Nathan F Lepora

List of Publications by Year
in descending order

124 papers	2,770 citations	236925 25 h-index	233421 45 g-index
130 all docs	130 docs citations	130 times ranked	1693 citing authors

#	Article	IF	Citations
1	The TacTip Family: Soft Optical Tactile Sensors with 3D-Printed Biomimetic Morphologies. Soft Robotics, 2018, 5, 216-227.	8.0	307
2	The state of the art in biomimetics. Bioinspiration and Biomimetics, 2013, 8, 013001.	2.9	187
3	Embodied Choice: How Action Influences Perceptual Decision Making. PLoS Computational Biology, 2015, 11, e1004110.	3.2	137
4	Tactile Sensors for Friction Estimation and Incipient Slip Detectionâ€"Toward Dexterous Robotic Manipulation: A Review. IEEE Sensors Journal, 2018, 18, 9049-9064.	4.7	130
5	Slip Detection With a Biomimetic Tactile Sensor. IEEE Robotics and Automation Letters, 2018, 3, 3340-3346.	5.1	107
6	From Pixels to Percepts: Highly Robust Edge Perception and Contour Following Using Deep Learning and an Optical Biomimetic Tactile Sensor. IEEE Robotics and Automation Letters, 2019, 4, 2101-2107.	5.1	79
7	Exploratory Tactile Servoing With Active Touch. IEEE Robotics and Automation Letters, 2017, 2, 1156-1163.	5.1	65
8	Superresolution with an optical tactile sensor. , 2015, , .		64
9	Tactile Discrimination Using Active Whisker Sensors. IEEE Sensors Journal, 2012, 12, 350-362.	4.7	62
10	Soft Biomimetic Optical Tactile Sensing With the TacTip: A Review. IEEE Sensors Journal, 2021, 21, 21131-21143.	4.7	61
11	Capturing dopaminergic modulation and bimodal membrane behaviour of striatal medium spiny neurons in accurate, reduced models. Frontiers in Computational Neuroscience, 2009, 3, 26.	2.1	59
12	Active sensorimotor control for tactile exploration. Robotics and Autonomous Systems, 2017, 87, 15-27.	5.1	56
13	Active contour following to explore object shape with robot touch. , 2013, , .		54
14	Tactile Superresolution and Biomimetic Hyperacuity. IEEE Transactions on Robotics, 2015, 31, 605-618.	10.3	50
15	Model-Free Precise in-Hand Manipulation with a 3D-Printed Tactile Gripper. IEEE Robotics and Automation Letters, 2017, 2, 2056-2063.	5.1	49
16	Slip Detection for Grasp Stabilization With a Multifingered Tactile Robot Hand. IEEE Transactions on Robotics, 2021, 37, 506-519.	10.3	49
17	Sensory Prediction or Motor Control? Application of Marrâ€"Albus Type Models of Cerebellar Function to Classical Conditioning. Frontiers in Computational Neuroscience, 2010, 4, 140.	2.1	48
18	Tactile Manipulation With a TacThumb Integrated on the Open-Hand M2 Gripper. IEEE Robotics and Automation Letters, 2016, 1, 169-175.	5.1	47

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19	The Basal Ganglia Optimize Decision Making over General Perceptual Hypotheses. Neural Computation, 2012, 24, 2924-2945.	2.2	44
20	Convolutional Autoencoder for Feature Extraction in Tactile Sensing. IEEE Robotics and Automation Letters, 2019, 4, 3671-3678.	5.1	44
21	Biomimetic Active Touch with Fingertips and Whiskers. IEEE Transactions on Haptics, 2016, 9, 170-183.	2.7	40
22	Naive Bayes texture classification applied to whisker data from a moving robot. , 2010, , .		39
23	Active touch for robust perception under position uncertainty. , 2013, , .		39
24	Optimal decision-making in mammals: insights from a robot study of rodent texture discrimination. Journal of the Royal Society Interface, 2012, 9, 1517-1528.	3.4	38
25	Optimal Deep Learning for Robot Touch: Training Accurate Pose Models of 3D Surfaces and Edges. IEEE Robotics and Automation Magazine, 2020, 27, 66-77.	2.0	32
26	Addition of a Biomimetic Fingerprint on an Artificial Fingertip Enhances Tactile Spatial Acuity. IEEE Robotics and Automation Letters, 2017, 2, 1336-1343.	5.1	31
27	NeuroTac: A Neuromorphic Optical Tactile Sensor applied to Texture Recognition. , 2020, , .		28
28	Tactile Model O: Fabrication and Testing of a 3D-Printed, Three-Fingered Tactile Robot Hand. Soft Robotics, 2021, 8, 594-610.	8.0	28
29	Nonlinear Dynamic Modeling of Isometric Force Production in Primate Eye Muscle. IEEE Transactions on Biomedical Engineering, 2010, 57, 1554-1567.	4.2	27
30	Analysis of hand kinematics reveals inter-individual differences in intertemporal decision dynamics. Experimental Brain Research, 2015, 233, 3597-3611.	1.5	26
31	Sim-to-Real Transfer for Optical Tactile Sensing. , 2020, , .		26
32	Dual-Modal Tactile Perception and Exploration. IEEE Robotics and Automation Letters, 2018, 3, 1033-1040.	5.1	25
33	Active Bayesian perception for angle and position discrimination with a biomimetic fingertip. , 2013, , .		24
34	Active Bayesian Perception for Simultaneous Object Localization and Identification. , 0, , .		24
35	Goal-Driven Robotic Pushing Using Tactile and Proprioceptive Feedback. IEEE Transactions on Robotics, 2022, 38, 1201-1212.	10.3	23
36	Tactile manipulation with biomimetic active touch. , 2016, , .		22

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37	DigiTac: A DIGIT-TacTip Hybrid Tactile Sensor for Comparing Low-Cost High-Resolution Robot Touch. IEEE Robotics and Automation Letters, 2022, 7, 9382-9388.	5.1	22
38	Brain-inspired Bayesian perception for biomimetic robot touch. , 2012, , .		21
39	Voronoi Features for Tactile Sensing: Direct Inference of Pressure, Shear, and Contact Locations. , 2018, , .		21
40	A Sense of Touch for the Shadow Modular Grasper. IEEE Robotics and Automation Letters, 2019, 4, 2220-2226.	5.1	20
41	Learning offline: memory replay in biological and artificial reinforcement learning. Trends in Neurosciences, 2021, 44, 808-821.	8.6	20
42	Whisker-object contact speed affects radial distance estimation. , 2010, , .		18
43	Pose-Based Tactile Servoing: Controlled Soft Touch Using Deep Learning. IEEE Robotics and Automation Magazine, 2021, 28, 43-55.	2.0	18
44	Embodied hyperacuity from Bayesian perception: Shape and position discrimination with an iCub fingertip sensor. , 2012, , .		17
45	Tactile Quality Control With Biomimetic Active Touch. IEEE Robotics and Automation Letters, 2016, 1, 646-652.	5.1	17
46	Deep Reinforcement Learning for Tactile Robotics: Learning to Type on a Braille Keyboard. IEEE Robotics and Automation Letters, 2020, 5, 6145-6152.	5.1	17
47	TacWhiskers: Biomimetic Optical Tactile Whiskered Robots. , 2018, , .		16
48	Exploiting Sensor Symmetry for Generalized Tactile Perception in Biomimetic Touch. IEEE Robotics and Automation Letters, 2017, 2, 1218-1225.	5.1	14
49	Action Discovery and Intrinsic Motivation: A Biologically Constrained Formalisation. , 2013, , 151-181.		14
50	The effect of whisker movement on radial distance estimation: a case study in comparative robotics. Frontiers in Neurorobotics, 2013, 6, 12.	2.8	13
51	The statistics of optimal decision making: Exploring the relationship between signal detection theory and sequential analysis. Journal of Mathematical Psychology, 2021, 103, 102544.	1.8	13
52	Towards integrated tactile sensorimotor control in anthropomorphic soft robotic hands. , 2021, , .		13
53	Evidence From Retractor Bulbi EMG for Linearized Motor Control of Conditioned Nictitating Membrane Responses. Journal of Neurophysiology, 2007, 98, 2074-2088.	1.8	12
54	Naive Bayes novelty detection for a moving robot with whiskers. , 2010, , .		12

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55	Efficient fitting of conductance-based model neurons from somatic current clamp. Journal of Computational Neuroscience, 2012, 32, 1-24.	1.0	12
56	Principal Components of Touch. , 2018, , .		12
57	Artificial SA-I, RA-I and RA-II/vibrotactile afferents for tactile sensing of texture. Journal of the Royal Society Interface, 2022, 19, 20210603.	3.4	12
58	Recruitment in Retractor Bulbi Muscle During Eyeblink Conditioning: EMG Analysis and Common-Drive Model. Journal of Neurophysiology, 2009, 102, 2498-2513.	1.8	11
59	Response linearity determined by recruitment strategy in detailed model of nictitating membrane control. Biological Cybernetics, 2007, 96, 39-57.	1.3	10
60	Active haptic shape recognition by intrinsic motivation with a robot hand. , 2015, , .		10
61	Artificial SA-I and RA-I afferents for tactile sensing of ridges and gratings. Journal of the Royal Society Interface, 2022, 19, 20210822.	3.4	10
62	Embedded defects and symmetry breaking in flipped SU(5). Physical Review D, 1995, 52, 7265-7275.	4.7	9
63	Spatio-Temporal Encoding Improves Neuromorphic Tactile Texture Classification. IEEE Sensors Journal, 2021, 21, 19038-19046.	4.7	9
64	Active Tactile Perception. , 2016, , 151-159.		9
65	Sensing Ultrasonic Mid-Air Haptics withÂa Biomimetic Tactile Fingertip. Lecture Notes in Computer Science, 2020, , 362-370.	1.3	8
66	Examples of embedded defects (in particle physics and condensed matter). Physical Review D, 1998, 58, .	4.7	7
67	Gauge interactions in the dual standard model. Journal of High Energy Physics, 2000, 2000, 037-037.	4.7	7
68	Probabilistic Decision Making with Spikes: From ISI Distributions to Behaviour via Information Gain. PLoS ONE, 2015, 10, e0124787.	2.5	7
69	Object exploration using vision and active touch. , 2017, , .		7
70	Shear-invariant Sliding Contact Perception with a Soft Tactile Sensor. , 2019, , .		7
71	Editorial: ViTac: Integrating Vision and Touch for Multimodal and Cross-Modal Perception. Frontiers in Robotics and AI, 2021, 8, 697601.	3.2	7
72	CrunchBot: A Mobile Whiskered Robot Platform. Lecture Notes in Computer Science, 2011, , 102-113.	1.3	7

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73	A General Classifier of Whisker Data Using Stationary Naive Bayes: Application to BIOTACT Robots. Lecture Notes in Computer Science, 2011, , 13-23.	1.3	7
74	Walking on TacTip toes: A tactile sensing foot for walking robots. , 2020, , .		7
75	A Biomimetic Tactile Fingerprint Induces Incipient Slip. , 2020, , .		7
76	Embedded vortices. Physical Review D, 1998, 58, .	4.7	6
77	Gauge unification within the dual standard model. Journal of High Energy Physics, 2000, 2000, 036-036.	4.7	6
78	MultiTip: A multimodal mechano-thermal soft fingertip. , 2018, , .		6
79	A Robust Controller for Stable 3D Pinching Using Tactile Sensing. IEEE Robotics and Automation Letters, 2021, 6, 8150-8157.	5.1	6
80	Electroweak vacuum geometry. Journal of High Energy Physics, 1999, 1999, 027-027.	4.7	5
81	The Robot Vibrissal System: Understanding Mammalian Sensorimotor Co-ordination Through Biomimetics. , 2015, , 213-240.		5
82	Active tactile perception. Scholarpedia Journal, 2015, 10, 32364.	0.3	5
83	A Miniaturised Neuromorphic Tactile Sensor integrated with an Anthropomorphic Robot Hand. , 2020, , .		5
84	BRL/Pisa/IIT SoftHand: A Low-Cost, 3D-Printed, Underactuated, Tendon-Driven Hand With Soft and Adaptive Synergies. IEEE Robotics and Automation Letters, 2022, 7, 8745-8751.	5.1	5
85	Vacuum geometry. Journal of High Energy Physics, 1999, 1999, 034-034.	4.7	4
86	Classifying vortex solutions to gauge theories. Physical Review D, 1999, 59, .	4.7	4
87	Whiskered texture classification with uncertain contact pose geometry. , 2012, , .		4
88	A future of living machines?: International trends and prospects in biomimetic and biohybrid systems. Proceedings of SPIE, 2014, , .	0.8	4
89	A SOLID Case for Active Bayesian Perception in Robot Touch. Lecture Notes in Computer Science, 2013, , 154-166.	1.3	4
90	Asymptotically embedded defects. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 2002, 541, 362-368.	4.1	3

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91	A simple method for characterizing passive and active neuronal properties: application to striatal neurons. European Journal of Neuroscience, 2011, 34, 1390-1405.	2.6	3
92	Texture Classification through Tactile Sensing. Lecture Notes in Computer Science, 2012, , 377-379.	1.3	3
93	Active Bayesian perception and reinforcement learning. , 2013, , .		3
94	Active Control for Object Perception and Exploration with a Robotic Hand. Lecture Notes in Computer Science, 2015, , 415-428.	1.3	3
95	Force Sensing with a Biomimetic Fingertip. Lecture Notes in Computer Science, 2016, , 436-440.	1.3	3
96	Mapping Mid-Air Haptics With a Low-Cost Tactile Robot. IEEE Robotics and Automation Letters, 2022, 7, 7873-7880.	5.1	3
97	The State-of-the-Art in Biomimetics. Lecture Notes in Computer Science, 2012, , 367-368.	1.3	2
98	Angle and Position Perception for Exploration with Active Touch. Lecture Notes in Computer Science, 2013, , 405-408.	1.3	2
99	A Biomimetic Fingerprint Improves Spatial Tactile Perception. Lecture Notes in Computer Science, 2016, , 418-423.	1.3	2
100	Learning to Live Life on the Edge: Online Learning for Data-Efficient Tactile Contour Following. , 2020, , .		2
101	Embedded monopoles. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 2002, 533, 131-137.	4.1	1
102	Efficient current-based optimization techniques for parameter estimation in multi-compartment neuronal models. BMC Neuroscience, 2009, 10, .	1.9	1
103	Sequential tests and biologically grounded multi-alternative decision making. BMC Neuroscience, 2011, 12, .	1.9	1
104	Decision-making out of neural events: from discrimination information to psychometric power laws. BMC Neuroscience, 2013, 14, .	1.9	1
105	Cerebellum-based adaptation for fine haptic control over the space of uncertain surfaces. , 2013, , .		1
106	Texture Perception with a Biomimetic Optical Tactile Sensor. Lecture Notes in Computer Science, 2018, , 365-369.	1.3	1
107	Real time defect detection during composite layup via Tactile Shape Sensing. Science and Engineering of Composite Materials, 2021, 28, 1-10.	1.4	1
108	Discrimination-Based Perception for Robot Touch. Lecture Notes in Computer Science, 2016, , 498-502.	1.3	1

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109	Sensing with Artificial Tactile Sensors: An Investigation of Spatio-temporal Inference. Lecture Notes in Computer Science, 2011, , 253-264.	1.3	1
110	Towards a Roadmap for Living Machines. Lecture Notes in Computer Science, 2013, , 396-398.	1.3	1
111	Active Touch Sensing in Mammals and Robots. , 2020, , 79-109.		1
112	Some simpler analogues of the dual standard model and their relation to Bais' generalisation of the Montonen–Olive conjecture. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 2002, 524, 383-388.	4.1	0
113	Some problems with calculating the quantum corrections to the classical 't Hooft–Polyakov monopole. Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, 2002, 536, 338-343.	4.1	0
114	Living Machines 2012: The First International Conference on Biomimetic and Biohybrid Systems. Bioinspiration and Biomimetics, 2013, 8, 030201.	2.9	0
115	Biology to Technology in Active Touch Sensing – Introduction to the Special Section. IEEE Transactions on Haptics, 2016, 9, 155-157.	2.7	0
116	Active Touch with a Biomimetic 3D-Printed Whiskered Robot. Lecture Notes in Computer Science, 2018, , 263-275.	1.3	0
117	Guest Editorial Special Issue on Active Perception for Industrial Intelligence. IEEE Transactions on Automation Science and Engineering, 2019, 16, 1498-1499.	5.2	0
118	Uncertainty-aware deep learning for robot touch: Application to Bayesian tactile servo control. , 2021, , .		0
119	Towards a Framework for Tactile Perception in Social Robotics. Lecture Notes in Computer Science, 2012, , 335-336.	1.3	0
120	Gaussian Process Regression for a Biomimetic Tactile Sensor. Lecture Notes in Computer Science, 2016, , 393-399.	1.3	0
121	Tactile Exploration by Contour Following Using a Biomimetic Fingertip. Lecture Notes in Computer Science, 2016, , 485-489.	1.3	0
122	Building blocks. , 2018, , .		0
123	Biohybrid systems. , 2018, , .		0
124	A roadmap for Living Machines research. , 2018, , .		0