Todd D Murphey

List of Publications by Year
in descending order

163	2,160	331538	345118
papers	citations	21 h-index	36 g-index

169	169	169	1408
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Hybrid control for combining model-based and model-free reinforcement learning. International Journal of Robotics Research, 2023, 42, 337-355.	5.8	3
2	Generalized Proximal Methods forÂPose Graph Optimization. Springer Proceedings in Advanced Robotics, 2022, , 393-409.	0.9	2
3	Ergodic Shared Control: Closing the Loop on pHRI Based on Information Encoded in Motion. ACM Transactions on Human-Robot Interaction, 2022, 11, 1-20.	3.2	1
4	Memristor Circuits for Colloidal Robotics: Temporal Access to Memory, Sensing, and Actuation. Advanced Intelligent Systems, 2022, 4, .	3.3	8
5	Mechanical intelligence for learning embodied sensor-object relationships. Nature Communications, 2022, 13, .	5.8	3
6	Autoperforation of two-dimensional materials to generate colloidal state machines capable of locomotion. Faraday Discussions, 2021, 227, 213-232.	1.6	7
7	Hybrid Control for Learning Motor Skills. Springer Proceedings in Advanced Robotics, 2021, , 450-466.	0.9	2
8	Information Requirements of Collision-Based Micromanipulation. Springer Proceedings in Advanced Robotics, 2021, , 210-226.	0.9	5
9	Low rattling: A predictive principle for self-organization in active collectives. Science, 2021, 371, 90-95.	6.0	44
10	An Ergodic Measure for Active Learning From Equilibrium. IEEE Transactions on Automation Science and Engineering, 2021, 18, 917-931.	3.4	11
11	A dynamical model for generating synthetic data to quantify active tactile sensing behavior in the rat. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	3.3	4
12	Algorithmic Design for Embodied Intelligence in Synthetic Cells. IEEE Transactions on Automation Science and Engineering, 2021, 18, 864-875.	3.4	3
13	Active learning in robotics: A review of control principles. Mechatronics, 2021, 77, 102576.	2.0	27
14	Derivative-Based Koopman Operators for Real-Time Control of Robotic Systems. IEEE Transactions on Robotics, 2021, 37, 2173-2192.	7.3	48
15	Automatic Tuning for Data-driven Model Predictive Control. , 2021, , .		12
16	Ergodic imitation: Learning from what to do and what not to do. , 2021, , .		8
17	Mechanical computing. Nature, 2021, 598, 39-48.	13.7	101
18	Control-oriented Modeling of Soft Robotic Swimmer with Koopman Operators. , 2020, , .		8

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19	Shoulder abduction loading affects motor coordination in individuals with chronic stroke, informing targeted rehabilitation. , 2020, , .		3
20	CPL-SLAM: Efficient and Certifiably Correct Planar Graph-Based SLAM Using the Complex Number Representation. IEEE Transactions on Robotics, 2020, 36, 1719-1737.	7.3	18
21	Data-driven Koopman operators for model-based shared control of humanâ€“machine systems. International Journal of Robotics Research, 2020, 39, 1178-1195.	5.8	23
22	Task-based hybrid shared control for training through forceful interaction. International Journal of Robotics Research, 2020, 39, 1138-1154.	5.8	9
23	Model-Based Generalization Under Parameter Uncertainty Using Path Integral Control. IEEE Robotics and Automation Letters, 2020, 5, 2864-2871.	3.3	17
24	Experimental Applications of the Koopman Operator in Active Learning for Control. Lecture Notes in Control and Information Sciences, 2020, , 421-450.	0.6	5
25	Low Complexity Control Policy Synthesis for Embodied Computation in Synthetic Cells. Springer Proceedings in Advanced Robotics, 2020, , 602-618.	0.9	3
26	Efficient Computation of Higher-Order Variational Integrators in Robotic Simulation and Trajectory Optimization. Springer Proceedings in Advanced Robotics, 2020, , 689-706.	0.9	1
27	Tuning movement for sensing in an uncertain world. ELife, 2020, 9, .	2.8	18
28	Operation and Imitation Under Safety-Aware Shared Control. Springer Proceedings in Advanced Robotics, 2020, , 905-920.	0.9	4
29	Active Area Coverage from Equilibrium. Springer Proceedings in Advanced Robotics, 2020, , 284-300.	0.9	0
30	Autonomous Visual Rendering using Physical Motion. Springer Proceedings in Advanced Robotics, 2020, , 80-95.	0.9	1
31	Majorization Minimization Methods for Distributed Pose Graph Optimization with Convergence Guarantees. , 2020, , .		12
32	Bayesian Particles on Cyclic Graphs. , 2020, , .		1
33	Active Learning of Dynamics for Data-Driven Control Using Koopman Operators. IEEE Transactions on Robotics, 2019, 35, 1071-1083.	7.3	92
34	Data-Driven Gait Segmentation for Walking Assistance in a Lower-Limb Assistive Device. , 2019, , .		5
35	A robot made of robots: Emergent transport and control of a smarticle ensemble. Science Robotics, 2019, 4, .	9.9	53
36	Ergodicity reveals assistance and learning from physical human-robot interaction. Science Robotics, 2019, 4, .	9.9	10

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37	Efficient and Guaranteed Planar Pose Graph optimization Using the Complex Number Representation. , 2019, , .		8
38	Structureâ€preserving local optimal control of mechanical systems. Optimal Control Applications and Methods, 2019, 40, 310-329.	1.3	9
39	Algorithmic materials: Embedding computation within material properties for autonomy. , 2019, , 197-221.		3
40	Dynamical System Segmentation for Information Measures in Motion. IEEE Robotics and Automation Letters, 2019, 4, 169-176.	3.3	8
41	Iterative Sequential Action Control for Stable, Model-Based Control of Nonlinear Systems. IEEE Transactions on Automatic Control, 2019, 64, 3170-3183.	3.6	6
42	Adaptive Single Action Control Policies for Linearly Parameterized Systems. , 2019, , .		1
43	Real-Time Area Coverage and Target Localization Using Receding-Horizon Ergodic Exploration. IEEE Transactions on Robotics, 2018, 34, 62-80.	7.3	59
44	Decentralized Ergodic Control: Distribution-Driven Sensing and Exploration for Multiagent Systems. IEEE Robotics and Automation Letters, 2018, 3, 2987-2994.	3.3	20
45	Superlinear Convergence Using Controls Based on Second-Order Needle Variations. , 2018, , .		2
46	Ergodic Exploration for Adaptive Sampling of Water Columns Using Gliding Robotic Fish. , 2018, , .		3
47	Feedback synthesis for underactuated systems using sequential second-order needle variations. International Journal of Robotics Research, 2018, 37, 1826-1853.	5.8	14
48	Ergodic Exploration Using Binary Sensing for Nonparametric Shape Estimation. IEEE Robotics and Automation Letters, 2017, 2, 827-834.	3.3	21
49	Variational Integrators for Structure-Preserving Filtering. Journal of Computational and Nonlinear Dynamics, 2017, 12, .	0.7	4
50	Massive increase in visual range preceded the origin of terrestrial vertebrates. Proceedings of the National Academy of Sciences of the United States of America, 2017, 114, E2375-E2384.	3.3	78
51	Trajectory planning and tracking of robotic fish using ergodic exploration. , 2017, , .		6
52	Hybrid control for tracking of invariant manifolds. Nonlinear Analysis: Hybrid Systems, 2017, 25, 298-311.	2.1	2
53	Dynamic Task Execution Using Active Parameter Identification With the Baxter Research Robot. IEEE Transactions on Automation Science and Engineering, 2017, 14, 391-397.	3.4	17
54	Trust Adaptation Leads to Lower Control Effort in Shared Control of Crane Automation. IEEE Robotics and Automation Letters, 2017, 2, 239-246.	3.3	10

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55	Variational integrators for open-loop and closed-loop optimal control of mechanical systems. Proceedings in Applied Mathematics and Mechanics, 2017, 17, 791-792.	0.2	2
56	Decentralized and recursive identification for cooperative manipulation of unknown rigid body with local measurements. , 2017, , .		4
57	Assistive Optimal Control-on-Request with Application in Standing Balance Therapy and Reinforcement. , 2017, , 131-151.		0
58	Automatic synthesis of control alphabet policies. , 2016, , .		3
59	Sensory Agreement Guides Kinetic Energy Optimization of Arm Movements during Object Manipulation. PLoS Computational Biology, 2016, 12, e1004861.	1.5	16
60	Discrete Lagrangian mechanics for nonseparable nonsmooth systems. International Journal for Numerical Methods in Engineering, 2016, 105, 440-463.	1.5	1
61	Real-Time Dynamic-Mode Scheduling Using Single-Integration Hybrid Optimization. IEEE Transactions on Automation Science and Engineering, 2016, 13, 1385-1398.	3.4	10
62	On the benefits of surrogate Lagrangians in optimal control and planning algorithms. , 2016, , .		1
63	Ergodic exploration with stochastic sensor dynamics. , 2016, , .		5
64	Optimal human-in-the-loop interfaces based on Maxwell's Demon. , 2016, , .		10
65	Augmenting sensorimotor control using â€œgoal-awareâ€•vibrotactile stimulation during reaching and manipulation behaviors. Experimental Brain Research, 2016, 234, 2403-2414.	0.7	16
66	Sequential Action Control: Closed-Form Optimal Control for Nonlinear and Nonsmooth Systems. IEEE Transactions on Robotics, 2016, 32, 1196-1214.	7.3	62
67	Sequential Action Control for models of underactuated underwater vehicles in a planar ideal fluid. , 2016, , .		8
68	Lowâ€Infrastructure Realâ€Time Embedded Control via Variational Integrators. Proceedings in Applied Mathematics and Mechanics, 2016, 16, 949-952.	0.2	0
69	Model-Based Reactive Control for Hybrid and High-Dimensional Robotic Systems. IEEE Robotics and Automation Letters, 2016, 1, 431-438.	3.3	10
70	Ergodic Exploration of Distributed Information. IEEE Transactions on Robotics, 2016, 32, 36-52.	7.3	79
71	Minimum sensitivity control for planning with parametric and hybrid uncertainty. International Journal of Robotics Research, 2016, 35, 823-839.	5.8	10
72	Optimal planning for target localization and coverage using range sensing. , 2015, , .		14

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73	Control-on-request: Short-burst assistive control for long time horizon improvement. , 2015, , .		8
74	Real-time trajectory synthesis for information maximization using Sequential Action Control and least-squares estimation. , 2015, , .		10
75	Power Network Regulation Benchmark for Switched-Mode Optimal Control. IFAC-PapersOnLine, 2015, 48, 280-285.	0.5	0
76	Structured linearization of discrete mechanical systems on Lie groups: A synthesis of analysis and control. , 2015, , .		5
77	Symplectic integration for optimal ergodic control. , 2015, , .		4
78	Controllers as filters: Noise-driven swing-up control based on Maxwell's demon. , 2015, , .		8
79	Variational integrators in linear optimal filtering. , 2015, , .		2
80	Maximizing fisher information using discrete mechanics and projection-based trajectory optimization. , 2015, , .		3
81	Trajectory Optimization for Well-Conditioned Parameter Estimation. IEEE Transactions on Automation Science and Engineering, 2015, 12, 28-36.	3.4	19
82	Structured Linearization of Discrete Mechanical Systems for Analysis and Optimal Control. IEEE Transactions on Automation Science and Engineering, 2015, 12, 140-152.	3.4	25
83	The Geography of Fatty Infiltrates Within the Cervical Multifidus and Semispinalis Cervicis in Individuals With Chronic Whiplash-Associated Disorders. Journal of Orthopaedic and Sports Physical Therapy, 2015, 45, 281-288.	1.7	43
84	Tactile proprioceptive input in robotic rehabilitation after stroke. , 2015, , .		21
85	A variational derivation of LQR for piecewise time-varying systems. , 2015, , .		0
86	Optimal control-on-request: An application in real-time assistive balance control. , 2015, , .		8
87	Improving object tracking through distributed exploration of an information map. , 2014, , .		2
88	Extending filter performance through structured integration. , 2014, , .		5
89	Trajectory Synthesis for Fisher Information Maximization. IEEE Transactions on Robotics, 2014, 30, 1358-1370.	7.3	27
90	Effects of optimal tactile feedback in balancing tasks: A pilot study. , 2014, , .		7

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91	Single-integration mode scheduling for linear time-varying switched systems. , 2014, , .		1
92	Continuous-time optimal control of impacting mechanical systems via a projected Hamilton's principle. , 2014, , .		1
93	A Propagative Model of Simultaneous Impact: Existence, Uniqueness, and Design Consequences. IEEE Transactions on Automation Science and Engineering, 2014, 11, 154-168.	3.4	1
94	Local E-optimality conditions for trajectory design to estimate parameters in nonlinear systems. , 2014, 2014, 443-450.		2
95	Modeling Forces and Moments at the Base of a Rat Vibrissa during Noncontact Whisking and Whisking against an Object. Journal of Neuroscience, 2014, 34, 9828-9844.	1.7	66
96	A projected Lagrange-d'Alembert principle for forced nonsmooth mechanics and optimal control. , 2013, , .		1
97	Feature Localization Using Kinematics and Impulsive Hybrid Optimization. IEEE Transactions on Automation Science and Engineering, 2013, 10, 957-968.	3.4	0
98	Simultaneous Optimal Estimation of Mode Transition Times and Parameters Applied to Simple Traction Models. IEEE Transactions on Robotics, 2013, 29, 1496-1503.	7.3	4
99	Trajectory optimization for continuous ergodic exploration on the motion group SE(2). , 2013, , .		11
100	Optimization for discretized switched systems. Proceedings in Applied Mathematics and Mechanics, 2013, 13, 401-402.	0.2	0
101	Minimal parametric sensitivity trajectories for nonlinear systems. , 2013, , .		3
102	Optimal trajectory design for well-conditioned parameter estimation. , 2013, , .		1
103	Optimal planning for information acquisition. , 2013, , .		15
104	Trajectory optimization for continuous ergodic exploration. , 2013, , .		37
105	Second-order switching time and magnitude optimization for impulsive hybrid systems. , 2013, , .		1
106	Minimal sensitivity control for hybrid environments. , 2013, , .		1
107	Embedded control synthesis using one-step methods in discrete mechanics. , 2013, , .		3
108	Discretized switching time optimization problems. , 2013, , .		5

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109	Optimal contact decisions for ergodic exploration. , 2012, , .		4
110	Simultaneous optimal parameter and mode transition time estimation. , 2012, , .		4
111	Variational nonsmooth mechanics via a projected Hamilton's principle. , 2012, , .		6
112	Linear time-varying impulse optimization for data association. , 2012, , .		0
113	Conditions for uniqueness in simultaneous impact with application to mechanical design. , 2012, , .		3
114	Global projections for variational nonsmooth mechanics. , 2012, , .		4
115	Trajectory tracking among landmarks and binary sensor-beams. , 2012, , .		4
116	Trajectory generation for underactuated control of a suspended mass. , 2012, , .		19
117	Switching time optimization in discretized hybrid dynamical systems. , 2012, , .		14
118	Single Integration Optimization of Linear Time-Varying Switched Systems. IEEE Transactions on Automatic Control, 2012, 57, 1592-1597.	3.6	21
119	Second-Order Switching Time Optimization for Nonlinear Time-Varying Dynamic Systems. IEEE Transactions on Automatic Control, 2011, 56, 1953-1957.	3.6	41
120	Constructing and Implementing Motion Programs for Robotic Marionettes. IEEE Transactions on Automatic Control, 2011, 56, 902-907.	3.6	9
121	A backwards error analysis approach for simulation and control of nonsmooth mechanical systems. , 2011, , .		6
122	Switching mode generation and optimal estimation with application to skid-steering. Automatica, 2011, 47, 50-64.	3.0	65
123	Impulsive data association with an unknown number of targets. , 2011, , .		4
124	Optimal motion planning for a class of hybrid dynamical systems with impacts. , 2011, , .		9
125	Trajectory optimization estimator for impulsive data association. , 2011, , .		2
126	Control aesthetics in software architecture for robotic marionettes. , 2011, , .		6

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127	Variational solutions to simultaneous collisions between multiple rigid bodies. , 2010, , .		9
128	Second-order DMOC using projection. , 2010, , .		6
129	Stochastic sampling based data association. , 2010, , .		0
130	Impulse optimization for data association. , 2010, , .		5
131	Linearizations for mechanical systems in generalized coordinates. , 2010, , .		5
132	Geometric integration of impact during an orbital docking procedure. , 2010, , .		0
133	Local planning using switching time optimization. , 2010, , .		1
134	Multiple Instantaneous Collisions in a Variational Framework. , 2009, , .		3
135	Dangers of two-point holonomic constraints for variational integrators. , 2009, , .		3
136	Second order switching time optimization for time-varying nonlinear systems. , 2009, , .		9
137	Scalable Variational Integrators for Constrained Mechanical Systems in Generalized Coordinates. IEEE Transactions on Robotics, 2009, 25, 1249-1261.	7.3	57
138	Automated trajectory synthesis from animation data using trajectory optimization. , 2009, , .		1
139	A Variational Approach to Strand-Based Modeling of the Human Hand. Springer Tracts in Advanced Robotics, 2009, , 151-166.	0.3	9
140	Teaching Rigid Body Mechanics Using Student-Created Virtual Environments. IEEE Transactions on Education, 2008, 51, 45-52.	2.0	9
141	Convergence-Preserving Switching for Topology-Dependent Decentralized Systems. IEEE Transactions on Robotics, 2008, 24, 1405-1415.	7.3	44
142	Data association with ambiguous measurements. , 2008, , .		0
143	Adaptive cooperative manipulation with intermittent contact. , 2008, , .		3
144	Filtering of interaction rules in cooperation. , 2008, , .		1

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145	Discrete and continuous mechanics for tree representations of mechanical systems. , 2008, , .		9
146	Teaching Rigid Body Mechanics Using Student-Created Virtual Environments. Proceedings of the American Control Conference, 2007, , .	0.0	1
147	Switching Rules for Decentralized Control with Simple Control Laws. Proceedings of the American Control Conference, 2007, , .	0.0	19
148	Kinematic reductions for uncertain mechanical contact. Robotica, 2007, 25, 751-764.	1.3	5
149	Geometric Derived Information Spaces in Manipulation with Mechanical Contact. , 2007, , .		0
150	Dynamic Modeling and Motion Planning for Marionettes: Rigid Bodies Articulated by Massless Strings. Proceedings - IEEE International Conference on Robotics and Automation, 2007, , .	0.0	21
151	Motion Programs for Puppet Choreography and Control. Lecture Notes in Computer Science, 2007, , 190-202.	1.0	18
152	Feedback Control for Distributed Manipulation. Springer Tracts in Advanced Robotics, 2004, , 487-503.	0.3	0
153	Control of Nonprehensile Manipulation. , 2003, , 39-57.		28
154	Online Feedback Control for Input-Saturated Robotic Systems on Lie Groups. , 0, , .		7
155	Learning Models for Shared Control of Human-Machine Systems with Unknown Dynamics. , 0, , .		32
156	Model-Based Control Using Koopman Operators. , 0, , .		62
157	Online User Assessment for Minimal Intervention During Task-Based Robotic Assistance. , 0, , .		9
158	Highly Parallelized Data-Driven MPC for Minimal Intervention Shared Control. , 0, , .		18
159	Local Koopman Operators for Data-Driven Control of Robotic Systems. , 0, , .		42
160	Ergodic Specifications for Flexible Swarm Control: From User Commands to Persistent Adaptation. , 0, , .		6
161	Feedback Synthesis for Controllable Underactuated Systems using Sequential Second Order Actions. , 0, , .		0
162	Data-Driven Measurement Models for Active Localization in Sparse Environments. , 0, , .		6

#	Article	IF	Citations
163	Programming Play. , 0, , .		0