Robert Babuska

List of Publications by Year in descending order

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312 papers 12,021 citations

50276 46 h-index 95 g-index

320 all docs 320 docs citations

times ranked

320

8265 citing authors

#	Article	IF	CITATIONS
1	Learning Assembly Tasks in a Few Minutes by Combining Impedance Control and Residual Recurrent Reinforcement Learning. Advanced Intelligent Systems, 2022, 4, 2100095.	6.1	6
2	Where to Look Next: Learning Viewpoint Recommendations for Informative Trajectory Planning. , 2022, , .		9
3	Change detection using weighted features for image-based localization. Robotics and Autonomous Systems, 2021, 135, 103676.	5.1	8
4	Visual Navigation in Real-World Indoor Environments Using End-to-End Deep Reinforcement Learning. IEEE Robotics and Automation Letters, 2021, 6, 4345-4352.	5.1	23
5	GEM: Glare or Gloom, I Can Still See You – End-to-End Multi-Modal Object Detection. IEEE Robotics and Automation Letters, 2021, 6, 6321-6328.	5.1	3
6	Multi-objective symbolic regression for physics-aware dynamic modeling. Expert Systems With Applications, 2021, 182, 115210.	7.6	12
7	Selecting Informative Data Samples for Model Learning Through Symbolic Regression. IEEE Access, 2021, 9, 14148-14158.	4.2	3
8	Symbolic Regression Methods for Reinforcement Learning. IEEE Access, 2021, 9, 139697-139711.	4.2	5
9	Guiding Robot Model Construction with Prior Features. , 2021, , .		O
10	DeepKoCo: Efficient latent planning with a task-relevant Koopman representation. , 2021, , .		0
11	Control of Magnetic Manipulator Using Reinforcement Learning Based on Incrementally Adapted Local Linear Models. Complexity, 2021, 2021, 1-12.	1.6	2
12	Simultaneous task allocation and motion scheduling for complex tasks executed by multiple robots. , 2020, , .		7
13	Object-Based Pose Graph for Dynamic Indoor Environments. IEEE Robotics and Automation Letters, 2020, 5, 5401-5408.	5.1	7
14	Constructing parsimonious analytic models for dynamic systems via symbolic regression. Applied Soft Computing Journal, 2020, 94, 106432.	7.2	16
15	Fine-tuning Deep RL with Gradient-Free Optimization. IFAC-PapersOnLine, 2020, 53, 8049-8056.	0.9	2
16	Symbolic regression driven by training data and prior knowledge. , 2020, , .		12
17	Efficient Object Search Through Probability-Based Viewpoint Selection. , 2020, , .		5
18	Closed-Loop Control Through Self-Sensing of a Joule-Heated Twisted and Coiled Polymer Muscle. Soft Robotics, 2019, 6, 621-630.	8.0	18

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19	Near Optimal Control With Reachability and Safety Guarantees. IFAC-PapersOnLine, 2019, 52, 230-235.	0.9	2
20	Towards Life-Long Autonomy of Mobile Robots Through Feature-Based Change Detection. , 2019, , .		2
21	Vision-based Navigation Using Deep Reinforcement Learning. , 2019, , .		32
22	Proxy Functions for Approximate Reinforcement Learning. IFAC-PapersOnLine, 2019, 52, 224-229.	0.9	0
23	Reinforcement learning based compensation methods for robot manipulators. Engineering Applications of Artificial Intelligence, 2019, 78, 236-247.	8.1	77
24	Integrating State Representation Learning Into Deep Reinforcement Learning. IEEE Robotics and Automation Letters, 2018, 3, 1394-1401.	5.1	72
25	Policy derivation methods for critic-only reinforcement learning in continuous spaces. Engineering Applications of Artificial Intelligence, 2018, 69, 178-187.	8.1	12
26	Model-Plant Mismatch Compensation Using Reinforcement Learning. IEEE Robotics and Automation Letters, 2018, 3, 2471-2477.	5.1	25
27	Reinforcement Learning Applied to an Electric Water Heater: From Theory to Practice. IEEE Transactions on Smart Grid, 2018, 9, 3792-3800.	9.0	112
28	Decentralized Reinforcement Learning of Robot Behaviors. Artificial Intelligence, 2018, 256, 130-159.	5.8	41
29	Reinforcement Learning with Symbolic Input-Output Models. , 2018, , .		7
30	Data-driven Construction of Symbolic Process Models for Reinforcement Learning. , 2018, , .		7
31	A Multiple-Model Reliability Prediction Approach for Condition-Based Maintenance. IEEE Transactions on Reliability, 2018, 67, 1364-1376.	4.6	19
32	Residential Demand Response of Thermostatically Controlled Loads Using Batch Reinforcement Learning. IEEE Transactions on Smart Grid, 2017, 8, 2149-2159.	9.0	232
33	Railway Track Circuit Fault Diagnosis Using Recurrent Neural Networks. IEEE Transactions on Neural Networks and Learning Systems, 2017, 28, 523-533.	11.3	220
34	Combining knowledge and historical data for system-level fault diagnosis of HVAC systems. Engineering Applications of Artificial Intelligence, 2017, 59, 260-273.	8.1	55
35	Approximate analytical solutions to the double-stance dynamics of the lossy spring-loaded inverted pendulum. Bioinspiration and Biomimetics, 2017, 12, 016003.	2.9	4
36	Bayesian and Dempster–Shafer reasoning for knowledge-based fault diagnosis–A comparative study. Engineering Applications of Artificial Intelligence, 2017, 60, 136-150.	8.1	53

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37	Benchmarking model-free and model-based optimal control. Robotics and Autonomous Systems, 2017, 92, 81-90.	5.1	18
38	A Big Data Analysis Approach for Rail Failure Risk Assessment. Risk Analysis, 2017, 37, 1495-1507.	2.7	86
39	Identification of distributed-parameter systems from sparse measurements. Applied Mathematical Modelling, 2017, 51, 605-625.	4.2	9
40	Automated tuning and configuration of path planning algorithms. , 2017, , .		10
41	Timely condition-based maintenance planning for multi-component systems. Reliability Engineering and System Safety, 2017, 159, 310-321.	8.9	62
42	Model-based real-time control of a magnetic manipulator system. , 2017, , .		3
43	Evaluation of physical damage associated with action selection strategies in reinforcement learning * *I. Koryakovskiy, H. Vallery and R.Babuška were supported by the European project KOROIBOT FP7-ICT-2013-10/611909 IFAC-PapersOnLine, 2017, 50, 6928-6933.	0.9	4
44	Takagi–Sugeno Fuzzy Payload Estimation and Adaptive Control. IFAC-PapersOnLine, 2017, 50, 844-849.	0.9	3
45	Optimal Control via Reinforcement Learning with Symbolic Policy Approximation. IFAC-PapersOnLine, 2017, 50, 4162-4167.	0.9	8
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47	Learning state representation for deep actor-critic control. , 2016, , .		25
48	Nested compliant admittance control for robotic mechanical assembly of misaligned and tightly toleranced parts. , 2016, , .		14
49	Improved deep reinforcement learning for robotics through distribution-based experience retention. , 2016, , .		17
50	Symbolic method for deriving policy in reinforcement learning. , 2016, , .		10
51	Integrated dynamic modelling and multivariable control of HVAC components. , 2016, , .		4
52	Actor-critic reinforcement learning for tracking control in robotics. , 2016, , .		15
53	Probabilistic Defect-Based Risk Assessment Approach for Rail Failures in Railway Infrastructure. IFAC-PapersOnLine, 2016, 49, 73-77.	0.9	25
54	Fault diagnosis using spatial and temporal information with application to railway track circuits. Engineering Applications of Artificial Intelligence, 2016, 56, 200-211.	8.1	15

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55	Policy Derivation Methods for Critic-Only Reinforcement Learning in Continuous Action Spaces. IFAC-PapersOnLine, 2016, 49, 285-290.	0.9	4
56	Hybrid Single Node Genetic Programming for Symbolic Regression. Lecture Notes in Computer Science, 2016, , 61-82.	1.3	5
57	Online learning for optimistic planning. Engineering Applications of Artificial Intelligence, 2016, 55, 70-82.	8.1	2
58	Unified Modeling and Control of Walking and Running on the Spring-Loaded Inverted Pendulum. IEEE Transactions on Robotics, 2016, 32, 1178-1195.	10.3	46
59	Optimal model-free output synchronization of heterogeneous systems using off-policy reinforcement learning. Automatica, 2016, 71, 334-341.	5.0	130
60	Deep convolutional neural networks for detection of rail surface defects. , 2016, , .		205
61	Directional Singularity-Robust Torque Control for Gyroscopic Actuators. IEEE/ASME Transactions on Mechatronics, 2016, 21, 2755-2763.	5.8	21
62	A fast sampling method for estimating the domain of attraction. Nonlinear Dynamics, 2016, 86, 823-834.	5.2	42
63	Synchronization of a class of cyclic discrete-event systems describing legged locomotion. Discrete Event Dynamic Systems: Theory and Applications, 2016, 26, 225-261.	1.5	9
64	Learning Sequential Composition Control. IEEE Transactions on Cybernetics, 2016, 46, 2559-2569.	9.5	14
65	Port-Hamiltonian Systems in Adaptive and Learning Control: A Survey. IEEE Transactions on Automatic Control, 2016, 61, 1223-1238.	5.7	50
66	Adaptive Friction Compensation: A Globally Stable Approach. IEEE/ASME Transactions on Mechatronics, 2015, , $1\text{-}1$.	5.8	12
67	Exploiting spatial and temporal dependencies to enhance fault diagnosis: Application to railway track circuits. , 2015, , .		12
68	Analytical approximation for the double-stance phase of a walking robot. , 2015, , .		3
69	Reasoning under Uncertainty for Knowledge-Based Fault Diagnosis: A Comparative Study. IFAC-PapersOnLine, 2015, 48, 422-427.	0.9	7
70	Control by interconnection of a manipulator arm using reinforcement learning. , 2015, , .		0
71	Learning robustly stable open-loop motions for robotic manipulation. Robotics and Autonomous Systems, 2015, 66, 27-34.	5.1	4
72	Attitude and altitude estimation and control on board a Flapping Wing Micro Air Vehicle. , 2015, , .		29

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73	Co-design of traffic network topology and control measures. Transportation Research Part C: Emerging Technologies, 2015, 54, 56-73.	7.6	4
74	An application of sequential composition control to cooperative systems., 2015,,.		13
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80	Effective transfer learning of affordances for household robots. , 2014, , .		8
81	Rapid learning in sequential composition control. , 2014, , .		13
82	Multi-agent discrete-time graphical games and reinforcement learning solutions. Automatica, 2014, 50, 3038-3053.	5.0	206
83	Passivity-based reinforcement learning control of a 2-DOF manipulator arm. Mechatronics, 2014, 24, 1001-1007.	3.3	24
84	Learning rate free reinforcement learning for real-time motion control using a value-gradient based policy. Mechatronics, 2014, 24, 966-974.	3.3	8
85	Comparison of model-free and model-based methods for time optimal hit control of a badminton robot. Mechatronics, 2014, 24, 1021-1030.	3.3	20
86	Convex saturated particle filter. Automatica, 2014, 50, 2494-2503.	5.0	1
87	Analysis and design for continuous-time string-connected Takagi–Sugeno systems. Journal of the Franklin Institute, 2014, 351, 3577-3592.	3.4	0
88	Estimation of the soil-dependent time-varying parameters of the hopper sedimentation model: The FPF versus the BPF. Control Engineering Practice, 2014, 24, 67-78.	5.5	17
89	Modeling and Control of Legged Locomotion via Switching Max-Plus Models. IEEE Transactions on Robotics, 2014, 30, 652-665.	10.3	25
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91	Balancing a Legged Robot Using State-Dependent Riccati Equation Control. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 2177-2182.	0.4	17
92	Interconnection and Damping Assignment Control via Reinforcement Learning. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 1760-1765.	0.4	5
93	On-line Reinforcement Learning for Nonlinear Motion Control: Quadratic and Non-Quadratic Reward Functions. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 7043-7048.	0.4	10
94	Automated Transitions Between Walking and Running in Legged Robots. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2014, 47, 2171-2176.	0.4	11
95	Parametric Bayesian Filters for Nonlinear Stochastic Dynamical Systems: A Survey. IEEE Transactions on Cybernetics, 2013, 43, 1607-1624.	9.5	59
96	Ant Colony Routing algorithm for freeway networks. Transportation Research Part C: Emerging Technologies, 2013, 37, 1-19.	7.6	30
97	On the convergence of Ant Colony Optimization with stench pheromone. , 2013, , .		0
98	Stiffness and damping scheduling for legged locomotion., 2013,,.		0
99	Observer-based postural balance control for humanoid robots. , 2013, , .		4
100	Optimal routing in freeway networks via sequential linear programming. , 2013, , .		0
101	Saturated Particle Filter: Almost sure convergence and improved resampling. Automatica, 2013, 49, 147-159.	5.0	19
102	Solutions to finite horizon cost problems using actor-critic reinforcement learning. , 2013, , .		5
103	Constrained distributed algebraic connectivity maximization in robotic networks. Automatica, 2013, 49, 1348-1357.	5.0	20
104	Piezo Printhead Control: Jetting Any Drop at Any Time. Embedded Systems, 2013, , 41-85.	0.6	2
105	Optimistic planning for continuous-action deterministic systems. , 2013, , .		13
106	Takagi-Sugeno fuzzy observer and extended-Kalman filter for adaptive payload estimation. , 2013, , .		11
107	Evolutionary co-optimization of control and system parameters for a resonating robot arm., 2013,,.		5
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109	Robot learning and use of affordances in goal-directed tasks. , 2013, , .		11
110	Reinforcement learning for sequential composition control., 2013,,.		13
111	Model-free and model-based time-optimal control of a badminton robot. , 2013, , .		4
112	Max-plus algebra for optimal scheduling of multiple sheets in a printer., 2012,,.		8
113	Imitation learning with non-parametric regression. , 2012, , .		4
114	Model learning actor-critic algorithms: Performance evaluation in a motion control task., 2012,,.		20
115	Minimization of cross-talk in a piezo inkjet printhead based on system identification and feedforward control. Journal of Micromechanics and Microengineering, 2012, 22, 115035.	2.6	7
116	Efficient Model Learning Methods for Actor–Critic Control. IEEE Transactions on Systems, Man, and Cybernetics, 2012, 42, 591-602.	5.0	97
117	Least-Squares Methods for Policy Iteration. Adaptation, Learning, and Optimization, 2012, , 75-109.	0.6	10
118	A Waveform Design Method for a Piezo Inkjet Printhead Based on Robust Feedforward Control. Journal of Microelectromechanical Systems, 2012, 21, 1365-1374.	2.5	37
119	Identification of distributed-parameter systems with missing data. , 2012, , .		4
120	Experience Replay for Real-Time Reinforcement Learning Control. IEEE Transactions on Systems, Man and Cybernetics, Part C: Applications and Reviews, 2012, 42, 201-212.	2.9	165
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128	Adaptive fuzzy and sliding-mode control of a robot manipulator with varying payload., 2011,,.		10
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130	DETERMINATION OF HYDROCORTISONE IN PHARMACEUTICAL DRUG BY TLC WITH DENSITOMETRIC DETECTION IN UV. Journal of Liquid Chromatography and Related Technologies, 2011, 34, 753-769.	1.0	15
131	Optimal gait switching for legged locomotion. , 2011, , .		5
132	Cross-Entropy Optimization of Control Policies With Adaptive Basis Functions. IEEE Transactions on Systems, Man, and Cybernetics, 2011, 41, 196-209.	5.0	58
133	Actor-Critic Control with Reference Model Learning. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2011, 44, 14723-14728.	0.4	11
134	Stability analysis and observer design for string-connected TS systems. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2011, 44, 12795-12800.	0.4	2
135	Convergence Analysis of Ant Colony Learning. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2011, 44, 14693-14698.	0.4	0
136	Performance improvement of a drop-on-demand inkjet printhead using an optimization-based feedforward control method. Control Engineering Practice, 2011, 19, 771-781.	5.5	53
137	Erratum to "Adaptive observers for TS fuzzy systems with unknown polynomial inputs―[Fuzzy Sets and Systems 161 (2010) 2043–2065]. Fuzzy Sets and Systems, 2011, 171, 106-107.	2.7	1
138	Sequential stability analysis and observer design for distributed TS fuzzy systems. Fuzzy Sets and Systems, 2011, 174, 1-30.	2.7	16
139	Stability Analysis and Nonlinear Observer Design Using Takagi-Sugeno Fuzzy Models. Studies in Fuzziness and Soft Computing, $2011, \ldots$	0.8	137
140	Drop-on-demand inkjet printhead performance improvement using robust feedforward control. , 2011, , .		4
141	On distributed maximization of algebraic connectivity in robotic networks. , 2011, , .		18
142	Towards automation of control software: A review of challenges in mechatronic design. Mechatronics, 2010, 20, 876-886.	3.3	64
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145	Adaptive observers for TS fuzzy systems with unknown polynomial inputs. Fuzzy Sets and Systems, 2010, 161, 2043-2065.	2.7	84
146	Fuzzy models and observers for freeway traffic state tracking. , 2010, , .		4
147	Optimization-based feedforward control for a Drop-on-Demand inkjet printhead. , 2010, , .		6
148	Generalized pheromone update for Ant Colony Learning in continuous state spaces. , 2010, , .		0
149	Control delay in Reinforcement Learning for real-time dynamic systems: A memoryless approach. , 2010,		24
150	Motion estimation based on predator/prey vision. , 2010, , .		4
151	Distributed nonlinear estimation for robot localization using weighted consensus. , 2010, , .		35
152	Multi-agent Reinforcement Learning: An Overview. Studies in Computational Intelligence, 2010, , 183-221.	0.9	278
153	Using prior knowledge to accelerate online least-squares policy iteration. , 2010, , .		6
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156	Ant Colony Optimization for traffic dispersion routing. , 2010, , .		25
157	On non-PDC local observers for TS fuzzy systems. , 2010, , .		13
158	Online self-organizing adaptive fuzzy controller: Application to a nonlinear servo system. , 2010, , .		11
159	Fuzzy observer for state estimation of the METANET traffic model. , 2010, , .		9
160	Particle filters for estimating average grain diameter of material excavated by hopper dredger. , 2010, , .		6
161	Online least-squares policy iteration for reinforcement learning control. , 2010, , .		39
162	Approximate Dynamic Programming and Reinforcement Learning. Studies in Computational Intelligence, 2010, , 3-44.	0.9	9

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163	Ant Colony Learning Algorithm for Optimal Control. Studies in Computational Intelligence, 2010, , 155-182.	0.9	2
164	Toward a flexible control design framework to automatically generate control code for mechatronic systems. , 2009, , .		6
165	Fuzzy Ant Colony Optimization for optimal control. , 2009, , .		15
166	Novel ant colony optimization approach to optimal control. International Journal of Intelligent Computing and Cybernetics, 2009, 2, 414-434.	2.7	10
167	Model-based pH monitor for sensor assessment. Water Science and Technology, 2009, 60, 709-715.	2.5	3
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170	Stability of Cascaded Fuzzy Systems and Observers. IEEE Transactions on Fuzzy Systems, 2009, 17, 641-653.	9.8	49
171	Model-Based Dosing Control of a Pellet Softening Reactor. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2009, 42, 267-272.	0.4	7
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173	Decentralized estimation of overflow losses in a hopper dredger. Control Engineering Practice, 2008, 16, 392-406.	5 . 5	6
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175	Adaptive fuzzy control of a non-linear servo-drive: Theory and experimental results. Engineering Applications of Artificial Intelligence, 2008, 21, 846-857.	8.1	39
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178	Ant Colony Optimization for optimal control. , 2008, , .		7
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180	Stability analysis and observer design for decentralized TS fuzzy systems. , 2008, , .		6

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181	A semi-supervised method to detect seismic random noise with fuzzy GK clustering. Journal of Geophysics and Engineering, 2008, 5, 457-468.	1.4	20
182	A general modeling framework for swarms. , 2008, , .		5
183	Distributed Controller Design Approach to Dynamic Speed Limit Control against Shockwaves on Freeways. Transportation Research Record, 2008, 2086, 93-99.	1.9	36
184	Fuzzy Partition Optimization for Approximate Fuzzy Q-iteration. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2008, 41, 5629-5634.	0.4	5
185	Dynamic modelling for optimisation of pellet softening. Journal of Water Supply: Research and Technology - AQUA, 2008, 57, 45-56.	1.4	14
186	Continuous-State Reinforcement Learning with Fuzzy Approximation. Lecture Notes in Computer Science, 2008, , 27-43.	1.3	12
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189	Stability of Cascaded Takagi-Sugeno Fuzzy Systems. IEEE International Conference on Fuzzy Systems, 2007, , .	0.0	5
190	Complexity Management in Fuzzy Systems: A Rule Base Compression Approach [Book Review]. IEEE Computational Intelligence Magazine, 2007, 2, 42-43.	3.2	1
191	Multi-Agent Reinforcement Learning: A Survey. , 2006, , .		64
192	Dynamic Exploration in Q(λ)-learning. , 2006, , .		1
193	Virtual Sensor for the Angle-of-Attack Signal in Small Commercial Aircraft. , 2006, , .		23
194	Optimal flow distribution over multiple parallel pellet reactors: a model-based approach. Water Science and Technology, 2006, 53, 493-501.	2.5	10
195	Design of a gain-scheduling mechanism for flight control laws by fuzzy clustering. Control Engineering Practice, 2006, 14, 769-781.	5.5	30
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197	Genetic polynomial regression as input selection algorithm for non-linear identification. Soft Computing, 2006, 10, 785-795.	3.6	17
198	A Fuzzy-logic System for Detecting Oscillations in Control Loops. , 2006, , .		4

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199	Decentralized Reinforcement Learning Control of a Robotic Manipulator., 2006,,.		25
200	Reinforcement Learning Control for Biped Robot Walking on Uneven Surfaces., 2006,,.		9
201	Particle filtering for on-line estimation of overflow losses in a hopper dredger. , 2006, , .		9
202	HYBRID CONTROL DESIGN FOR A ROBOT MANIPULATOR IN A SHIELD TUNNELING MACHINE. , 2006, , 143-150.		4
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206	Evolutionary input selection for the non-linear identification of complex processes. Computers and Electronics in Agriculture, 2005, 49, 441-451.	7.7	2
207	Integrated operation of drinking water treatment plant at Amsterdam water supply. Water Science and Technology: Water Supply, 2004, 4, 263-270.	2.1	14
208	Engine load prediction in off-road vehicles using multi-objective nonlinear identification. Control Engineering Practice, 2004, 12, 615-624.	5.5	6
209	Input Selection for Nonlinear Regression Models. IEEE Transactions on Fuzzy Systems, 2004, 12, 688-696.	9.8	81
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211	Genetic polynomial regression as input selection algorithm for engine load prediction in combine harvesters. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2004, 37, 81-85.	0.4	1
212	Intelligent adaptive control of bioreactors. Journal of Intelligent Manufacturing, 2003, 14, 255-265.	7.3	20
213	Computer-controlled mechanical simulation of the artificially ventilated human respiratory system. IEEE Transactions on Biomedical Engineering, 2003, 50, 731-743.	4.2	45
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