Mark Cutkosky

List of Publications by Year
in descending order

140	6,144	101543	91884
papers	citations	36 h-index	69 g-index

142	142	142	4177
all docs	docs citations	times ranked	citing authors

#	Article	IF	Citations
1	Biologically inspired climbing with a hexapedal robot. Journal of Field Robotics, 2008, 25, 223-242.	6.0	382
2	Quantified self and human movement: A review on the clinical impact of wearable sensing and feedback for gait analysis and intervention. Gait and Posture, 2014, 40, 11-19.	1.4	309
3	Scaling Hard Vertical Surfaces with Compliant Microspine Arrays. International Journal of Robotics Research, 2006, 25, 1165-1179.	8.5	261
4	A Soft Robotic Gripper With Gecko-Inspired Adhesive. IEEE Robotics and Automation Letters, 2018, 3, 903-910.	5.1	246
5	A microfabricated wedge-shaped adhesive array displaying gecko-like dynamic adhesion, directionality and long lifetime. Journal of the Royal Society Interface, 2009, 6, 1223-1232.	3.4	228
6	A robotic device using gecko-inspired adhesives can grasp and manipulate large objects in microgravity. Science Robotics, 2017, 2, .	17.6	196
7	Real-Time Estimation of 3-D Needle Shape and Deflection for MRI-Guided Interventions. IEEE/ASME Transactions on Mechatronics, 2010, 15, 906-915.	5.8	190
8	Practical Force-Motion Models for Sliding Manipulation. International Journal of Robotics Research, 1996, 15, 557-572.	8.5	186
9	Human Grasp Choice and Robotic Grasp Analysis. , 1990, , 5-31.		154
10	Friction, Stability and the Design of Robotic Fingers. International Journal of Robotics Research, 1986, 5, 20-37.	8.5	149
11	Design and testing of a selectively compliant underactuated hand. International Journal of Robotics Research, 2014, 33, 721-735.	8.5	138
12	Directional adhesion for climbing: theoretical and practical considerations. Journal of Adhesion Science and Technology, 2007, 21, 1317-1341.	2.6	125
13	The Ocean One hands: An adaptive design for robust marine manipulation. International Journal of Robotics Research, 2017, 36, 150-166.	8.5	112
14	Landing, perching and taking off from vertical surfaces. International Journal of Robotics Research, 2011, 30, 355-370.	8.5	109
15	A robust, low-cost and low-noise artificial skin for human-friendly robots. , 2010, , .		106
16	A Multimodal Robot for Perching and Climbing on Vertical Outdoor Surfaces. IEEE Transactions on Robotics, 2017, 33, 38-48.	10.3	105
17	Fixture Planning With Friction. Journal of Engineering for Industry, 1991, 113, 320-327.	0.8	96
18	Human climbing with efficiently scaled gecko-inspired dry adhesives. Journal of the Royal Society Interface, 2015, 12, 20140675.	3.4	96

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19	Design and fabrication of multi-material structures for bioinspired robots. Philosophical Transactions Series A, Mathematical, Physical, and Engineering Sciences, 2009, 367, 1799-1813.	3.4	87
20	The Geckoâ€™s Toe: Scaling Directional Adhesives for Climbing Applications. IEEE/ASME Transactions on Mechatronics, 2013, 18, 518-526.	5.8	87
21	Microwedge Machining for the Manufacture of Directional Dry Adhesives. Journal of Micro and Nano-Manufacturing, 2013, 1, .	0.7	87
22	Bird-inspired dynamic grasping and perching in arboreal environments. Science Robotics, 2021, 6, eabj7562.	17.6	81
23	Grasping without squeezing: Shear adhesion gripper with fibrillar thin film. , 2015, , .		74
24	Feedback Strategies for Telemanipulation with Shared Control of Object Handling Forces. Presence: Teleoperators and Virtual Environments, 2005, 14, 720-731.	0.6	69
25	Aggressive Flight With Quadrotors for Perching on Inclined Surfaces. Journal of Mechanisms and Robotics, 2016, 8, .	2.2	68
26	Touchdown to take-off: at the interface of flight and surface locomotion. Interface Focus, 2017, 7, 20160094.	3.0	60
27	Grasping Without Squeezing: Design and Modeling of Shear-Activated Grippers. IEEE Transactions on Robotics, 2018, 34, 303-316.	10.3	57
28	Climbing rough vertical surfaces with hierarchical directional adhesion. , 2009, , .		55
29	Integrated Ground Reaction Force Sensing and Terrain Classification for Small Legged Robots. IEEE Robotics and Automation Letters, 2016, 1, 1125-1132.	5.1	54
30	Stress distribution and contact area measurements of a gecko toe using a high-resolution tactile sensor. Bioinspiration and Biomimetics, 2015, 10, 016013.	2.9	50
31	Slip classification for dynamic tactile array sensors. International Journal of Robotics Research, 2016, 35, 404-421.	8.5	50
32	From grasping to manipulation with gecko-inspired adhesives on a multifinger gripper. Science Robotics, 2021, 6, eabi9773.	17.6	49
33	Three-dimensional dynamic surface grasping with dry adhesion. International Journal of Robotics Research, 2016, 35, 943-958.	8.5	48
34	Landing and Perching on Vertical Surfaces with Microspines for Small Unmanned Air Vehicles. Journal of Intelligent and Robotic Systems: Theory and Applications, 2010, 57, 313-327.	3.4	47
35	Dynamic surface grasping with directional adhesion. , 2013, , .		47
36	Active Control of a Compliant Wrist in Manufacturing Tasks. Journal of Engineering for Industry, 1986, 108, 36-43.	0.8	45

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37	Selectively compliant underactuated hand for mobile manipulation. , 2012, , .		45
38	Design information retrieval: a thesauri-based approach for reuse of informal design information. Engineering With Computers, 2005, 21, 177-192.	6.1	43
39	Surface and Shape Deposition Manufacturing for the Fabrication of a Curved Surface Gripper. Journal of Mechanisms and Robotics, 2015, 7, .	2.2	42
40	Climbing with adhesion: from bioinspiration to biounderstanding. Interface Focus, 2015, 5, 20150015.	3.0	41
41	Forceful manipulation with micro air vehicles. Science Robotics, 2018, 3, .	17.6	40
42	ExÂVivo Biomechanical Study of Apical Versus Papillary Neochord Anchoring for Mitral Regurgitation. Annals of Thoracic Surgery, 2019, 108, 90-97.	1.3	38
43	Capacitive Sensing for a Gripper With Gecko-Inspired Adhesive Film. IEEE Robotics and Automation Letters, 2019, 4, 677-683.	5.1	38
44	Improving Industrial Grippers With Adhesion-Controlled Friction. IEEE Robotics and Automation Letters, 2018, 3, 1041-1048.	5.1	37
45	Tactile Sensing and Terrain-Based Gait Control for Small Legged Robots. IEEE Transactions on Robotics, 2020, 36, 15-27.	10.3	37
46	Scaling controllable adhesives to grapple floating objects in space. , 2015, , .		36
47	Haptic gait retraining for knee osteoarthritis treatment. , 2010, , .		35
48	Designing Compliant Spine Mechanisms for Climbing. Journal of Mechanisms and Robotics, 2012, 4, .	2.2	35
49	A palm for a rock climbing robot based on dense arrays of micro-spines. , 2016, , .		33
50	Development and Ex Vivo Validation of Novel Force-Sensing Neochordae for Measuring Chordae Tendineae Tension in the Mitral Valve Apparatus Using Optical Fibers With Embedded Bragg Gratings. Journal of Biomechanical Engineering, 2020, 142, .	1.3	33
51	Representation and reasoning of geometric tolerances in design. Artificial Intelligence for Engineering Design, Analysis and Manufacturing: AIEDAM, 1997, 11, 325-341.	1.1	30
52	Design and modeling of linearly-constrained compliant spines for human-scale locomotion on rocky surfaces. International Journal of Robotics Research, 2017, 36, 985-999.	8.5	30
53	Mitral chordae tendineae force profile characterization using a posterior ventricular anchoring neochordal repair model for mitral regurgitation in a three-dimensional-printed ex vivo left heart simulator. European Journal of Cardio-thoracic Surgery, 2020, 57, 535-544.	1.4	30
54	Mr-compatible biopsy needle with enhanced tip force sensing. , 2013, 2013, 109-114.		29

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55	Dynamic Tactile Sensing. Springer Tracts in Advanced Robotics, 2014, , 389-403.	0.4	28
56	Detection of membrane puncture with haptic feedback using a tip-force sensing needle. , 2014, 2014, 3975-3981.		28
57	Haptic Surface Display based on Miniature Dielectric Fluid Transducers. IEEE Robotics and Automation Letters, 2020, 5, 4021-4027.	5.1	28
58	Using Haptic Feedback to Improve Grasp Force Control in Multiple Sclerosis Patients. IEEE Transactions on Robotics, 2009, 25, 593-601.	10.3	27
59	Modeling the dynamics of perching with opposed-grip mechanisms. , 2014, , .		27
60	μTugs: Enabling microrobots to deliver macro forces with controllable adhesives. , 2015, , .		27
61	Free-flyer acquisition of spinning objects with gecko-inspired adhesives. , 2016, , .		27
62	Load-Sharing in Soft and Spiny Paws for a Large Climbing Robot. IEEE Robotics and Automation Letters, 2019, 4, 1439-1446.	5.1	27
63	Dynamically Reconfigurable Tactile Sensor for Robotic Manipulation. IEEE Robotics and Automation Letters, 2020, 5, 2562-2569.	5.1	27
64	Scaling walls: Applying dry adhesives to the real world. , 2011, , .		25
65	Working With Multiple Representations in a Concurrent Design System. Journal of Mechanical Design, Transactions of the ASME, 1992, 114, 515-524.	2.9	24
66	Vertical dry adhesive climbing with a 100× bodyweight payload. , 2015, , .		24
67	Birds land reliably on complex surfaces by adapting their foot-surface interactions upon contact. ELife, 2019, 8, .	6.0	24
68	SpinyHand: Contact Load Sharing for a Human-Scale Climbing Robot. Journal of Mechanisms and Robotics, 2019, 11, .	2.2	24
69	Perching and vertical climbing: Design of a multimodal robot. , 2014, , .		23
70	A rolling-diaphragm hydrostatic transmission for remote MR-guided needle insertion. , 2017, , .		23
71	Stochastic models of compliant spine arrays for rough surface grasping. International Journal of Robotics Research, 2018, 37, 669-687.	8.5	23
72	Stride Period Adaptation for a Biomimetic Running Hexapod. , 2003, , 133-145.		22

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73	Informing haptic feedback design for gait retraining. , 2011, , .		21
74	Region of attraction estimation for a perching aircraft: A Lyapunov method exploiting barrier certificates. , 2012, , .		21
75	The Effect of Leg Specialization in a Biomimetic Hexapedal Running Robot. Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2006, 128, 26-35.	1.6	19
76	Effect of fibril shape on adhesive properties. Applied Physics Letters, 2010, 97, 053701.	3.3	19
77	Scalable Electroactive Polymer for Variable Stiffness Suspensions. IEEE/ASME Transactions on Mechatronics, 2016, 21, 2836-2846.	5.8	19
78	Hybrid aerial and scansorial robotics. , 2010, , .		18
79	Varying spring preloads to select grasp strategies in an adaptive hand. , 2011, , .		18
80	Robust capture and deorbit of rocket body debris using controllable dry adhesion. , 2017, , .		18
81	Force and Tactile Sensing. Springer Handbooks, 2016, , 717-736.	0.6	17
82	Design of Materials and Mechanisms for Responsive Robots. Annual Review of Control, Robotics, and Autonomous Systems, 2018, 1, 359-384.	11.8	17
83	HoloNeedle: Augmented Reality Guidance System for Needle Placement Investigating the Advantages of Three-Dimensional Needle Shape Reconstruction. IEEE Robotics and Automation Letters, 2018, 3, 4156-4162.	5.1	17
84	Biologically inspired tactile classification of object-hand and object-world interactions. , 2012, , .		16
85	Design of dielectric electroactive polymers for a compact and scalable variable stiffness device. , 2012, , .		16
86	A Passive Parallel Masterâ€“Slave Mechanism for Magnetic Resonance Imaging-Guided Interventions. Journal of Medical Devices, Transactions of the ASME, 2015, 9, 0110081-1100811.	0.7	16
87	Planning and Control of Aggressive Maneuvers for Perching on Inclined and Vertical Surfaces. , 2015, , .		16
88	Approximating gecko setae via direct laser lithography. Smart Materials and Structures, 2018, 27, 075009.	3.5	16
89	Tunable Contact Conditions and Grasp Hydrodynamics Using Gentle Fingertip Suction. IEEE Transactions on Robotics, 2019, 35, 295-306.	10.3	15
90	Slip interface classification through tactile signal coherence. , 2013, , .		14

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91	Letâ€™s All Pull Together: Principles for Sharing Large Loads in Microrobot Teams. IEEE Robotics and Automation Letters, 2016, 1, 1089-1096.	5.1	14
92	Slip Sensing for Intelligent, Improved Grasping and Retraction in Robot-Assisted Surgery. IEEE Robotics and Automation Letters, 2018, 3, 4148-4155.	5.1	13
93	MR-Compatible Haptic Display of Membrane Puncture in Robot-Assisted Needle Procedures. IEEE Transactions on Haptics, 2018, 11, 443-454.	2.7	12
94	Spatially variant microstructured adhesive with one-way friction. Journal of the Royal Society Interface, 2019, 16, 20180705.	3.4	12
95	Effects of Gamma Irradiation on Adhesion of Polymer Microstructure-Based Dry Adhesives. Nuclear Technology, 2012, 180, 450-455.	1.2	11
96	Low-Cost, Continuously Variable, Strain Wave Transmission Using Gecko-Inspired Adhesives. IEEE Robotics and Automation Letters, 2019, 4, 894-901.	5.1	11
97	Enabling In-Bore MRI-Guided Biopsies With Force Feedback. IEEE Transactions on Haptics, 2020, 13, 159-166.	2.7	11
98	Forcing the issue: testing gecko-inspired adhesives. Journal of the Royal Society Interface, 2021, 18, 20200730.	3.4	11
99	Hybrid electrostatic and gecko-inspired gripping pads for manipulating bulky, non-smooth items. Smart Materials and Structures, 2021, 30, 025010.	3.5	11
100	Analysis of torque capacities in hybrid actuation for human-friendly robot design. , 2010, , .		10
101	Incipient Slip Detection and Recovery for Controllable Gecko-Inspired Adhesion. IEEE Robotics and Automation Letters, 2017, 2, 460-467.	5.1	10
102	Efficient Equilibrium Testing Under Adhesion and Anisotropy Using Empirical Contact Force Models. IEEE Transactions on Robotics, 2018, 34, 1157-1169.	10.3	10
103	Long-Stroke Rolling Diaphragm Actuators For Haptic Display of Forces in Teleoperation. IEEE Robotics and Automation Letters, 2019, 4, 1478-1484.	5.1	10
104	Creating Paper Robots increases designersâ€™ confidence to prototype with microcontrollers and electronics. International Journal of Design Creativity and Innovation, 2017, 5, 48-59.	1.2	9
105	Thrust-Assisted Perching and Climbing for a Bioinspired UAV. Lecture Notes in Computer Science, 2016, , 288-296.	1.3	9
106	Creating Metal Molds for Directional Gecko-Inspired Adhesives. Journal of Micro and Nano-Manufacturing, 2020, 8, .	0.7	9
107	Presenting spatial tactile messages with a hand-held device. , 2011, , .		8
108	Simulation-based tools for evaluating underactuated hand designs. , 2013, , .		8

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109	Force and moment constraints of a curved surface gripper and wrist for assistive free flyers. , 2017, , .		8
110	Active Sensing for Measuring Contact of Thin Film Gecko-Inspired Adhesives. IEEE Robotics and Automation Letters, 2018, 3, 3263-3270.	5.1	8
111	A Stretchable Capacitive Sensory Skin for Exploring Cluttered Environments. IEEE Robotics and Automation Letters, 2020, 5, 1750-1757.	5.1	8
112	Perceived Intensities of Normal and Shear Skin Stimuli Using a Wearable Haptic Bracelet. IEEE Robotics and Automation Letters, 2022, 7, 6099-6106.	5.1	7
113	Hybrid aerial and scansorial robotics. , 2010, , .		6
114	Virtual pebble: A haptic state display for pedestrians. , 2011, , .		6
115	Contact event detection for robotic oil drilling. , 2014, , .		6
116	Perching failure detection and recovery with onboard sensing. , 2015, , .		6
117	Distal Hyperextension Is Handy: High Range of Motion in Cluttered Environments. IEEE Robotics and Automation Letters, 2020, 5, 921-928.	5.1	6
118	Exploratory Hand: Leveraging Safe Contact to Facilitate Manipulation in Cluttered Spaces. IEEE Robotics and Automation Letters, 2021, 6, 5159-5166.	5.1	6
119	Extending Reach Inside the MRI Bore: A 7-DOF, Low-Friction, Hydrostatic Teleoperator. IEEE Transactions on Medical Robotics and Bionics, 2021, 3, 701-713.	3.2	6
120	A Stretchable Tactile Sleeve for Reaching Into Cluttered Spaces. IEEE Robotics and Automation Letters, 2021, 6, 5308-5315.	5.1	6
121	Dry Adhesion of Artificial Gecko Setae Fabricated via Direct Laser Lithography. Lecture Notes in Computer Science, 2017, , 631-636.	1.3	6
122	Sampling heuristics for optimal motion planning in high dimensions. , 2011, , .		6
123	Variable impedance due to electromechanical coupling in electroactive polymer actuators. , 2011, , .		5
124	The Role of Tissue Slip Feedback in Robot-Assisted Surgery. Journal of Medical Devices, Transactions of the ASME, 2019, 13, .	0.7	5
125	Bioinspired Grippers for Natural Curved Surface Perching. Lecture Notes in Computer Science, 2017, , 604-610.	1.3	5
126	ReachBot: A Small Robot with Exceptional Reach for Rough Terrain. , 2022, , .		5

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127	One Motor, Two Degrees of Freedom Through Dynamic Response Switching. IEEE Robotics and Automation Letters, 2016, 1, 969-975.	5.1	4
128	Cutting to the Point: Directly Machined Metal Molds for Directional Gecko-Inspired Adhesives. Journal of Micro and Nano-Manufacturing, 2021, 9, .	0.7	4
129	Bimanual Handling of Deformable Objects With Hybrid Adhesion. IEEE Robotics and Automation Letters, 2022, 7, 5497-5503.	5.1	4
130	Testing Gecko-Inspired Adhesives With Astrobee Aboard the International Space Station: Readying the Technology for Space. IEEE Robotics and Automation Magazine, 2022, 29, 24-33.	2.0	4
131	Research in Computational Design at Stanford. Research in Engineering Design - Theory, Applications, and Concurrent Engineering, 1990, 2, 53-59.	2.1	3
132	Sensing slip of grasped wet, conformable objects. , 2017, , .		3
133	DynaRing: A Patient-Specific Mitral Annuloplasty Ring With Selective Stiffness Segments. Journal of Medical Devices, Transactions of the ASME, 2022, 16, .	0.7	3
134	Compression Molding and Nickel Molds for Directional Gecko-Inspired Adhesives. Journal of Micro and Nano-Manufacturing, 2021, 9, .	0.7	2
135	RVEX: Right Ventricular External Device for Biomimetic Support and Monitoring of the Right Heart. Advanced Materials Technologies, 2022, 7, .	5.8	2
136	Varying spring preloads to select grasp strategies in an adaptive hand. , 2011, , .		1
137	PEDOT:PSS Coating Improves Gecko-Inspired Adhesive Performance. Journal of Micro and Nano-Manufacturing, 2020, 8, .	0.7	1
138	Abstract 17300: Development and Ex Vivo Validation of Novel Force-Sensing Neo-Tendons for Measuring Chordae Tendineae Tension in the Mitral Valve Apparatus Using Optical Fibers With Embedded Bragg Gratings. Circulation, 2018, 138, .	1.6	0
139	Abstract 17080: A 3D Printed Ex Vivo Left Heart Simulator Quantifies and Validates Posterior Ventricular Anchoring Neochordoplasty. Circulation, 2018, 138, .	1.6	0
140	Variable impedance due to electromechanical coupling in electroactive polymer actuators. , 2011, , .		0