2.9	23
31	The interplay of sex ratio, male success and density-independent mortality affects population dynamics. Ecological Modelling, 2010, 221, 1089-1097.	2.5	22
32	Vascular morphogenesis controller. , 2017, , .		20
33	A Model of Symmetry Breaking in Collective Decision-Making. Lecture Notes in Computer Science, 2010, , 639-648.	1.3	20
34	Time Delay Implies Cost on Task Switching: A Model to Investigate the Efficiency of Task Partitioning. Bulletin of Mathematical Biology, 2013, 75, 1181-1206.	1.9	19
35	Analysis and implementation of an Artificial Homeostatic Hormone System: A first case study in robotic hardware. , 2009, , .		18
36	Constructing living buildings: a review of relevant technologies for a novel application of biohybrid robotics. Journal of the Royal Society Interface, 2019, 16, 20190238.	3.4	18

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37	ASSISI: Mixing Animals with Robots in a Hybrid Society. Lecture Notes in Computer Science, 2013, , 441-443.	1.3	18
38	Modelling a hormone-inspired controller for individual- and multi-modular robotic systems. Mathematical and Computer Modelling of Dynamical Systems, 2011, 17, 221-242.	2.2	17
39	Sting, Carry and Stock: How Corpse Availability Can Regulate De-Centralized Task Allocation in a Ponerine Ant Colony. PLoS ONE, 2014, 9, e114611.	2.5	17
40	Towards Bio-hybrid Systems Made of Social Animals and Robots. Lecture Notes in Computer Science, 2013, , 384-386.	1.3	17
41	Spatial macroscopic models of a bio-inspired robotic swarm algorithm. , 2008, , .		16
42	Algorithmic requirements for swarm intelligence in differently coupled collective systems. Chaos, Solitons and Fractals, 2013, 50, 100-114.	5.1	16
43	subCULTron - Cultural Development as a Tool in Underwater Robotics. Communications in Computer and Information Science, 2018, , 27-41.	0.5	16
44	Emergent Flocking with Low-End Swarm Robots. Lecture Notes in Computer Science, 2010, , 424-431.	1.3	16
45	Generation of Diversity in a Reaction-Diffusion-Based Controller. Artificial Life, 2014, 20, 319-342.	1.3	15
46	Autonomously shaping natural climbing plants: a bio-hybrid approach. Royal Society Open Science, 2018, 5, 180296.	2.4	15
47	Tracking of Multiple Honey Bees on a Flat Surface. , 2012, , .		13
48	A Hormone-Based Controller for Evaluation-Minimal Evolution in Decentrally Controlled Systems. Artificial Life, 2012, 18, 165-198.	1.3	13
49	Modelling the swarm: Analysing biological and engineered swarm systems. Mathematical and Computer Modelling of Dynamical Systems, 2012, 18, 1-12.	2.2	13
50	Coupled inverted pendulums. , 2011, , .		12
51	How a life-like system emerges from a simplistic particle motion law. Scientific Reports, 2016, 6, 37969.	3.3	12
52	BEECLUST used for exploration tasks in Autonomous Underwater Vehiclesâ˜…. IFAC-PapersOnLine, 2015, 48, 819-824.	0.9	11
53	Governing the swarm: Controlling a bio-hybrid society of bees & robots with computational feedback loops. , 2017, , .		11
54	Social Integrating Robots Suggest Mitigation Strategies for Ecosystem Decay. Frontiers in Bioengineering and Biotechnology, 2021, 9, 612605.	4.1	11

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55	Understanding Ecosystem Stability and Resilience Through Mathematical Modeling. , 2020, , 1-17.		11
56	A Minimally Invasive Approach Towards â€œEcosystem Hackingâ€•With Honeybees. Frontiers in Robotics and AI, 2022, 9, 791921.	3.2	11
57	Open-ended on-board Evolutionary Robotics for robot swarms. , 2009, , .		10
58	ASSISI: Charged Hot Bees Shakin' in the Spotlight. , 2013, , .		10
59	Social Inhibition Manages Division of Labour in Artificial Swarm Systems. , 0, , .		10
60	A robot to shape your natural plant. , 2018, , .		9
61	Regenerative Abilities in Modular Robots Using Virtual Embryogenesis. Lecture Notes in Computer Science, 2011, , 227-237.	1.3	9
62	Freshwater organisms potentially useful as biosensors and power-generation mediators in biohybrid robotics. Biological Cybernetics, 2021, 115, 615-628.	1.3	9
63	On Adaptive Self-Organization in Artificial Robot Organisms. , 2009, , .		8
64	Self-organized pattern formation in a swarm system as a transient phenomenon of non-linear dynamics. Mathematical and Computer Modelling of Dynamical Systems, 2012, 18, 39-50.	2.2	8
65	Evolved Control of Natural Plants. ACM Transactions on Autonomous and Adaptive Systems, 2017, 12, 1-24.	0.8	8
66	Collective Change Detection: Adaptivity to Dynamic Swarm Densities and Light Conditions in Robot Swarms. , 2019, , .		8
67	How to Engineer Robotic Organisms and Swarms?. Studies in Computational Intelligence, 2011, , 25-52.	0.9	8
68	EMANN - a model of emotions in an artificial neural network. , 2013, , .		8
69	FSTaxis Algorithm: Bio-Inspired Emergent Gradient Taxis. , 2016, , .		8
70	The efficiency of the RULES-4 classification learning algorithm in predicting the density of agents. Cogent Engineering, 2014, 1, 986262.	2.2	7
71	Wolfpack-inspired evolutionary algorithm and a reaction-diffusion-based controller are used for pattern formation. , 2014, , .		7
72	Bottom-up ecology: an agent-based model on the interactions between competition and predation. Letters in Biomathematics, 2016, 3, 161-180.	0.1	7

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73	A Model for Bio-Inspired Underwater Swarm Robotic Exploration. IFAC-PapersOnLine, 2018, 51, 385-390.	0.9	7
74	Optical Networking in a Swarm of Microrobots. Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, 2009, , 107-119.	0.3	7
75	How Two Cooperating Robot Swarms Are Affected by Two Conflictive Aggregation Spots. Lecture Notes in Computer Science, 2011, , 367-374.	1.3	7
76	Novel Concept of Modelling Embryology for Structuring an Artificial Neural Network. SNE Simulation Notes Europe, 2010, 20, 25-32.	0.3	7
77	Evolving Diverse Collective Behaviors Independent of Swarm Density. , 2015, , .		6
78	Collective Motion as an Ultimate Effect in Crowded Selfish Herds. Scientific Reports, 2019, 9, 6618.	3.3	6
79	A swarm design paradigm unifying swarm behaviors using minimalistic communication. Bioinspiration and Biomimetics, 2020, 15, 036005.	2.9	6
80	CIMAX: collective information maximization in robotic swarms using local communication. Adaptive Behavior, 2021, 29, 297-314.	1.9	6
81	Profiling Underwater Swarm Robotic Shoaling Performance Using Simulation. Lecture Notes in Computer Science, 2014, , 404-416.	1.3	6
82	Social Adaptation of Robots for Modulating Self-Organization in Animal Societies. , 2014, , .		5
83	Resilience and Stability of Ecological and Social Systems. , 2020, , .		5
84	Effects of Sinusoidal Vibrations on the Motion Response of Honeybees. Frontiers in Physics, 2021, 9, .	2.1	5
85	aMussels: Diving and Anchoring in a New Bio-inspired Under-Actuated Robot Class for Long-Term Environmental Exploration and Monitoring. Lecture Notes in Computer Science, 2017, , 300-314.	1.3	5
86	Evolving a Novel Bio-inspired Controller in Reconfigurable Robots. Lecture Notes in Computer Science, 2011, , 132-139.	1.3	5
87	Influence of a Social Gradient on a Swarm of Agents Controlled by the BEECLUST Algorithm. , 0, , .		5
88	Coordination of collective behaviours in spatially separated agents. , 0, , .		5
89	Mycelial Beehives of HIVEOPOLIS: Designing and Building Therapeutic Inner Nest Environments for Honeybees. Biomimetics, 2022, 7, 75.	3.3	5
90	WOSPP - A Wave Oriented Swarm Programming Paradigm. IFAC-PapersOnLine, 2018, 51, 379-384.	0.9	4

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91	Morphogenesis as a Collective Decision of Agents Competing for Limited Resource: A Plants Approach. Lecture Notes in Computer Science, 2018, , 84-96.	1.3	4
92	An Individual-Based Model of Task Selection in Honeybees. Lecture Notes in Computer Science, 2008, , 383-392.	1.3	4
93	Using Virtual Embryogenesis for Structuring Controllers. Lecture Notes in Computer Science, 2010, , 312-313.	1.3	4
94	Using Virtual Embryogenesis in Multi-robot Organisms. Lecture Notes in Computer Science, 2011, , 238-247.	1.3	4
95	Collective Change Detection: Adaptivity to Dynamic Swarm Densities and Light Conditions in Robot Swarms. , 2019, , .		4
96	Development of morphology based on resource distribution: Finding the shortest path in a maze by vascular morphogenesis controller. , 2017, , .		4
97	Thermodynamics of emergence: Langton's ant meets Boltzmann. , 2011, , .		3
98	Estimation of moving agents density in 2D space based on LSTM neural network. , 2017, , .		3
99	Evolving robot controllers for a bio-hybrid system. , 2018, , .		3
100	Towards swarm level optimisation: the role of different movement patterns in swarm systems. International Journal of Parallel, Emergent and Distributed Systems, 2019, 34, 241-259.	1.0	3
101	Economics of Specialization in Honeybees. Lecture Notes in Computer Science, 2011, , 358-366.	1.3	3
102	Evolving Reactive Controller for a Modular Robot: Benefits of the Property of State-Switching in Fractal Gene Regulatory Networks. Lecture Notes in Computer Science, 2012, , 209-218.	1.3	3
103	Growth of Structured Artificial Neural Networks by Virtual Embryogenesis. Lecture Notes in Computer Science, 2011, , 118-125.	1.3	3
104	Analysis of Swarm Behaviors Based on an Inversion of the Fluctuation Theorem. Artificial Life, 2014, 20, 77-93.	1.3	2
105	Vascular Morphogenesis Controller: A Distributed Controller for Growing Artificial Structures. , 2016, , .		2
106	Evolving vascular morphogenesis controller to demonstrate locomotion. , 2017, , .		2
107	Design choices for adapting bio-hybrid systems with evolutionary computation. , 2017, , .		2
108	Perverse Bienen Artificial Life und der Apfel der Erkenntnis. Zeitschrift FÃ¼r Medienwissenschaft, 2018, 10, 98-110.	0.1	2

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109	Investigation of Cue-Based Aggregation Behaviour in Complex Environments. Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, 2021, , 18-36.	0.3	2
110	A cellular model of swarm intelligence in bees and robots. , 2017, , .		2
111	Evolution of Spatial Pattern Formation by Autonomous Bio-Inspired Cellular Controllers. , 0, , .		2
112	Cooperation of two different swarms controlled by BEECLUST algorithm. , 0, , .		2
113	swarmFSTaxis: Borrowing a Swarm Communication Mechanism from Fireflies and Slime Mold. Understanding Complex Systems, 2019, , 213-222.	0.6	2
114	Simple Physical Interactions Yield Social Self-Organization in Honeybees. Frontiers in Physics, 2021, 9, .	2.1	2
115	Novel method of virtual embryogenesis for structuring Artificial Neural Network controllers. Mathematical and Computer Modelling of Dynamical Systems, 2013, 19, 375-387.	2.2	1
116	Modelling â€œBreaking Badâ€ An economic model of drugs and population dynamics to predict how the series itself feeds back into the drug market. IFAC-PapersOnLine, 2015, 48, 697-698.	0.9	1
117	Fundamentalism in a social learning perspective: A memetic agent model of vegetarianism, social interaction networks and food markets. , 2017, , .		1
118	Automatic tracking method for multiple honeybees using backward-play movies. , 2017, , .		1
119	Robotic Sensing and Stimuli Provision for Guided Plant Growth. Journal of Visualized Experiments, 2019, , .	0.3	1
120	Wankelmut: A Simple Benchmark for the Evolvability of Behavioral Complexity. Applied Sciences (Switzerland), 2021, 11, 1994.	2.5	1
121	Quantification and Analysis of the Resilience of Two Swarm Intelligent Algorithms. , 0, , .		1
122	Robotic oligarchy: How a few members can control their whole society by doing almost nothing. , 2017, , .		1
123	Evolving Collective Behaviors With Diverse But Predictable Sensor States. , 0, , .		1
124	Collective Decision Making in a Swarm of Robots: How Robust the BEECLUST Algorithm Performs in Various Conditions. , 2016, , .		1
125	Evolving Mixed Societies: A one-dimensional modelling approach. , 2016, , .		1
126	Estimating Dynamics of Honeybee Population Densities with Machine Learning Algorithms. Lecture Notes in Computer Science, 2018, , 309-321.	1.3	1

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127	Social Stomach. , 2020, , 1-4.		1
128	Social Distancing in Robot Swarms: Modulating Exploitation and Exploration Without Signal Exchange. , 2020, , .		1
129	Convolutional Neural Network for Honeybee Density Estimation. , 2020, , .		1
130	Forest Fires: Fire Management and the Power Law. , 2020, , 63-77.		1
131	Ultimate Ecology: How a socio-economic game can evolve into a resilient ecosystem of agents. , 2017, , .		0
132	SOCO 2018 Foreword. , 2018, , .		0
133	Locomotion as a Result of Displacement of Resources. , 2018, , .		0
134	Collective Event Detection Using Bio-inspired Minimalistic Communication in a Swarm of Underwater Robots. , 2019, , .		0
135	Social Stomach. , 2021, , 868-871.		0
136	Evolving for Creativity: Maximizing Complexity in a Self-organized Multi-particle System. Lecture Notes in Computer Science, 2011, , 442-449.	1.3	0
137	Virtual Spatiality in Agent Controllers: Encoding Compartmentalization. Lecture Notes in Computer Science, 2013, , 579-588.	1.3	0
138	Evolving Controllers for Programmable Robots to Influence Non-programmable Lifeforms: A Casy Study. Lecture Notes in Computer Science, 2015, , 831-841.	1.3	0
139	A Model of â€˜Breaking Badâ€™: An Economic Model of Drugs and Population Dynamics Predicts how the TV Series Feeds Back to the Drug Market. SNE Simulation Notes Europe, 2016, 26, 167-174.	0.3	0
140	Virtual Animal Studies/Hybrid Societies. , 2019, , 1-23.		0
141	A Heuristic Trajectory Decision Method to Enhance the Tracking Performance of Multiple Honeybees on a Flat Laboratory Arena. Transactions of the Institute of Systems Control and Information Engineers, 2019, 32, 113-122.	0.1	0
142	Virtual Animal Studies/Hybrid Societies. , 2020, , 629-651.		0
143	Ants and Bees: Common Stomach Regulation Provide Stability for Societies. , 2020, , 107-123.		0
144	The Importance of Life History and Population Interactions in Population Growth. , 2020, , 19-45.		0

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145	Material Flow, Task Partition, and Self-Organization in Wasp Societies. , 2020, , 79-106.		0
146	Generalization of the Common Stomach: Integral Control at the Supra-Individual Level. , 2020, , 125-147.		0