Silvestro Micera

List of Publications by Year
in descending order

141 papers	12,374 citations	41258 49 h-index	29081 104 g-index
159 all docs	159 docs citations	159 times ranked	9535 citing authors

#	Article	IF	Citations
1	Electronic dura mater for long-term multimodal neural interfaces. Science, 2015, 347, 159-163.	6.0	845
2	Restoring Natural Sensory Feedback in Real-Time Bidirectional Hand Prostheses. Science Translational Medicine, 2014, 6, 222ra19.	5.8	805
3	A critical review of interfaces with the peripheral nervous system for the control of neuroprostheses and hybrid bionic systems. Journal of the Peripheral Nervous System, 2005, 10, 229-258.	1.4	723
4	Restoring Voluntary Control of Locomotion after Paralyzing Spinal Cord Injury. Science, 2012, 336, 1182-1185.	6.0	701
5	Control of Multifunctional Prosthetic Hands by Processing the Electromyographic Signal. Critical Reviews in Biomedical Engineering, 2002, 30, 459-485.	0.5	512
6	A brainâ€“spine interface alleviating gait deficits after spinal cord injury in primates. Nature, 2016, 539, 284-288.	13.7	492
7	On the Shared Control of an EMG-Controlled Prosthetic Hand: Analysis of Userâ€“Prosthesis Interaction. IEEE Transactions on Robotics, 2008, 24, 170-184.	7.3	409
8	Double nerve intraneural interface implant on a human amputee for robotic hand control. Clinical Neurophysiology, 2010, 121, 777-783.	0.7	367
9	A Computational Model for Epidural Electrical Stimulation of Spinal Sensorimotor Circuits. Journal of Neuroscience, 2013, 33, 19326-19340.	1.7	320
10	Control of Hand Prostheses Using Peripheral Information. IEEE Reviews in Biomedical Engineering, 2010, 3, 48-68.	13.1	308
11	Intraneural stimulation elicits discrimination of textural features by artificial fingertip in intact and amputee humans. ELife, 2016, 5, e09148.	2.8	286
12	Spatiotemporal neuromodulation therapies engaging muscle synergies improve motor control after spinal cord injury. Nature Medicine, 2016, 22, 138-145.	15.2	274
13	Biomimetic Intraneural Sensory Feedback Enhances Sensation Naturalness, Tactile Sensitivity, and Manual Dexterity in a Bidirectional Prosthesis. Neuron, 2018, 100, 37-45.e7.	3.8	265
14	Electrical spinal cord stimulation must preserve proprioception to enable locomotion in humans with spinal cord injury. Nature Neuroscience, 2018, 21, 1728-1741.	7.1	247
15	A closed-loop hand prosthesis with simultaneous intraneural tactile and position feedback. Science Robotics, 2019, 4, .	9.9	198
16	Control of Multifunctional Prosthetic Hands by Processing the Electromyographic Signal. Critical Reviews in Biomedical Engineering, 2017, 45, 383-410.	0.5	184
17	Sensory feedback restoration in leg amputees improves walking speed, metabolic cost and phantom pain. Nature Medicine, 2019, 25, 1356-1363.	15.2	174
18	Activity-dependent spinal cord neuromodulation rapidly restores trunk and leg motor functions after complete paralysis. Nature Medicine, 2022, 28, 260-271.	15.2	174

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19	Closed-loop neuromodulation of spinal sensorimotor circuits controls refined locomotion after complete spinal cord injury. Science Translational Medicine, 2014, 6, 255ra133.	5.8	170
20	Unidirectional brain to muscle connectivity reveals motor cortex control of leg muscles during stereotyped walking. NeuroImage, 2017, 159, 403-416.	2.1	148
21	A somatotopic bidirectional hand prosthesis with transcutaneous electrical nerve stimulation based sensory feedback. Scientific Reports, 2017, 7, 10930.	1.6	147
22	Mechanisms Underlying the Neuromodulation of Spinal Circuits for Correcting Gait and Balance Deficits after Spinal Cord Injury. Neuron, 2016, 89, 814-828.	3.8	144
23	Neuroplastic Changes Following Brain Ischemia and their Contribution to Stroke Recovery: Novel Approaches in Neurorehabilitation. Frontiers in Cellular Neuroscience, 2017, 11, 76.	1.8	144
24	Personalized Neuroprosthetics. Science Translational Medicine, 2013, 5, 210rv2.	5.8	141
25	Sixâ€Month Assessment of a Hand Prosthesis with Intraneural Tactile Feedback. Annals of Neurology, 2019, 85, 137-154.	2.8	140
26	Neurotechnology-aided interventions for upper limb motor rehabilitation in severe chronic stroke. Brain, 2019, 142, 2182-2197.	3.7	138
27	Enhancing functional abilities and cognitive integration of the lower limb prosthesis. Science Translational Medicine, 2019, 11, .	5.8	133
28	MUNDUS project: MUltimodal Neuroprosthesis for daily Upper limb Support. Journal of NeuroEngineering and Rehabilitation, 2013, 10, 66.	2.4	115
29	Restoration of sensory information via bionic hands. Nature Biomedical Engineering, 2023, 7, 443-455.	11.6	111
30	Brain-controlled modulation of spinal circuits improves recovery from spinal cord injury. Nature Communications, 2018, 9, 3015.	5.8	108
31	On the Use of Longitudinal Intrafascicular Peripheral Interfaces for the Control of Cybernetic Hand Prostheses in Amputees. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2008, 16, 453-472.	2.7	106
32	On the use of wavelet denoising and spike sorting techniques to process electroneurographic signals recorded using intraneural electrodes. Journal of Neuroscience Methods, 2008, 172, 294-302.	1.3	105
33	Toward higher-performance bionic limbs for wider clinical use. Nature Biomedical Engineering, 2023, 7, 473-485.	11.6	104
34	Multisensory bionic limb to achieve prosthesis embodiment and reduce distorted phantom limb perceptions. Journal of Neurology, Neurosurgery and Psychiatry, 2019, 90, 833-836.	0.9	101
35	A Computational Model for the Stimulation of Rat Sciatic Nerve Using a Transverse Intrafascicular Multichannel Electrode. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2011, 19, 333-344.	2.7	97
36	Shared humanâ€“robot proportional control of a dexterous myoelectric prosthesis. Nature Machine Intelligence, 2019, 1, 400-411.	8.3	91

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37	Decoding of grasping information from neural signals recorded using peripheral intrafascicular interfaces. Journal of NeuroEngineering and Rehabilitation, 2011, 8, 53.	2.4	89
38	Decoding Information From Neural Signals Recorded Using Intraneural Electrodes: Toward the Development of a Neurocontrolled Hand Prosthesis. Proceedings of the IEEE, 2010, 98, 407-417.	16.4	84
39	Detection of movement onset using EMG signals for upper-limb exoskeletons in reaching tasks. Journal of NeuroEngineering and Rehabilitation, 2019, 16, 45.	2.4	84
40	RELICA: A method for estimating the reliability of independent components. NeuroImage, 2014, 103, 391-400.	2.1	76
41	On the identification of sensory information from mixed nerves by using single-channel cuff electrodes. Journal of NeuroEngineering and Rehabilitation, 2010, 7, 17.	2.4	69
42	Advanced Neurotechnologies for the Restoration of Motor Function. Neuron, 2020, 105, 604-620.	3.8	69
43	Reducing GABAA-mediated inhibition improves forelimb motor function after focal cortical stroke in mice. Scientific Reports, 2016, 6, 37823.	1.6	61
44	Engagement of the Rat Hindlimb Motor Cortex across Natural Locomotor Behaviors. Journal of Neuroscience, 2016, 36, 10440-10455.	1.7	60
45	Chronic multichannel neural recordings from soft regenerative microchannel electrodes during gait. Scientific Reports, 2015, 5, 14363.	1.6	59
46	Delta Power Is Higher and More Symmetrical in Ischemic Stroke Patients with Cortical Involvement. Frontiers in Human Neuroscience, 2017, 11, 385.	1.0	58
47	Data-driven bodyâ€“machine interface for the accurate control of drones. Proceedings of the National Academy of Sciences of the United States of America, 2018, 115, 7913-7918.	3.3	57
48	Chapter 2 Bidirectional Interfaces with the Peripheral Nervous System. International Review of Neurobiology, 2009, 86, 23-38.	0.9	54
49	Tracking Motor Improvement at the Subtask Level During Robot-Aided Neurorehabilitation of Stroke Patients. Neurorehabilitation and Neural Repair, 2012, 26, 822-833.	1.4	54
50	Experimental Validation of a Hybrid Computational Model for Selective Stimulation Using Transverse Intrafascicular Multichannel Electrodes. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2012, 20, 395-404.	2.7	53
51	Spatial and Functional Selectivity of Peripheral Nerve Signal Recording With the Transversal Intrafascicular Multichannel Electrode (TIME). IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2016, 24, 20-27.	2.7	53
52	Spatially selective activation of the visual cortex via intraneural stimulation of the optic nerve. Nature Biomedical Engineering, 2020, 4, 181-194.	11.6	53
53	Focal release of neurotrophic factors by biodegradable microspheres enhance motor and sensory axonal regeneration in vitro and in vivo. Brain Research, 2016, 1636, 93-106.	1.1	51
54	Combining robotic training and inactivation of the healthy hemisphere restores pre-stroke motor patterns in mice. ELife, 2017, 6, .	2.8	50

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55	A Robotic System for Quantitative Assessment and Poststroke Training of Forelimb Retraction in Mice. Neurorehabilitation and Neural Repair, 2014, 28, 188-196.	1.4	49
56	Quantitative Kinematic Characterization of Reaching Impairments in Mice After a Stroke. Neurorehabilitation and Neural Repair, 2015, 29, 382-392.	1.4	46
57	Current Solutions and Future Trends for Robotic Prosthetic Hands. Annual Review of Control, Robotics, and Autonomous Systems, 2021, 4, 595-627.	7.5	46
58	Combined Rehabilitation Promotes the Recovery of Structural and Functional Features of Healthy Neuronal Networks after Stroke. Cell Reports, 2019, 28, 3474-3485.e6.	2.9	42
59	Tutorial: a computational framework for the design and optimization of peripheral neural interfaces. Nature Protocols, 2020, 15, 3129-3153.	5.5	40
60	A Wearable Multi-Site System for NMES-Based Hand Function Restoration. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2018, 26, 428-440.	2.7	39
61	Decoding of grasping tasks from intraneural recordings in trans-radial amputee. Journal of Neural Engineering, 2020, 17, 026034.	1.8	39
62	Dynamic Functional Connectivity of Resting-State Spinal Cord fMRI Reveals Fine-Grained Intrinsic Architecture. Neuron, 2020, 108, 424-435.e4.	3.8	38
63	Stability of flexible thin-film metallization stimulation electrodes: analysis of explants after first-in-human study and improvement of in vivo performance. Journal of Neural Engineering, 2020, 17, 046006.	1.8	38
64	Combined Analysis of Cortical (EEG) and Nerve Stump Signals Improves Robotic Hand Control. Neurorehabilitation and Neural Repair, 2012, 26, 275-281.	1.4	37
65	Artificial spatiotemporal touch inputs reveal complementary decoding in neocortical neurons. Scientific Reports, 2017, 7, 45898.	1.6	37
66	Bioelectronic medicine for the autonomic nervous system: clinical applications and perspectives. Journal of Neural Engineering, 2021, 18, 041002.	1.8	37
67	On the intersubject generalization ability in extracting kinematic information from afferent nervous signals. IEEE Transactions on Biomedical Engineering, 2003, 50, 1063-1073.	2.5	36
68	Understanding ultrasound neuromodulation using a computationally efficient and interpretable model of intramembrane cavitation. Journal of Neural Engineering, 2019, 16, 046007.	1.8	36
69	Phantom somatosensory evoked potentials following selective intraneural electrical stimulation in two amputees. Clinical Neurophysiology, 2018, 129, 1117-1120.	0.7	35
70	Multi-pronged neuromodulation intervention engages the residual motor circuitry to facilitate walking in a rat model of spinal cord injury. Nature Communications, 2021, 12, 1925.	5.8	35
71	The neural resource allocation problem when enhancing human bodies with extra robotic limbs. Nature Machine Intelligence, 2021, 3, 850-860.	8.3	34
72	Compliant peripheral nerve interfaces. Journal of Neural Engineering, 2021, 18, 031001.	1.8	33

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73	Brainâ€“machine interface: closer to therapeutic reality?. Lancet, The, 2013, 381, 515-517.	6.3	32
74	Implantable Neural Interfaces and Wearable Tactile Systems for Bidirectional Neuroprosthetics Systems. Advanced Healthcare Materials, 2019, 8, e1801345.	3.9	32
75	A multimodal approach to capture post-stroke temporal dynamics of recovery. Journal of Neural Engineering, 2020, 17, 045002.	1.8	31
76	Neural signal recording and processing in somatic neuroprosthetic applications. A review. Journal of Neuroscience Methods, 2020, 337, 108653.	1.3	31
77	Hand Control With Invasive Feedback Is Not Impaired by Increased Cognitive Load. Frontiers in Bioengineering and Biotechnology, 2020, 8, 287.	2.0	31
78	Closed-loop control of trunk posture improves locomotion through the regulation of leg proprioceptive feedback after spinal cord injury. Scientific Reports, 2018, 8, 76.	1.6	30
79	Intent Prediction Based on Biomechanical Coordination of EMG and Vision-Filtered Gaze for End-Point Control of an Arm Prosthesis. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2020, 28, 1471-1480.	2.7	30
80	Morphological Neural Computation Restores Discrimination of Naturalistic Textures in Trans-radial Amputees. Scientific Reports, 2020, 10, 527.	1.6	30
81	Intrafascicular peripheral nerve stimulation produces fine functional hand movements in primates. Science Translational Medicine, 2021, 13, eabg6463.	5.8	30
82	Spatiotemporal Dynamics of the Cortical Responses Induced by a Prolonged Tactile Stimulation of the Human Fingertips. Brain Topography, 2017, 30, 473-485.	0.8	29
83	Preferential Enhancement of Sensory and Motor Axon Regeneration by Combining Extracellular Matrix Components with Neurotrophic Factors. International Journal of Molecular Sciences, 2017, 18, 65.	1.8	28
84	A biomimetic electrical stimulation strategy to induce asynchronous stochastic neural activity. Journal of Neural Engineering, 2020, 17, 046019.	1.8	27
85	Shape Memory Alloy Microactuation of tf-LIFEs: Preliminary Results. IEEE Transactions on Biomedical Engineering, 2007, 54, 1115-1120.	2.5	25
86	Effective Synchronization of EEG and EMG for Mobile Brain/Body Imaging in Clinical Settings. Frontiers in Human Neuroscience, 2017, 11, 652.	1.0	25
87	Decoding Neural Metabolic Markers From the Carotid Sinus Nerve in a Type 2 Diabetes Model. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2019, 27, 2034-2043.	2.7	24
88	Spatio-temporal structure of single neuron subthalamic activity identifies DBS target for anesthetized Tourette syndrome patients. Journal of Neural Engineering, 2019, 16, 066011.	1.8	23
89	Experimental and Computational Study on Motor Control and Recovery After Stroke: Toward a Constructive Loop Between Experimental and Virtual Embodied Neuroscience. Frontiers in Systems Neuroscience, 2020, 14, 31.	1.2	23
90	Uncontrolled manifold hypothesis: Organization of leg joint variance in humans while walking in a wide range of speeds. Human Movement Science, 2018, 57, 227-235.	0.6	22

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91	REMOV: EEG artifacts removal methods during Lokomat lower-limb rehabilitation. , 2012, , .		21
92	Neurobiological evaluation of thin-film longitudinal intrafascicular electrodes as a peripheral nerve interface. , 2007, , .		20
93	Giuliano Vanghetti and the innovation of â€œcineplastic operationsâ€• Neurology, 2017, 89, 1627-1632.	1.5	19
94	Neuromuscular electrical stimulation restores upper limb sensory-motor functions and body representations in chronic stroke survivors. Med, 2022, 3, 58-74.e10.	2.2	19
95	Spinal Cord fMRI: A New Window into the Central Nervous System. Neuroscientist, 2023, 29, 715-731.	2.6	18
96	Connectivity Measures Differentiate Cortical and Subcortical Sub-Acute Ischemic Stroke Patients. Frontiers in Human Neuroscience, 2021, 15, 669915.	1.0	17
97	Simultaneous decoding of cardiovascular and respiratory functional changes from pig intraneural vagus nerve signals. Journal of Neural Engineering, 2021, 18, 0460a2.	1.8	17
98	Systematic analysis of wavelet denoising methods for neural signal processing. Journal of Neural Engineering, 2020, 17, 066016.	1.8	17
99	A modular strategy for next-generation upper-limb sensory-motor neuroprostheses. Med, 2021, 2, 912-937.	2.2	16
100	Post-Stroke Longitudinal Alterations of Inter-Hemispheric Correlation and Hemispheric Dominance in Mouse Pre-Motor Cortex. PLoS ONE, 2016, 11, e0146858.	1.1	16
101	Sensitivity to temporal parameters of intraneural tactile sensory feedback. Journal of NeuroEngineering and Rehabilitation, 2020, 17, 110.	2.4	15
102	High gamma response tracks different syntactic structures in homophonous phrases. Scientific Reports, 2020, 10, 7537.	1.6	15
103	Real-Time Neural Signals Decoding onto Off-the-Shelf DSP Processors for Neuroprosthetic Applications. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2016, 24, 993-1002.	2.7	14
104	A Robotic System for Adaptive Training and Function Assessment of Forelimb Retraction in Mice. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2018, 26, 1803-1812.	2.7	14
105	Q-PINE: A quick to implant peripheral intraneural electrode. Journal of Neural Engineering, 2020, 17, 066008.	1.8	14
106	Closed-Loop Vagus Nerve Stimulation for the Treatment of Cardiovascular Diseases: State of the Art and Future Directions. Frontiers in Cardiovascular Medicine, 2022, 9, 866957.	1.1	14
107	Bilateral Tactile Input Patterns Decoded at Comparable Levels But Different Time Scales in Neocortical Neurons. Journal of Neuroscience, 2018, 38, 3669-3679.	1.7	13
108	Soft Embodiment for Engineering Artificial Limbs. Trends in Cognitive Sciences, 2020, 24, 965-968.	4.0	13

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109	A Psychometric Platform to Collect Somatosensory Sensations for Neuroprosthetic Use. Frontiers in Medical Technology, 2021, 3, 619280.	1.3	13
110	Computational approaches to decode grasping force and velocity level in upper-limb amputee from intraneural peripheral signals. Journal of Neural Engineering, 2021, 18, 055001.	1.8	12
111	Combining Optogenetic Stimulation and Motor Training Improves Functional Recovery and Perilesional Cortical Activity. Neurorehabilitation and Neural Repair, 2022, 36, 107-118.	1.4	12
112	Implantable Fiber Bragg Grating Sensor for Continuous Heart Activity Monitoring: Ex-Vivo and In-Vivo Validation. IEEE Sensors Journal, 2021, 21, 14051-14059.	2.4	11
113	Wide-field imaging of cortical neuronal activity with red-shifted functional indicators during motor task execution. Journal Physics D: Applied Physics, 2019, 52, 074001.	1.3	10
114	Microneurography as a tool to develop decoding algorithms for peripheral neuro-controlled hand prostheses. BioMedical Engineering OnLine, 2019, 18, 44.	1.3	10
115	Bayesian optimization of peripheral intraneural stimulation protocols to evoke distal limb movements. Journal of Neural Engineering, 2021, 18, 066046.	1.8	9
116	Uncontrolled manifold analysis of the effects of a perturbation-based training on the organization of leg joint variance in cerebellar ataxia. Experimental Brain Research, 2021, 239, 501-513.	0.7	8
117	Effects of gait rehabilitation on motor coordination in stroke survivors: an UCM-based approach. Experimental Brain Research, 2021, 239, 2107-2118.	0.7	8
118	Bidirectional bionic limbs: a perspective bridging technology and physiology. Journal of Neural Engineering, 2022, 19, 013001.	1.8	7
119	Preclinical upper limb neurorobotic platform to assess, rehabilitate, and develop therapies. Science Robotics, 2022, 7, eabk2378.	9.9	7
120	Segregation of motor and sensory axons regenerating through bicompartmental tubes by combining extracellular matrix components with neurotrophic factors. Journal of Tissue Engineering and Regenerative Medicine, 2018, 12, e1991-e2000.	1.3	6
121	Brain reactions to the use of sensorized hand prosthesis in amputees. Brain and Behavior, 2020, 10, e01734.	1.0	6
122	A data-driven polynomial approach to reproduce the scar tissue outgrowth around neural implants. Journal of Materials Science: Materials in Medicine, 2020, 31, 59.	1.7	6
123	Ultrasound Stimulations Induce Prolonged Depolarization and Fast Action Potentials in Leech Neurons. IEEE Open Journal of Engineering in Medicine and Biology, 2020, 1, 23-32.	1.7	6
124	All-Polymer Printed Low-Cost Regenerative Nerve Cuff Electrodes. Frontiers in Bioengineering and Biotechnology, 2021, 9, 615218.	2.0	6
125	A machine learning framework to optimize optic nerve electrical stimulation for vision restoration. Patterns, 2021, 2, 100286.	3.1	6
126	High frequency shift in Carotid Sinus Nerve and Sympathetic Nerve activity in Type 2 Diabetic Rat Model. , 2019, , .		5

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127	MorphoSONIC: A morphologically structured intramembrane cavitation model reveals fiber-specific neuromodulation by ultrasound. IScience, 2021, 24, 103085.	1.9	5
128	Recording properties of an electrode implanted in the peripheral nervous system: A human computational model. , 2015, , .		4
129	Stimulus evoked causality estimation in stereo-EEG. Journal of Neural Engineering, 2021, 18, 056041.	1.8	4
130	Comparison of intraneural electrode geometries: Preliminary guidelines for electrode design. , 2009, , .		3
131	Wireless neuromodulation with porous silicon. Nature Materials, 2022, 21, 614-616.	13.3	3
132	Finite element and biophysics modelling of intraneural transversal electrodes: Influence of active site shape. , 2010, 2010, 1678-81.		2
133	Adaptation and Optimization of an Intraneural Electrode to Interface with the Cervical Vagus Nerve. , 2021, , .		2
134	Counteracting Balance Loss in Transfemoral Amputees by Using an Active Pelvis Orthosis: A Case Series. IFMBE Proceedings, 2021, , 294-305.	0.2	2
135	P300 in the park: feasibility of online data acquisition and integration in a Mobile Brain/Body Imaging setting. , 2019, , .		1
136	Towards in-silico robotic post-stroke rehabilitation for mice. , 2019, , .		1
137	Somatosensory Evoked Potentials following upper limb noninvasive electrical stimulation: a case study. , 2020, 2020, 2881-2884.		1
138	Brain network modulation in transradial amputee with finger perception restored through biomimetic intraneural stimulation. Neurological Sciences, 2021, 42, 5369-5372.	0.9	1
139	Combining robotics with enhanced serotonin-driven cortical plasticity improves post-stroke motor recovery. Progress in Neurobiology, 2021, 203, 102073.	2.8	1
140	Biomimetic bidirectional hand neuroprostheses for restoring somatosensory and motor functions. , 2021, , 321-345.		0
141	Rehabilitation Promotes the Recovery of Functional and Structural Features of Healthy Neuronal Networks after Stroke. SSRN Electronic Journal, 0, , .	0.4	0