

# Howard Choset

## List of Publications by Year in descending order

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156  
papers

7,530  
citations

109137

35  
h-index

82410

72  
g-index

163  
all docs

163  
docs citations

163  
times ranked

4650  
citing authors

#	ARTICLE	IF	CITATIONS
1	Continuum Robots for Medical Applications: A Survey. IEEE Transactions on Robotics, 2015, 31, 1261-1280.	7.3	1,005
2	Coverage for robotics – A survey of recent results. Annals of Mathematics and Artificial Intelligence, 2001, 31, 113-126.	0.9	892
3	Coverage of Known Spaces: The Boustrophedon Cellular Decomposition. Autonomous Robots, 2000, 9, 247-253.	3.2	340
4	Morse Decompositions for Coverage Tasks. International Journal of Robotics Research, 2002, 21, 331-344.	5.8	223
5	Sidewinding with minimal slip: Snake and robot ascent of sandy slopes. Science, 2014, 346, 224-229.	6.0	209
6	Subdimensional expansion for multirobot path planning. Artificial Intelligence, 2015, 219, 1-24.	3.9	202
7	A review on locomotion robophysics: the study of movement at the intersection of robotics, soft matter and dynamical systems. Reports on Progress in Physics, 2016, 79, 110001.	8.1	197
8	Parameterized and Scripted Gaits for Modular Snake Robots. Advanced Robotics, 2009, 23, 1131-1158.	1.1	194
9	Design of a modular snake robot. , 2007, , .		167
10	Efficient Boustrophedon Multi-Robot Coverage: an algorithmic approach. Annals of Mathematics and Artificial Intelligence, 2008, 52, 109-142.	0.9	151
11	PRIMAL: Pathfinding via Reinforcement and Imitation Multi-Agent Learning. IEEE Robotics and Automation Letters, 2019, 4, 2378-2385.	3.3	149
12	M*: A complete multirobot path planning algorithm with performance bounds. , 2011, , .		128
13	Sensor-based Coverage of Unknown Environments: Incremental Construction of Morse Decompositions. International Journal of Robotics Research, 2002, 21, 345-366.	5.8	126
14	A Highly Articulated Robotic Surgical System for Minimally Invasive Surgery. Annals of Thoracic Surgery, 2009, 87, 1253-1256.	0.7	105
15	Geometric motion planning: The local connection, Stokes’s theorem, and the importance of coordinate choice. International Journal of Robotics Research, 2011, 30, 988-1014.	5.8	89
16	Generating gaits for snake robots: annealed chain fitting and keyframe wave extraction. Autonomous Robots, 2010, 28, 271-281.	3.2	86
17	Continuum Robots for Medical Interventions. Proceedings of the IEEE, 2022, 110, 847-870.	16.4	80
18	Modulation of orthogonal body waves enables high maneuverability in sidewinding locomotion. Proceedings of the National Academy of Sciences of the United States of America, 2015, 112, 6200-6205.	3.3	78

#	ARTICLE	IF	CITATIONS
19	Tail use improves performance on soft substrates in models of early vertebrate land locomotors. Science, 2016, 353, 154-158.	6.0	78
20	Pipe Network Locomotion with a Snake Robot. Journal of Field Robotics, 2016, 33, 322-336.	3.2	76
21	Geometric Motion Planning Analysis for Two Classes of Underactuated Mechanical Systems. International Journal of Robotics Research, 2007, 26, 1043-1073.	5.8	75
22	Design and architecture of a series elastic snake robot. , 2014, , .		74
23	A transoral highly flexible robot. Laryngoscope, 2012, 122, 1067-1071.	1.1	71
24	Demonstration of transoral surgery in cadaveric specimens with the medrobotics flex system. Laryngoscope, 2013, 123, 1168-1172.	1.1	67
25	Geometric Visualization of Self-Propulsion in a Complex Medium. Physical Review Letters, 2013, 110, 078101.	2.9	63
26	An optimization approach to planning for mobile manipulation. , 2008, , .		58
27	Valet parking without a valet. , 2007, , .		55
28	Using response surfaces and expected improvement to optimize snake robot gait parameters. , 2011, , .		55
29	Geometric Swimming at Low and High Reynolds Numbers. IEEE Transactions on Robotics, 2013, 29, 615-624.	7.3	53
30	Snake Robot Urban Search After the 2017 Mexico City Earthquake. , 2018, , .		49
31	Probabilistic path planning for multiple robots with subdimensional expansion. , 2012, , .		45
32	Kinematic gait synthesis for snake robots. International Journal of Robotics Research, 2016, 35, 100-113.	5.8	45
33	Three degrees-of-freedom joint for spatial hyper-redundant robots. Mechanism and Machine Theory, 2006, 41, 170-190.	2.7	44
34	Towards a Unified Approach to Motion Planning for Dynamic Underactuated Mechanical Systems with Non-holonomic Constraints. International Journal of Robotics Research, 2007, 26, 1075-1124.	5.8	44
35	Distributed Reinforcement Learning for Multi-robot Decentralized Collective Construction. Springer Proceedings in Advanced Robotics, 2019, , 35-49.	0.9	41
36	Survey on Urban Search and Rescue Robots. Journal of the Robotics Society of Japan, 2004, 22, 582-586.	0.0	40

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37	Courteous Cars. IEEE Robotics and Automation Magazine, 2008, 15, 30-38.	2.2	40
38	Distributed Learning of Decentralized Control Policies for Articulated Mobile Robots. IEEE Transactions on Robotics, 2019, 35, 1109-1122.	7.3	40
39	Relative localization using path odometry information. Autonomous Robots, 2006, 21, 143-154.	3.2	37
40	Shape-based coordination in locomotion control. International Journal of Robotics Research, 2018, 37, 1253-1268.	5.8	35
41	Shape estimation for image-guided surgery with a highly articulated snake robot. , 2011, , .		33
42	Coordination of back bending and leg movements for quadrupedal locomotion. , 0, , .		33
43	Ergodic coverage in constrained environments using stochastic trajectory optimization. , 2017, , .		31
44	Flow-Through Policies for Hybrid Controller Synthesis Applied to Fully Actuated Systems. IEEE Transactions on Robotics, 2009, 25, 136-146.	7.3	30
45	Virtual chassis for snake robots. , 2011, , .		29
46	Gait-based compliant control for snake robots. , 2013, , .		29
47	Surprising simplicities and syntheses in limbless self-propulsion in sand. Journal of Experimental Biology, 2020, 223, .	0.8	29
48	Motion estimation of snake robots in straight pipes. , 2013, , .		28
49	A unified Bayesian framework for global localization and SLAM in hybrid metric/topological maps. International Journal of Robotics Research, 2012, 31, 271-288.	5.8	27
50	Science for robotics and robotics for science. Science Robotics, 2016, 1, .	9.9	27
51	Visual sensing for developing autonomous behavior in snake robots. , 2014, , .		26
52	Virtual Chassis for Snake Robots: Definition and Applications. Advanced Robotics, 2012, 26, 2043-2064.	1.1	25
53	Simplified motion modeling for snake robots. , 2012, , .		25
54	Expensive multiobjective optimization for robotics. , 2013, , .		25

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55	Iterated filters for bearing-only SLAM. , 2008, , .		24
56	ODrM* optimal multirobot path planning in low dimensional search spaces. , 2013, , .		24
57	Torque control strategies for snake robots. , 2014, , .		24
58	Using Bayesian optimization to guide probing of a flexible environment for simultaneous registration and stiffness mapping. , 2016, , .		23
59	Central Pattern Generator With Inertial Feedback for Stable Locomotion and Climbing in Unstructured Terrain. , 2018, , .		22
60	Snakes on a plan: Toward combining planning and control. , 2013, , .		21
61	Probabilistic pose estimation using a Bingham distribution-based linear filter. International Journal of Robotics Research, 2018, 37, 1610-1631.	5.8	21
62	Shape-Based Compliance in Locomotion. , 0, , .		20
63	Hybrid localization using the hierarchical atlas. , 2007, , .		19
64	Complementary model update: A method for simultaneous registration and stiffness mapping in flexible environments. , 2016, , .		19
65	Integrating planning and control for single-bodied wheeled mobile robots. Autonomous Robots, 2011, 30, 243-264.	3.2	18
66	A Novel, New Robotic Platform for Natural Orifice Distal Pancreatectomy. Surgical Innovation, 2015, 22, 274-282.	0.4	18
67	Shape-based compliant control with variable coordination centralization on a snake robot. , 2016, , .		17
68	Utility-Guided Palpation for Locating Tissue Abnormalities. IEEE Robotics and Automation Letters, 2017, 2, 864-871.	3.3	17
69	Directional Compliance in Obstacle-Aided Navigation for Snake Robots. , 2020, , .		17
70	FusionVLAD: A Multi-View Deep Fusion Networks for Viewpoint-Free 3D Place Recognition. IEEE Robotics and Automation Letters, 2021, 6, 2304-2310.	3.3	17
71	A dynamic single actuator vertical climbing robot. , 2007, , .		16
72	Frictional Compliance Model Development and Experiments for Snake Robot Climbing. Proceedings - IEEE International Conference on Robotics and Automation, 2007, , .	0.0	16

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73	A multi-hypothesis topological SLAM approach for loop closing on edge-ordered graphs. , 2009, , .		16
74	Conical sidewinding. , 2012, , .		16
75	Modeling rolling gaits of a snake robot. , 2015, , .		16
76	Frequency modulation of body waves to improve performance of sidewinding robots. International Journal of Robotics Research, 2021, 40, 1547-1562.	5.8	16
77	Adapting control policies for expensive systems to changing environments. , 2011, , .		15
78	Design and Open-Loop Control of the ParkourBot, a Dynamic Climbing Robot. IEEE Transactions on Robotics, 2014, 30, 705-718.	7.3	15
79	Coordination of lateral body bending and leg movements for sprawled posture quadrupedal locomotion. International Journal of Robotics Research, 2021, 40, 747-763.	5.8	15
80	DSAC - Dynamic, Single Actuated Climber: Local stability and bifurcations. , 2010, , .		14
81	The ParkourBot - a dynamic BowLeg climbing robot. , 2011, , .		14
82	Kinematic Cartography and the Efficiency of Viscous Swimming. IEEE Transactions on Robotics, 2017, 33, 523-535.	7.3	14
83	Task-Specific Manipulator Design and Trajectory Synthesis. IEEE Robotics and Automation Letters, 2019, 4, 301-308.	3.3	14
84	Exploring Large and Complex Environments Fast and Efficiently. , 2021, , .		14
85	Multi-Objective Path-Based D* Lite. IEEE Robotics and Automation Letters, 2022, 7, 3318-3325.	3.3	14
86	Locomotive reduction for snake robots. , 2015, , .		13
87	Locomotion of a multi-link non-holonomic snake robot with passive joints. International Journal of Robotics Research, 2020, 39, 598-616.	5.8	13
88	State estimation for snake robots. , 2011, , .		12
89	Reconstruction of Backbone Curves for Snake Robots. IEEE Robotics and Automation Letters, 2021, 6, 3264-3270.	3.3	12
90	SeqSphereVLAD: Sequence Matching Enhanced Orientation-invariant Place Recognition. , 2020, , .		12

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91	Multi-Objective Safe-Interval Path Planning With Dynamic Obstacles. IEEE Robotics and Automation Letters, 2022, 7, 8154-8161.	3.3	12
92	Using Lie algebra for shape estimation of medical snake robots. , 2014, , .		11
93	A general locomotion control framework for multi-legged locomotors. Bioinspiration and Biomimetics, 2022, 17, 046015.	1.5	11
94	Autonomous Ultrasound Scanning using Bayesian Optimization and Hybrid Force Control. , 2022, , .		11
95	Inequality constrained Kalman filtering for the localization and registration of a surgical robot. , 2011, , .		10
96	Distributed Learning for the Decentralized Control of Articulated Mobile Robots. , 2018, , .		10
97	Topological SLAM using neighbourhood information of places. , 2009, , .		9
98	Minimalistic, dynamic, tube climbing robot. , 2010, , .		9
99	Shape-constrained whole-body adaptivity. , 2015, , .		9
100	Interleaving Graph Search and Trajectory Optimization for Aggressive Quadrotor Flight. IEEE Robotics and Automation Letters, 2021, 6, 5357-5364.	3.3	9
101	A Conflict-Based Search Framework for Multiobjective Multiagent Path Finding. IEEE Transactions on Automation Science and Engineering, 2023, 20, 1262-1274.	3.4	9
102	Multi-agent deterministic graph mapping via robot rendezvous. , 2012, , .		8
103	Intelligent Surgical Robots with Situational Awareness. Mechanical Engineering, 2015, 137, S3-S6.	0.0	8
104	Gaussian reconstruction of swarm behavior from partial data. , 2015, , .		8
105	Mobile manufacturing of large structures. , 2015, , .		8
106	Geometric Motion Planning for a Three-Link Swimmer in a Three-Dimensional low Reynolds-Number Regime. , 2018, , .		8
107	Registration with a small number of sparse measurements. International Journal of Robotics Research, 2019, 38, 1403-1419.	5.8	8
108	Subdimensional Expansion for Multi-Objective Multi-Agent Path Finding. IEEE Robotics and Automation Letters, 2021, 6, 7153-7160.	3.3	8

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109	Design of a Biomimetic Tactile Sensor for Material Classification. , 2022, , .		8
110	Incremental construction of the saturated-GVG for multi-hypothesis topological SLAM. , 2011, , .		7
111	A dynamical systems approach to obstacle navigation for a series-elastic hexapod robot. , 2016, , .		7
112	Multi-objective Conflict-based Search for Multi-agent Path Finding. , 2021, , .		7
113	Locomotive analysis of a single-input three-link snake robot. , 2016, , .		6
114	Proprioceptive-Inertial Autonomous Locomotion for Articulated Robots. , 2018, , .		6
115	Simultaneous Policy and Discrete Communication Learning for Multi-Agent Cooperation. IEEE Robotics and Automation Letters, 2020, 5, 2498-2505.	3.3	6
116	Sparse Discrete Communication Learning for Multi-Agent Cooperation Through Backpropagation. , 2020, , .		6
117	Toward Robotically Automated Femoral Vascular Access. , 2021, , .		6
118	Online Kinematic Calibration for Legged Robots. IEEE Robotics and Automation Letters, 2022, 7, 8178-8185.	3.3	6
119	Context Identification for Efficient Multiple-Model State Estimation of Systems With Cyclical Intermittent Dynamics. IEEE Transactions on Robotics, 2011, 27, 14-28.	7.3	5
120	Expensive multiobjective optimization for robotics with consideration of heteroscedastic noise. , 2014, , .		5
121	Visual-Laser-Inertial SLAM Using a Compact 3D Scanner for Confined Space. , 2021, , .		5
122	A Tunable Magnet-based Tactile Sensor Framework. , 2020, , .		5
123	DTAR—A Dynamic, Tube-Ascending Robot. IEEE Transactions on Robotics, 2011, 27, 360-364.	7.3	4
124	Optimal control for geometric motion planning of a robot diver. , 2016, , .		4
125	Communication Learning via Backpropagation in Discrete Channels with Unknown Noise. Proceedings of the AAAI Conference on Artificial Intelligence, 2020, 34, 7160-7168.	3.6	4
126	A Compact and Infrastructure-free Confined Space Sensor for 3D Scanning and SLAM. , 2020, , .		4



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127	Using response surfaces and expected improvement to optimize snake robot gait parameters. , 2011, , .		4
128	Using kinesthetic input to overcome obstacles with snake robots. , 2012, , .		3
129	Nonlinear dimensionality reduction for kinematic cartography with an application toward robotic locomotion. , 2014, , .		3
130	A physical parameter-based skidding model for the snakeboard. , 2016, , .		3
131	Evaluation of Hybrid Control and Palpation Assistance for Situational Awareness in Telemanipulated Task Execution. IEEE Transactions on Medical Robotics and Bionics, 2021, 3, 31-43.	2.1	3
132	Shape and location design of supporting legs for a new Water Strider Robot. , 2011, , .		3
133	Autonomous Decentralized Shape-Based Navigation for Snake Robots in Dense Environments. , 2021, , .		3
134	3D Segmentation Learning From Sparse Annotations and Hierarchical Descriptors. IEEE Robotics and Automation Letters, 2021, 6, 5953-5960.	3.3	3
135	The Geometry of Optimal Gaits for Inertia-Dominated Kinematic Systems. IEEE Transactions on Robotics, 2022, 38, 3279-3299.	7.3	3
136	Uncertainty-Based Adaptive Data Augmentation For Ultrasound Imaging Anatomical Variations. , 2021, , .		2
137	Learning Cooperative Multi-Agent Policies With Partial Reward Decoupling. IEEE Robotics and Automation Letters, 2022, 7, 890-897.	3.3	2
138	Guided locomotion in 3D for snake robots based on contact force optimization. , 2014, , .		1
139	Constraint Manifold Subsearch for multirobot path planning with cooperative tasks. , 2015, , .		1
140	Monte Carlo Localization and registration to prior data for outdoor navigation. , 2011, , .		1
141	Virtual chassis for snake robots. , 2011, , .		1
142	LTL-based decentralized supervisory control of multi-robot tasks modelled as Petri nets. , 2011, , .		1
143	Frequency Modulation of Body Waves to Improve Performance of Limbless Robots. , 0, , .		1
144	A potential function approach to surface coverage for a surgical robot. Computer Aided Surgery, 2006, 11, 1-9.	1.8	1

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145	Geometric Motion Planning for a System on the Cylindrical Surface. , 2021, , .		1
146	Periodic SLAM: Using Cyclic Constraints to Improve the Performance of Visual-Inertial SLAM on Legged Robots. , 2022, , .		1
147	Editorial: Special Issue on Field and Service Robotics. International Journal of Robotics Research, 2000, 19, 971-971.	5.8	0
148	Epicardial Atrial Ablation Using a Novel Articulated Robotic Medical Probe via a Percutaneous Subxiphoid Approach. Innovations: Technology and Techniques in Cardiothoracic and Vascular Surgery, 2006, 1, 335-340.	0.4	0
149	Context identification for efficient multiple-model state estimation. , 2007, , .		0
150	Monocular feature-based periodic motion estimation for surgical guidance. , 2013, , .		0
151	Fourth Biennial North American Summer School on Surgical Robotics [Education]. IEEE Robotics and Automation Magazine, 2014, 21, 128-129.	2.2	0
152	Multirobot sequential composition. , 2016, , .		0
153	Control and locomotion of hydrodynamically coupled rigid spheres. , 2017, , .		0
154	Guest Editorial: Special issue on "Topological methods in robotics". Autonomous Robots, 2021, 45, 611-612.	3.2	0
155	Multiobjective Optimization Based on Response Surface Methodology with Consideration of Input Dependent Noise. Transactions of the Society of Instrument and Control Engineers, 2014, 50, 792-800.	0.1	0
156	State estimation and feedforward tremor suppression for a handheld micromanipulator with a Kalman filter. , 2011, , .		0