

Leigh R Hochberg

List of Publications by Citations

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The third column is the impact factor (IF) of the journal, and the fourth column is the number of citations of the article.

126
papers

9,980
citations

39
h-index

99
g-index

142
ext. papers

12,483
ext. citations

10.1
avg, IF

6.01
L-index

#	Paper	IF	Citations
126	Neuronal ensemble control of prosthetic devices by a human with tetraplegia. <i>Nature</i> , 2006 , 442, 164-71	50.4	2466
125	Reach and grasp by people with tetraplegia using a neurally controlled robotic arm. <i>Nature</i> , 2012 , 485, 372-5	50.4	1665
124	Restoration of reaching and grasping movements through brain-controlled muscle stimulation in a person with tetraplegia: a proof-of-concept demonstration. <i>Lancet, The</i> , 2017 , 389, 1821-1830	40	400
123	Single-neuron dynamics in human focal epilepsy. <i>Nature Neuroscience</i> , 2011 , 14, 635-41	25.5	353
122	Neural control of cursor trajectory and click by a human with tetraplegia 1000 days after implant of an intracortical microelectrode array. <i>Journal of Neural Engineering</i> , 2011 , 8, 025027	5	338
121	Neural control of computer cursor velocity by decoding motor cortical spiking activity in humans with tetraplegia. <i>Journal of Neural Engineering</i> , 2008 , 5, 455-76	5	286
120	Rapid fragmentation of neuronal networks at the onset of propofol-induced unconsciousness. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2012 , 109, E3377-86	11.5	278
119	High performance communication by people with paralysis using an intracortical brain-computer interface. <i>ELife</i> , 2017 , 6,	8.9	223
118	Clinical translation of a high-performance neural prosthesis. <i>Nature Medicine</i> , 2015 , 21, 1142-5	50.5	202
117	Primary motor cortex tuning to intended movement kinematics in humans with tetraplegia. <i>Journal of Neuroscience</i> , 2008 , 28, 1163-78	6.6	193
116	Inferring single-trial neural population dynamics using sequential auto-encoders. <i>Nature Methods</i> , 2018 , 15, 805-815	21.6	168
115	Virtual typing by people with tetraplegia using a self-calibrating intracortical brain-computer interface. <i>Science Translational Medicine</i> , 2015 , 7, 313ra179	17.5	166
114	Collective dynamics in human and monkey sensorimotor cortex: predicting single neuron spikes. <i>Nature Neuroscience</i> , 2010 , 13, 105-11	25.5	162
113	Human seizures self-terminate across spatial scales via a critical transition. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2012 , 109, 21116-21	11.5	136
112	Early detection of consciousness in patients with acute severe traumatic brain injury. <i>Brain</i> , 2017 , 140, 2399-2414	11.2	135
111	Assistive technology and robotic control using motor cortex ensemble-based neural interface systems in humans with tetraplegia. <i>Journal of Physiology</i> , 2007 , 579, 603-11	3.9	134
110	Intra-day signal instabilities affect decoding performance in an intracortical neural interface system. <i>Journal of Neural Engineering</i> , 2013 , 10, 036004	5	126

109	Point-and-click cursor control with an intracortical neural interface system by humans with tetraplegia. <i>IEEE Transactions on Neural Systems and Rehabilitation Engineering</i> , 2011 , 19, 193-203	4.8	120
108	Heterogeneous neuronal firing patterns during interictal epileptiform discharges in the human cortex. <i>Brain</i> , 2010 , 133, 1668-81	11.2	119
107	Spatiotemporal dynamics of neocortical excitation and inhibition during human sleep. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , 2012 , 109, 1731-6	11.5	115
106	Speech-specific tuning of neurons in human superior temporal gyrus. <i>Cerebral Cortex</i> , 2014 , 24, 2679-93	5.1	97
105	Listening to Brain Microcircuits for Interfacing With External World-Progress in Wireless Implantable Microelectronic Neuroengineering Devices: Experimental systems are described for electrical recording in the brain using multiple microelectrodes and short range implantable or wearable broadcasting units. <i>Proceedings of the IEEE</i> , 2010 , 98, 375-388	14.3	94
104	High-performance brain-to-text communication via handwriting. <i>Nature</i> , 2021 , 593, 249-254	50.4	83
103	Sensors and decoding for intracortical brain computer interfaces. <i>Annual Review of Biomedical Engineering</i> , 2013 , 15, 383-405	12	82
102	Neuronal ensemble synchrony during human focal seizures. <i>Journal of Neuroscience</i> , 2014 , 34, 9927-44	6.6	81
101	Continuous neuronal ensemble control of simulated arm reaching by a human with tetraplegia. <i>Journal of Neural Engineering</i> , 2011 , 8, 034003	5	74
100	Reliability of directional information in unsorted spikes and local field potentials recorded in human motor cortex. <i>Journal of Neural Engineering</i> , 2014 , 11, 046007	5	71
99	Efficient decoding with steady-state Kalman filter in neural interface systems. <i>IEEE Transactions on Neural Systems and Rehabilitation Engineering</i> , 2011 , 19, 25-34	4.8	68
98	Sensors for brain-computer interfaces. <i>IEEE Engineering in Medicine and Biology Magazine</i> , 2006 , 25, 32-8		67
97	Neural Point-and-Click Communication by a Person With Incomplete Locked-In Syndrome. <i>Neurorehabilitation and Neural Repair</i> , 2015 , 29, 462-71	4.7	62
96	Advantages of closed-loop calibration in intracortical brain-computer interfaces for people with tetraplegia. <i>Journal of Neural Engineering</i> , 2013 , 10, 046012	5	61
95	Cortical control of a tablet computer by people with paralysis. <i>PLoS ONE</i> , 2018 , 13, e0204566	3.7	60
94	Rapid calibration of an intracortical brain-computer interface for people with tetraplegia. <i>Journal of Neural Engineering</i> , 2018 , 15, 026007	5	56
93	Review: Human Intracortical Recording and Neural Decoding for Brain-Computer Interfaces. <i>IEEE Transactions on Neural Systems and Rehabilitation Engineering</i> , 2017 , 25, 1687-1696	4.8	51
92	Stable long-term BCI-enabled communication in ALS and locked-in syndrome using LFP signals. <i>Journal of Neurophysiology</i> , 2018 , 120, 343-360	3.2	51

91	The emergence of single neurons in clinical neurology. <i>Neuron</i> , 2015 , 86, 79-91	13.9	50
90	Vagus nerve stimulation paired with rehabilitation for upper limb motor function after ischaemic stroke (VNS-REHAB): a randomised, blinded, pivotal, device trial. <i>Lancet, The</i> , 2021 , 397, 1545-1553	4.0	43
89	Evolving Applications, Technological Challenges and Future Opportunities in Neuromodulation: Proceedings of the Fifth Annual Deep Brain Stimulation Think Tank. <i>Frontiers in Neuroscience</i> , 2017 , 11, 734	5.1	42
88	Neural population dynamics in human motor cortex during movements in people with ALS. <i>ELife</i> , 2015 , 4, e07436	8.9	40
87	Hand Knob Area of Premotor Cortex Represents the Whole Body in a Compositional Way. <i>Cell</i> , 2020 , 181, 396-409.e26	56.2	39
86	Corticospinal Tract Injury Estimated From Acute Stroke Imaging Predicts Upper Extremity Motor Recovery After Stroke. <i>Stroke</i> , 2019 , 50, 3569-3577	6.7	37
85	An assistive decision-and-control architecture for force-sensitive hand/arm systems driven by human-machine interfaces. <i>International Journal of Robotics Research</i> , 2015 , 34, 763-780	5.7	35
84	Prediction of imagined single-joint movements in a person with high-level tetraplegia. <i>IEEE Transactions on Biomedical Engineering</i> , 2012 , 59, 2755-65	5	32
83	Microscale spatiotemporal dynamics during neocortical propagation of human focal seizures. <i>NeuroImage</i> , 2015 , 122, 114-30	7.9	30
82	Neural ensemble dynamics in dorsal motor cortex during speech in people with paralysis. <i>ELife</i> , 2019 , 8,	8.9	28
81	Motor neuroprosthesis implanted with neurointerventional surgery improves capacity for activities of daily living tasks in severe paralysis: first in-human experience. <i>Journal of NeuroInterventional Surgery</i> , 2021 , 13, 102-108	7.8	28
80	Feedback control policies employed by people using intracortical brain-computer interfaces. <i>Journal of Neural Engineering</i> , 2017 , 14, 016001	5	27
79	Intact Brain Network Function in an Unresponsive Patient with COVID-19. <i>Annals of Neurology</i> , 2020 , 88, 851-854	9.4	26
78	Unexpected recovery of function after severe traumatic brain injury: the limits of early neuroimaging-based outcome prediction. <i>Neurocritical Care</i> , 2013 , 19, 364-75	3.3	26
77	Horizons in prosthesis development for the restoration of limb function. <i>Journal of the American Academy of Orthopaedic Surgeons, The</i> , 2006 , 14, S198-204	4.5	26
76	Non-causal spike filtering improves decoding of movement intention for intracortical BCIs. <i>Journal of Neuroscience Methods</i> , 2014 , 236, 58-67	3	23
75	Power-saving design opportunities for wireless intracortical brain-computer interfaces. <i>Nature Biomedical Engineering</i> , 2020 , 4, 984-996	19	23
74	Home Use of a Percutaneous Wireless Intracortical Brain-Computer Interface by Individuals With Tetraplegia. <i>IEEE Transactions on Biomedical Engineering</i> , 2021 , 68, 2313-2325	5	22

73	Feasibility of an EEG-based brain-computer interface in the intensive care unit. <i>Clinical Neurophysiology</i> , 2018 , 129, 1519-1525	4.3	21
72	Multi-state decoding of point-and-click control signals from motor cortical activity in a human with tetraplegia 2007 ,		19
71	Somatosensory responses in a human motor cortex. <i>Journal of Neurophysiology</i> , 2013 , 109, 2192-204	3.2	18
70	Turning thought into action. <i>New England Journal of Medicine</i> , 2008 , 359, 1175-7	59.2	18
69	Watch, Imagine, Attempt: Motor Cortex Single-Unit Activity Reveals Context-Dependent Movement Encoding in Humans With Tetraplegia. <i>Frontiers in Human Neuroscience</i> , 2018 , 12, 450	3.3	17
68	Signal processing methods for reducing artifacts in microelectrode brain recordings caused by functional electrical stimulation. <i>Journal of Neural Engineering</i> , 2018 , 15, 026014	5	16
67	Adaptive offset correction for intracortical brain-computer interfaces. <i>IEEE Transactions on Neural Systems and Rehabilitation Engineering</i> , 2014 , 22, 239-48	4.8	15
66	Replay of Learned Neural Firing Sequences during Rest in Human Motor Cortex. <i>Cell Reports</i> , 2020 , 31, 107581	10.6	14
65	A Comparison of Intention Estimation Methods for Decoder Calibration in Intracortical Brain-Computer Interfaces. <i>IEEE Transactions on Biomedical Engineering</i> , 2018 , 65, 2066-2078	5	14
64	Inhibitory single neuron control of seizures and epileptic traveling waves in humans. <i>BMC Neuroscience</i> , 2014 , 15,	3.2	14
63	Personalized Connectome Mapping to Guide Targeted Therapy and Promote Recovery of Consciousness in the Intensive Care Unit. <i>Neurocritical Care</i> , 2020 , 33, 364-375	3.3	14
62	Principled BCI Decoder Design and Parameter Selection Using a Feedback Control Model. <i>Scientific Reports</i> , 2019 , 9, 8881	4.9	13
61	Speech-related dorsal motor cortex activity does not interfere with iBCI cursor control. <i>Journal of Neural Engineering</i> , 2020 , 17, 016049	5	13
60	BCI Users and Their Needs 2012 , 317-324		13
59	Applications of brain-computer interfaces to the control of robotic and prosthetic arms. <i>Handbook of Clinical Neurology / Edited By P J Vinken and G W Bruyn</i> , 2020 , 168, 87-99	3	12
58	Decoding spoken English from intracortical electrode arrays in dorsal precentral gyrus. <i>Journal of Neural Engineering</i> , 2020 , 17, 066007	5	12
57	Robust Closed-Loop Control of a Cursor in a Person with Tetraplegia using Gaussian Process Regression. <i>Neural Computation</i> , 2018 , 30, 2986-3008	2.9	12
56	BCI decoder performance comparison of an LSTM recurrent neural network and a Kalman filter in retrospective simulation 2019 ,		11

55	Modulation depth estimation and variable selection in state-space models for neural interfaces. <i>IEEE Transactions on Biomedical Engineering</i> , 2015 , 62, 570-81	5	11
54	Neural Representation of Observed, Imagined, and Attempted Grasping Force in Motor Cortex of Individuals with Chronic Tetraplegia. <i>Scientific Reports</i> , 2020 , 10, 1429	4.9	11
53	Feasibility of Automatic Error Detect-and-Undo System in Human Intracortical Brain-Computer Interfaces. <i>IEEE Transactions on Biomedical Engineering</i> , 2018 , 65, 1771-1784	5	10
52	Implanted Neural Interfaces: Ethics in Treatment and Research 2013 , 235-250		10
51	Retrospectively supervised click decoder calibration for self-calibrating point-and-click brain-computer interfaces. <i>Journal of Physiology (Paris)</i> , 2016 , 110, 382-391		10
50	Reprint of "Non-causal spike filtering improves decoding of movement intention for intracortical BCIs". <i>Journal of Neuroscience Methods</i> , 2015 , 244, 94-103	3	9
49	Large-scale neural recordings with single neuron resolution using Neuropixels probes in human cortex.. <i>Nature Neuroscience</i> , 2022 ,	25.5	9
48	Continuous Control of the DLR Light-Weight Robot III by a Human with Tetraplegia Using the BrainGate2 Neural Interface System. <i>Springer Tracts in Advanced Robotics</i> , 2014 , 125-136	0.5	9
47	Decoding Speech from Intracortical Multielectrode Arrays in Dorsal "Arm/Hand Areas" of Human Motor Cortex. <i>Annual International Conference of the IEEE Engineering in Medicine and Biology Society IEEE Engineering in Medicine and Biology Society Annual International Conference</i> , 2018 , 2018, 93-97	0.9	9
46	Inferring single-trial neural population dynamics using sequential auto-encoders		8
45	Signal-independent noise in intracortical brain-computer interfaces causes movement time properties inconsistent with Fitts's law. <i>Journal of Neural Engineering</i> , 2017 , 14, 026010	5	7
44	Volitional control of single-electrode high gamma local field potentials by people with paralysis. <i>Journal of Neurophysiology</i> , 2019 , 121, 1428-1450	3.2	7
43	Early Detection of Human Epileptic Seizures Based on Intracortical Local Field Potentials. <i>International IEEE/EMBS Conference on Neural Engineering: [proceedings]</i> , 2013 , 323-326	1.3	7
42	2013 ,		7
41	High-performance brain-to-text communication via imagined handwriting		7
40	Closed-loop cortical control of virtual reach and posture using Cartesian and joint velocity commands. <i>Journal of Neural Engineering</i> , 2019 , 16, 026011	5	7
39	Early Detection of Human Epileptic Seizures Based on Intracortical Microelectrode Array Signals. <i>IEEE Transactions on Biomedical Engineering</i> , 2020 , 67, 817-831	5	7
38	Trends in BCI Research I: Brain-Computer Interfaces for Assessment of Patients with Locked-in Syndrome or Disorders of Consciousness. <i>Springer Briefs in Electrical and Computer Engineering</i> , 2017 , 105-125	0.4	6

37	Early detection of human focal seizures based on cortical multiunit activity. <i>Annual International Conference of the IEEE Engineering in Medicine and Biology Society IEEE Engineering in Medicine and Biology Society Annual International Conference, 2014, 2014, 5796-9</i>	0.9	6
36	Intuitive prosthetic limb control. <i>Lancet, The, 2007, 369, 345-6</i>	4.0	5
35	Cognitive Demands Influence Upper Extremity Motor Performance During Recovery From Acute Stroke. <i>Neurology, 2021, 96, e2576-e2586</i>	6.5	5
34	The neuroethics of disorders of consciousness: a brief history of evolving ideas. <i>Brain, 2021,</i>	11.2	5
33	The Discriminative Kalman Filter for Bayesian Filtering with Nonlinear and Nongaussian Observation Models. <i>Neural Computation, 2020, 32, 969-1017</i>	2.9	4
32	Predicting seizures from local field potentials recorded via intracortical microelectrode arrays. <i>Annual International Conference of the IEEE Engineering in Medicine and Biology Society IEEE Engineering in Medicine and Biology Society Annual International Conference, 2016, 2016, 6353-6356</i>	0.9	4
31	Initial Surgical Experience with an Intracortical Microelectrode Array for Brain-computer Interface Applications. <i>Neurosurgery, 2006, 59, 481</i>	3.2	4
30	BrainGate: Turning Thought into Action First Experience with a Human Neuromotor Prosthesis. <i>Neurosurgery, 2005, 57, 425-425</i>	3.2	4
29	Author response: High performance communication by people with paralysis using an intracortical brain-computer interface 2016,		4
28	Brain-Computer Interfaces in Neurorecovery and Neurorehabilitation. <i>Seminars in Neurology, 2021, 41, 206-216</i>	3.2	4
27	The Neural Representation of Force across Grasp Types in Motor Cortex of Humans with Tetraplegia. <i>ENeuro, 2021, 8,</i>	3.9	4
26	Brain-machine interface cursor position only weakly affects monkey and human motor cortical activity in the absence of arm movements. <i>Scientific Reports, 2018, 8, 16357</i>	4.9	4
25	Adaptive Parametric Spectral Estimation with Kalman Smoothing for Online Early Seizure Detection. <i>International IEEE/EMBS Conference on Neural Engineering: [proceedings], 2013, 1410-1413</i>	1.3	3
24	Home Use of a Wireless Intracortical Brain-Computer Interface by Individuals With Tetraplegia		3
23	Neural ensemble dynamics in dorsal motor cortex during speech in people with paralysis		3
22	Hand Knob Area of Motor Cortex in People with Tetraplegia Represents the Whole Body in a Modular Way		3
21	Responsive neurostimulation for focal motor status epilepticus. <i>Annals of Clinical and Translational Neurology, 2021, 8, 1353-1361</i>	5.3	3
20	Large-scale neural recordings with single-cell resolution in human cortex using high-density Neuropixels probes		3

19	Intracortical neural activity distal to seizure-onset-areas predicts human focal seizures. <i>PLoS ONE</i> , 2019 , 14, e0211847	3.7	2
18	Application of system identification methods for decoding imagined single-joint movements in an individual with high tetraplegia. <i>Annual International Conference of the IEEE Engineering in Medicine and Biology Society IEEE Engineering in Medicine and Biology Society Annual International Conference</i> , 2010 , 2010, 2678-81	0.9	2
17	Author response: Neural population dynamics in human motor cortex during movements in people with ALS 2015 ,		2
16	Decoding spoken English phonemes from intracortical electrode arrays in dorsal precentral gyrus		2
15	Arm Motor Recovery After Ischemic Stroke: A Focus on Clinically Distinct Trajectory Groups. <i>Journal of Neurologic Physical Therapy</i> , 2021 , 45, 70-78	4.1	2
14	Brain Computer Interfaces 2016 , 231-263		2
13	Auditory cues reveal intended movement information in middle frontal gyrus neuronal ensemble activity of a person with tetraplegia. <i>Scientific Reports</i> , 2021 , 11, 98	4.9	2
12	Intracranial brain-computer interfaces for communication and control 577-585		1
11	Towards the optimal design of an assistive communication interface with neural input 2012 ,		1
10	The neural representation of force across grasp types in motor cortex of humans with tetraplegia		1
9	Designing a Neural Interface System to Restore Mobility 2009 , 229-242		1
8	Learned motor patterns are replayed in human motor cortex during sleep.. <i>Journal of Neuroscience</i> , 2022 ,	6.6	1
7	Electrical stimulation approaches to stroke recovery 247-258		
6	Hyperacute stent placement in acute cervical internal carotid artery occlusions: the potential role of magnetic resonance imaging. <i>Journal of NeuroInterventional Surgery</i> , 2009 , 1, 171-4	7.8	
5	West Nile encephalitis in Massachusetts. <i>New England Journal of Medicine</i> , 2002 , 346, 1030-1	59.2	
4	Development of a Manually Operated Communication System (MOCS) for patients in intensive care units.. <i>AAC: Augmentative and Alternative Communication</i> , 2022 , 1-13	3.5	
3	Restoring Functional Reach-to-Grasp in a Person with Chronic Tetraplegia Using Implanted Functional Electrical Stimulation and Intracortical Brain-Computer Interfaces. <i>Springer Briefs in Electrical and Computer Engineering</i> , 2020 , 35-45	0.4	
2	Auditory-Reliant Intracortical Brain Computer Interfaces for Effector Control by a Person with Tetraplegia. <i>Communications in Computer and Information Science</i> , 2020 , 102-109	0.3	

- 1 Acute Stroke **2010**, 414-417