Matteo Bianchi

List of Publications by Year
in descending order

132 papers	2,840 citations	218677 26 h-index	254184 43 g-index
138 all docs	138 docs citations	138 times ranked	2229 citing authors

#	Article	IF	Citations
1	Hand synergies: Integration of robotics and neuroscience for understanding the control of biological and artificial hands. Physics of Life Reviews, 2016, 17, 1-23.	2.8	191
2	Exploring Teleimpedance and Tactile Feedback for Intuitive Control of the Pisa/IIT SoftHand. IEEE Transactions on Haptics, 2014, 7, 203-215.	2.7	107
3	Controlling Soft Robots: Balancing Feedback and Feedforward Elements. IEEE Robotics and Automation Magazine, 2017, 24, 75-83.	2.0	104
4	A Humanâ€"Robot Interaction Perspective on Assistive and Rehabilitation Robotics. Frontiers in Neurorobotics, 2017, 11, 24.	2.8	102
5	A synergy-based hand control is encoded in human motor cortical areas. ELife, 2016, 5, .	6.0	98
6	Rendering Softness: Integration of Kinesthetic and Cutaneous Information in a Haptic Device. IEEE Transactions on Haptics, 2010, 3, 109-118.	2.7	94
7	Design and realization of the CUFF - clenching upper-limb force feedback wearable device for distributed mechano-tactile stimulation of normal and tangential skin forces. , 2015, , .		77
8	Learning From Humans How to Grasp: A Data-Driven Architecture for Autonomous Grasping With Anthropomorphic Soft Hands. IEEE Robotics and Automation Letters, 2019, 4, 1533-1540.	5.1	65
9	The SoftHand Pro: Functional evaluation of a novel, flexible, and robust myoelectric prosthesis. PLoS ONE, 2018, 13, e0205653.	2.5	62
10	The Change in Fingertip Contact Area as a Novel Proprioceptive Cue. Current Biology, 2016, 26, 1159-1163.	3.9	60
11	The Rice Haptic Rocker: Skin stretch haptic feedback with the Pisa/IIT SoftHand. , 2017, , .		57
12	Postural Hand Synergies during Environmental Constraint Exploitation. Frontiers in Neurorobotics, 2017, 11, 41.	2.8	56
13	Decentralized Trajectory Tracking Control for Soft Robots Interacting With the Environment. IEEE Transactions on Robotics, 2018, 34, 924-935.	10.3	47
14	Synergy-based hand pose sensing: Optimal glove design. International Journal of Robotics Research, 2013, 32, 407-424.	8.5	46
15	ThimbleSense: A Fingertip-Wearable Tactile Sensor for Grasp Analysis. IEEE Transactions on Haptics, 2016, 9, 121-133.	2.7	42
16	Modelling and control of HIV dynamics. Computer Methods and Programs in Biomedicine, 2008, 89, 162-168.	4.7	40
17	Smart Collaborative Systems for Enabling Flexible and Ergonomic Work Practices [Industry Activities]. IEEE Robotics and Automation Magazine, 2020, 27, 169-176.	2.0	40
18	Unvealing the Principal Modes of Human Upper Limb Movements through Functional Analysis. Frontiers in Robotics and AI, 2017, 4, .	3.2	38

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19	Simplifying Telerobotics: Wearability and Teleimpedance Improves Human-Robot Interactions in Teleoperation. IEEE Robotics and Automation Magazine, 2018, 25, 77-88.	2.0	38
20	W-FYD: A Wearable Fabric-Based Display for Haptic Multi-Cue Delivery and Tactile Augmented Reality. IEEE Transactions on Haptics, 2018, 11, 304-316.	2.7	36
21	HapPro: A Wearable Haptic Device for Proprioceptive Feedback. IEEE Transactions on Biomedical Engineering, 2019, 66, 138-149.	4.2	36
22	A data-driven kinematic model of the human hand with soft-tissue artifact compensation mechanism for grasp synergy analysis. , 2013, , .		35
23	Design and Characterization of a Fabric-Based Softness Display. IEEE Transactions on Haptics, 2015, 8, 152-163.	2.7	35
24	Skin Stretch Haptic Feedback to Convey Closure Information in Anthropomorphic, Under-Actuated Upper Limb Soft Prostheses. IEEE Transactions on Haptics, 2019, 12, 508-520.	2.7	35
25	Synergy-based hand pose sensing: Reconstruction enhancement. International Journal of Robotics Research, 2013, 32, 396-406.	8.5	34
26	A Multi-Modal Sensing Glove for Human Manual-Interaction Studies. Electronics (Switzerland), 2016, 5, 42.	3.1	34
27	A Wearable Fabric-based display for haptic multi-cue delivery. , 2016, , .		34
28	Design and preliminary affective characterization of a novel fabric-based tactile display. , 2014, , .		33
29	Integrating Wearable Haptics and Obstacle Avoidance for the Visually Impaired in Indoor Navigation: A User-Centered Approach. IEEE Transactions on Haptics, 2021, 14, 109-122.	2.7	33
30	The Sensor-Based Biomechanical Risk Assessment at the Base of the Need for Revising of Standards for Human Ergonomics. Sensors, 2020, 20, 5750.	3.8	31
31	Influence of force feedback on grasp force modulation in prosthetic applications: A preliminary study. , 2016, 2016, 5439-5442.		30
32	A Synergy-Based Optimally Designed Sensing Glove for Functional Grasp Recognition. Sensors, 2016, 16, 811.	3.8	29
33	Recent Data Sets on Object Manipulation: A Survey. Big Data, 2016, 4, 197-216.	3.4	29
34	The SoftHand Pro-H: A Hybrid Body-Controlled, Electrically Powered Hand Prosthesis for Daily Living and Working. IEEE Robotics and Automation Magazine, 2017, 24, 87-101.	2.0	27
35	Design and Validation of the <i>Readable</i> Device: A Single-Cell Electromagnetic Refreshable Braille Display. IEEE Transactions on Haptics, 2020, 13, 239-245.	2.7	27
36	A Novel Skin-Stretch Haptic Device for Intuitive Control of Robotic Prostheses and Avatars. IEEE Robotics and Automation Letters, 2019, 4, 1572-1579.	5.1	26

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37	Editorial: Mapping Human Sensory-Motor Skills for Manipulation Onto the Design and Control of Robots. Frontiers in Neurorobotics, 2019, 13, 1.	2.8	26
38	Exploiting upper-limb functional principal components for human-like motion generation of anthropomorphic robots. Journal of NeuroEngineering and Rehabilitation, 2020, 17, 63.	4.6	26
39	A Fabric-Based Approach for Wearable Haptics. Electronics (Switzerland), 2016, 5, 44.	3.1	25
40	Characterization and Psychophysical Studies of an Air-Jet Lump Display. IEEE Transactions on Haptics, 2013, 6, 156-166.	2.7	24
41	Assessment of muscle fatigue during isometric contraction using autonomic nervous system correlates. Biomedical Signal Processing and Control, 2019, 51, 42-49.	5.7	24
42	Incrementality and Hierarchies in the Enrollment of Multiple Synergies for Grasp Planning. IEEE Robotics and Automation Letters, 2018, 3, 2686-2693.	5.1	23
43	Robotic manipulation and the role of the task in the metric of success. Nature Machine Intelligence, 2019, 1, 340-346.	16.0	22
44	Touch as an auxiliary proprioceptive cue for movement control. Science Advances, 2019, 5, eaaw3121.	10.3	22
45	Efficient Walking Gait Generation via Principal Component Representation of Optimal Trajectories: Application to a Planar Biped Robot With Elastic Joints. IEEE Robotics and Automation Letters, 2018, 3, 2299-2306.	5.1	21
46	On the Time-Invariance Properties of Upper Limb Synergies. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2019, 27, 1397-1406.	4.9	21
47	A new softness display based on bi-elastic fabric. , 2009, , .		20
48	Assessment of Myoelectric Controller Performance and Kinematic Behavior of a Novel Soft Synergy-Inspired Robotic Hand for Prosthetic Applications. Frontiers in Neurorobotics, 2016, 10, 11.	2.8	20
49	Spatially Separating Haptic Guidance From Task Dynamics Through Wearable Devices. IEEE Transactions on Haptics, 2019, 12, 581-593.	2.7	20
50	The interaction between motion and texture in the sense of touch. Journal of Neurophysiology, 2021, 126, 1375-1390.	1.8	20
51	On the role of wearable haptics for force feedback in teleimpedance control for dual-arm robotic teleoperation. , 2019, , .		19
52	Tailor-Made Hand Exoskeletons at the University of Florence: From Kinematics to Mechatronic Design. Machines, 2019, 7, 22.	2.2	19
53	Predicting Object-Mediated Gestures From Brain Activity: An EEG Study on Gender Differences. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2019, 27, 411-418.	4.9	19
54	A device for mimicking the contact force/contact area relationship of different materials with applications to softness rendering. , 2013, , .		18

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55	Design of an under-actuated wrist based on adaptive synergies. , 2017, , .		18
56	SoftHand at the CYBATHLON: a userâ€™s experience. Journal of NeuroEngineering and Rehabilitation, 2017, 14, 124.	4.6	18
57	Touch-Based Grasp Primitives for Soft Hands: Applications to Human-to-Robot Handover Tasks and Beyond. , 2018, , .		18
58	U-Limb: A multi-modal, multi-center database on arm motion control in healthy and post-stroke conditions. GigaScience, 2021, 10, .	6.4	18
59	A new fabric-based softness display. , 2010, , .		17
60	Forceâ€"Velocity Assessment of Caress-Like Stimuli Through the Electrodermal Activity Processing: Advantages of a Convex Optimization Approach. IEEE Transactions on Human-Machine Systems, 2016, , 1-10.	3.5	16
61	A functional analysis-based approach to quantify upper limb impairment level in chronic stroke patients: a pilot study. , 2019, 2019, 4198-4204.		16
62	EEG oscillations during caressâ€like affective haptic elicitation. Psychophysiology, 2018, 55, e13199.	2.4	15
63	Design and control of an air-jet lump display. , 2012, , .		13
64	Electrodermal activity analysis during affective haptic elicitation. , 2015, 2015, 5777-80.		13
65	Tactile Augmented Reality for Arteries Palpation in Open Surgery Training. Lecture Notes in Computer Science, 2016, , 186-197.	1.3	13
66	Inhomogeneous Point-Processes to Instantaneously Assess Affective Haptic Perception through Heartbeat Dynamics Information. Scientific Reports, 2016, 6, 28567.	3.3	13
67	Towards a synergy framework across neuroscience and robotics: Lessons learned and open questions. Reply to comments on: â€œHand synergies: Integration of robotics and neuroscience for understanding the control of biological and artificial handsâ€• Physics of Life Reviews, 2016, 17, 54-60.	2.8	13
68	Relaying the High-Frequency Contents of Tactile Feedback to Robotic Prosthesis Users: Design, Filtering, Implementation, and Validation. IEEE Robotics and Automation Letters, 2019, 4, 926-933.	5.1	13
69	Towards integrated tactile sensorimotor control in anthropomorphic soft robotic hands. , 2021, , .		13
70	Characterization of an air jet haptic lump display. , 2011, 2011, 3467-70.		12
71	Characterization of nonlinear finger pad mechanics for tactile rendering. , 2015, , .		12
72	On the Role of Affective Properties in Hedonic and Discriminant Haptic Systems. International Journal of Social Robotics, 2017, 9, 87-95.	4.6	12

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73	Brain Dynamics Induced by Pleasant/Unpleasant Tactile Stimuli Conveyed by Different Fabrics. IEEE Journal of Biomedical and Health Informatics, 2019, 23, 2417-2427.	6.3	12
74	Toward brainâ€“heart computer interfaces: a study on the classification of upper limb movements using multisystem directional estimates. Journal of Neural Engineering, 2021, 18, 046002.	3.5	12
75	Tactile slip and hand displacement: Bending hand motion with tactile illusions. , 2017, , .		11
76	A technical framework for human-like motion generation with autonomous anthropomorphic redundant manipulators. , 2020, , .		11
77	On the use of postural synergies to improve human hand pose reconstruction. , 2012, , .		10
78	Gender-specific velocity recognition of caress-like stimuli through nonlinear analysis of Heart Rate Variability. , 2015, 2015, 298-301.		10
79	A Change in the Fingertip Contact Area Induces an Illusory Displacement of the Finger. Lecture Notes in Computer Science, 2014, , 72-79.	1.3	10
80	Separating haptic guidance from task dynamics: A practical solution via cutaneous devices. , 2018, , .		9
81	Synergy-based optimal design of hand pose sensing. , 2012, , .		8
82	Towards a novel generation of haptic and robotic interfaces: Integrating affective physiology in human-robot interaction. , 2016, , .		8
83	Classifying Affective Haptic Stimuli through Gender-Specific Heart Rate Variability Nonlinear Analysis. IEEE Transactions on Affective Computing, 2020, 11, 459-469.	8.3	8
84	Understanding Human Manipulation With the Environment: A Novel Taxonomy for Video Labelling. IEEE Robotics and Automation Letters, 2021, 6, 6537-6544.	5.1	8
85	EEG Complexity Maps to Characterise Brain Dynamics during Upper Limb Motor Imagery. , 2018, 2018, 3060-3063.		7
86	To grasp or not to grasp: an end-to-end deep-learning approach for predicting grasping failures in soft hands. , 2020, , .		7
87	ExoSense: Measuring Manipulation in a Wearable Manner. , 2018, , .		6
88	Mechatronic designs for a robotic hand to explore human body experience and sensory-motor skills: a Delphi study. Advanced Robotics, 2018, 32, 670-680.	1.8	6
89	Wearable haptic interfaces for applications in gynecologic robotic surgery: a proof of concept in robotic myomectomy. Journal of Robotic Surgery, 2019, 13, 585-588.	1.8	6
90	Wearable Integrated Soft Haptics in a Prosthetic Socket. IEEE Robotics and Automation Letters, 2021, 6, 1785-1792.	5.1	6

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91	Integration of a Passive Exoskeleton and a Robotic Supernumerary Finger for Grasping Compensation in Chronic Stroke Patients: The SoftPro Wearable System. Frontiers in Robotics and AI, 2021, 8, 661354.	3.2	6
92	Three-digit grasp haptic device with variable contact stiffness for rehabilitation and human grasping studies. , 2014, , .		5
93	A novel tactile display for softness and texture rendering in tele-operation tasks. , 2015, , .		5
94	Sensorymotor Synergies: Fusion of Cutaneous Touch and Proprioception in the Perceived Hand Kinematics. Springer Series on Touch and Haptic Systems, 2016, , 87-98.	0.3	5
95	From humans to robots: The role of cutaneous impairment in human environmental constraint exploitation to inform the design of robotic hands. , 2017, , .		5
96	Control Architecture for Human-Like Motion With Applications to Articulated Soft Robots. Frontiers in Robotics and AI, 2020, 7, 117.	3.2	5
97	Human-Robot Collaboration (HRC) Technologies for Reducing Work-Related Musculoskeletal Diseases in Industry 4.0. Lecture Notes in Networks and Systems, 2022, , 335-342.	0.7	5
98	Enhancing the Localization of Uterine Leiomyomas Through Cutaneous Softness Rendering for Robot-Assisted Surgical Palpation Applications. IEEE Transactions on Haptics, 2021, 14, 503-512.	2.7	5
99	Learning to Prevent Grasp Failure with Soft Hands: From Online Prediction to Dualâ€Arm Grasp Recovery. Advanced Intelligent Systems, 2022, 4, 2100146.	6.1	5
100	A Miniaturised Neuromorphic Tactile Sensor integrated with an Anthropomorphic Robot Hand. , 2020, , .		5
101	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
102	A Finite element model of tactile flow for softness perception. , 2015, 2015, 2430-3.		4
103	On the pleasantness of a haptic stimulation: How different textures can be recognized through heart rate variability nonlinear analysis. , 2016, 2016, 3560-3563.		4
104	Recognition of affective haptic stimuli conveyed by different fabrics sing EEG-based sparse SVM. , 2017, , .		4
105	Comparison of Three Hand Pose Reconstruction Algorithms Using Inertial and Magnetic Measurement Units. , 2018, , .		4
106	The Role of Haptic Stimuli on Affective Reading: a Pilot Study. , 2019, 2019, 4938-4941.		4
107	A Novel Device Decoupling Tactile Slip and Hand Motion in Reaching Tasks: The HaptiTrack Device. IEEE Transactions on Haptics, 2021, 14, 1-1.	2.7	4
108	Electroencephalographic spectral correlates of caress-like affective haptic stimuli. , 2015, 2015, 4733-6.		3

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109	DeepDynamicHand: A Deep Neural Architecture for Labeling Hand Manipulation Strategies in Video Sources Exploiting Temporal Information. Frontiers in Neurorobotics, 2018, 12, 86.	2.8	3
110	EEG Processing to Discriminate Transitive-Intransitive Motor Imagery Tasks: Preliminary Evidences using Support Vector Machines. , 2018, 2018, 231-234.		3
111	Towards a Technology-Based Assessment of Sensory-Motor Pathological States Through Tactile Illusions. , 2018, , .		3
112	Optimal Reconstruction of Human Motion From Scarce Multimodal Data. IEEE Transactions on Human-Machine Systems, 2022, 52, 833-842.	3.5	3
113	A low-dimensional representation of arm movements and hand grip forces in post-stroke individuals. Scientific Reports, 2022, 12, 7601.	3.3	3
114	Contact with Sliding over a Rotating Ridged Surface: the Turntable Illusion. , 2019, , .		2
115	On the Role of Lateral Force in Texture-Induced Motion Bias During Reaching Tasks. IEEE Transactions on Haptics, 2020, 13, 233-238.	2.7	2
116	Multi-Cue Haptic Guidance Through Wearables for Enhancing Human Ergonomics. IEEE Transactions on Haptics, 2022, 15, 115-120.	2.7	2
117	Learning With Few Examples the Semantic Description of Novel Human-Inspired Grasp Strategies From RGB Data. IEEE Robotics and Automation Letters, 2022, 7, 2573-2580.	5.1	2
118	Modeling Previous Trial Effect in Human Manipulation through Iterative Learning Control. Advanced Intelligent Systems, 2020, 2, 1900074.	6.1	1
119	Controlling Hand Movements Relying on Tactile Illusions: A Model Predictive Control Framework. , 2021, , .		1
120	The SoftPro Wearable System for Grasp Compensation in Stroke Patients. Biosystems and Biorobotics, 2022, , 363-367.	0.3	1
121	Iterative Learning Control as a Framework for Human-Inspired Control with Bio-mimetic Actuators. Lecture Notes in Computer Science, 2020, , 12-16.	1.3	1
122	Editorial: On the Planning, Control, and Perception of Soft Robotic End-Effectors. Frontiers in Robotics and AI, 2021, 8, 795863.	3.2	1
123	Characterization of upper limb movement-related EEG dynamics through fractional integrated autoregressive modeling. , 2021, 2021, 5987-5990.		1
124	The Motor Control of Hand Movements in the Human Brain: Toward the Definition of a Cortical Representation of Postural Synergies. Springer Series on Touch and Haptic Systems, 2016, , 41-60.	0.3	0
125	Modeling Human Motor Skills to Enhance Robotsâ€™ Physical Interaction. Springer Proceedings in Advanced Robotics, 2021, , 116-126.	1.3	0
126	HaptiTrack: A Novel Device for theÂEvaluation of Tactile Sensitivity in Active and in Passive Tasks. Biosystems and Biorobotics, 2022, , 617-621.	0.3	0

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127	Functional Analysis of Upper-Limb Movements in the Cartesian Domain. Biosystems and Biorobotics, 2022, , 339-343.	0.3	0
128	A User-Centered Approach to Artificial Sensory Substitution for Blind People Assistance. Biosystems and Biorobotics, 2022, , 599-603.	0.3	0
129	Synergy-Based Optimal Sensing Techniques for Hand Pose Reconstruction. Springer Series on Touch and Haptic Systems, 2016, , 259-283.	0.3	0
130	Synergy-Driven Performance Enhancement ofÂVision-Based 3D Hand Pose Reconstruction. Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering, 2017, , 328-336.	0.3	0
131	A Synergistic Behavior Underpins Human Hand Grasping Force Control During Environmental Constraint Exploitation. Biosystems and Biorobotics, 2019, , 67-71.	0.3	0
132	Kineto-Dynamic Modeling of Human Upper Limb for Robotic Manipulators and Assistive Applications. , 2020, , 23-51.		0