Robert F Kirsch

List of Publications by Year
in descending order

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98 papers	3,905 citations	147801 31 h-index	133252 59 g-index
103 all docs	103 docs citations	103 times ranked	3151 citing authors

#	Article	IF	Citations
1	Restoration of reaching and grasping movements through brain-controlled muscle stimulation in a person with tetraplegia: a proof-of-concept demonstration. Lancet, The, 2017, 389, 1821-1830.	13.7	632
2	Evaluation of Head Orientation and Neck Muscle EMG Signals as Command Inputs to a Humanâ€“Computer Interface for Individuals With High Tetraplegia. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2008, 16, 485-496.	4.9	221
3	EMG-based prediction of shoulder and elbow kinematics in able-bodied and spinal cord injured individuals. IEEE Transactions on Rehabilitation Engineering: A Publication of the IEEE Engineering in Medicine and Biology Society, 2000, 8, 471-480.	1.4	161
4	Effects of voluntary force generation on the elastic components of endpoint stiffness. Experimental Brain Research, 2001, 141, 312-323.	1.5	135
5	Toward the Restoration of Hand Use to a Paralyzed Monkey: Brain-Controlled Functional Electrical Stimulation of Forearm Muscles. PLoS ONE, 2009, 4, e5924.	2.5	123
6	Multijoint dynamics and postural stability of the human arm. Experimental Brain Research, 2004, 157, 507-17.	1.5	122
7	Stimulation Stability and Selectivity of Chronically Implanted Multicontact Nerve Cuff Electrodes in the Human Upper Extremity. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2009, 17, 428-437.	4.9	116
8	Implanted Neuroprosthesis for Restoring Arm and Hand Function in People With High Level Tetraplegia. Archives of Physical Medicine and Rehabilitation, 2014, 95, 1201-1211.e1.	0.9	114
9	Multiple-input, multiple-output system identification for characterization of limb stiffness dynamics. Biological Cybernetics, 1999, 80, 327-337.	1.3	113
10	Muscle stiffness during transient and continuous movements of cat muscle: perturbation characteristics and physiological relevance. IEEE Transactions on Biomedical Engineering, 1994, 41, 758-770.	4.2	107
11	Voluntary Control of Static Endpoint Stiffness During Force Regulation Tasks. Journal of Neurophysiology, 2002, 87, 2808-2816.	1.8	106
12	Rapid calibration of an intracortical brainâ€“computer interface for people with tetraplegia. Journal of Neural Engineering, 2018, 15, 026007.	3.5	95
13	A Real-Time, 3-D Musculoskeletal Model for Dynamic Simulation of Arm Movements. IEEE Transactions on Biomedical Engineering, 2009, 56, 941-948.	4.2	83
14	A musculoskeletal model of the upper extremity for use in the development of neuroprosthetic systems. Journal of Biomechanics, 2008, 41, 1714-1721.	2.1	82
15	Neuroprosthetic Applications of Electrical Stimulation. Assistive Technology, 2000, 12, 6-20.	2.0	76
16	Electromyogram-based neural network control of transhumeral prostheses. Journal of Rehabilitation Research and Development, 2011, 48, 739.	1.6	76
17	Combined feedforward and feedback control of a redundant, nonlinear, dynamic musculoskeletal system. Medical and Biological Engineering and Computing, 2009, 47, 533-542.	2.8	73
18	Neural compensation for muscular fatigue: evidence for significant force regulation in man. Journal of Neurophysiology, 1987, 57, 1893-1910.	1.8	72

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19	Neural ensemble dynamics in dorsal motor cortex during speech in people with paralysis. ELife, 2019, 8, .	6.0	64
20	Real-Time Simulation of Three-Dimensional Shoulder Girdle and Arm Dynamics. IEEE Transactions on Biomedical Engineering, 2014, 61, 1947-1956.	4.2	58
21	Feasibility of EMG-Based Neural Network Controller for an Upper Extremity Neuroprosthesis. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2009, 17, 80-90.	4.9	55
22	Miniature Low-Power Inertial Sensors: Promising Technology for Implantable Motion Capture Systems. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2014, 22, 1138-1147.	4.9	52
23	Estimation of intrinsic and reflex contributions to muscle dynamics: a modeling study. IEEE Transactions on Biomedical Engineering, 2000, 47, 1413-1421.	4.2	51
24	Effects of spinal cord injury on lower-limb passive joint moments revealed through a nonlinear viscoelastic model. Journal of Rehabilitation Research and Development, 2004, 41, 15.	1.6	51
25	Virtual Reality Environment for Simulating Tasks With a Myoelectric Prosthesis: An Assessment and Training Tool. Journal of Prosthetics and Orthotics, 2011, 23, 89-94.	0.4	48
26	Training an Actor-Critic Reinforcement Learning Controller for Arm Movement Using Human-Generated Rewards. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2017, 25, 1892-1905.	4.9	48
27	Neural compensation for fatigue-induced changes in muscle stiffness during perturbations of elbow angle in human. Journal of Neurophysiology, 1992, 68, 449-470.	1.8	46
28	Identification of time-varying stiffness dynamics of the human ankle joint during an imposed movement. Experimental Brain Research, 1997, 114, 71-85.	1.5	43
29	Feedback control policies employed by people using intracortical brainâ€“computer interfaces. Journal of Neural Engineering, 2017, 14, 016001.	3.5	41
30	Prediction of Imagined Single-Joint Movements in a Person With High-Level Tetraplegia. IEEE Transactions on Biomedical Engineering, 2012, 59, 2755-2765.	4.2	39
31	Musculoskeletal model of trunk and hips for development of seated-posture-control neuroprosthesis. Journal of Rehabilitation Research and Development, 2009, 46, 515.	1.6	37
32	Comprehensive Joint Feedback Control for Standing by Functional Neuromuscular Stimulationâ€”A Simulation Study. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2010, 18, 646-657.	4.9	33
33	Prevention of secondary stroke in VA: Role of occupational therapists and physical therapists. Journal of Rehabilitation Research and Development, 2008, 45, 1019-1026.	1.6	33
34	A robotic manipulator for the characterization of two-dimensional dynamic stiffness using stochastic displacement perturbations. Journal of Neuroscience Methods, 2000, 102, 177-186.	2.5	32
35	Multi-Muscle FES Force Control of the Human Arm for Arbitrary Goals. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2014, 22, 654-663.	4.9	32
36	Identification of time-varying dynamics of the human triceps surae stretch reflex. Experimental Brain Research, 1993, 97, 115-127.	1.5	30

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37	Principled BCI Decoder Design and Parameter Selection Using a Feedback Control Model. Scientific Reports, 2019, 9, 8881.	3.3	28
38	Simulation of a functional neuromuscular stimulation powered mechanical gait orthosis with coordinated joint locking. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2005, 13, 227-235.	4.9	25
39	Musculoskeletal Model-Guided, Customizable Selection of Shoulder and Elbow Muscles for a C5 SCI Neuroprosthesis. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2008, 16, 255-263.	4.9	25
40	A Fully Implanted Intramuscular Bipolar Myoelectric Signal Recording Electrode. Neuromodulation, 2014, 17, 794-799.	0.8	22
41	Stable, three degree-of-freedom myoelectric prosthetic control via chronic bipolar intramuscular electrodes: a case study. Journal of NeuroEngineering and Rehabilitation, 2019, 16, 147.	4.6	21
42	Effect of maintained stretch on the range of motion of the human ankle joint. Clinical Biomechanics, 1995, 10, 166-168.	1.2	19
43	Measurement of isometric elbow and shoulder moments: position-dependent strength of posterior deltoid-to-triceps muscle tendon transfer in tetraplegia. IEEE Transactions on Rehabilitation Engineering: A Publication of the IEEE Engineering in Medicine and Biology Society, 1996, 4, 403-409.	1.4	19
44	A Computational Technique for Determining the Ground Reaction Forces in Human Bipedal Stance. Journal of Applied Biomechanics, 2003, 19, 361-371.	0.8	19
45	Tests of Models for Saccadeâ€“Vergence Interaction using Novel Stimulus Conditions. Biological Cybernetics, 2006, 95, 143-157.	1.3	19
46	Experimental verification of a computational technique for determining ground reactions in human bipedal stance. Journal of Biomechanics, 2007, 40, 1115-1124.	2.1	19
47	Semiparametric Identification of Human Arm Dynamics for Flexible Control of a Functional Electrical Stimulation Neuroprosthesis. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2016, 24, 1405-1415.	4.9	19
48	A Comparison of Intention Estimation Methods for Decoder Calibration in Intracortical Brainâ€“Computer Interfaces. IEEE Transactions on Biomedical Engineering, 2018, 65, 2066-2078.	4.2	19
49	An Implanted Neuroprosthesis for High Tetraplegia. Topics in Spinal Cord Injury Rehabilitation, 2005, 10, 38-52.	1.8	19
50	Evaluation of head orientation and neck muscle EMG signals as three-dimensional command sources. Journal of NeuroEngineering and Rehabilitation, 2015, 12, 25.	4.6	18
51	Center of mass acceleration feedback control for standing by functional neuromuscular stimulation: A simulation study. Journal of Rehabilitation Research and Development, 2012, 49, 279.	1.6	18
52	Standard task set for evaluating rehabilitation interventions for individuals with arm paralysis. Journal of Rehabilitation Research and Development, 2012, 49, 395.	1.6	17
53	Human-Like Rewards to Train a Reinforcement Learning Controller for Planar Arm Movement. IEEE Transactions on Human-Machine Systems, 2016, 46, 723-733.	3.5	17
54	Selection of optimal muscle set for 16-channel standing neuroprosthesis. Journal of Rehabilitation Research and Development, 2008, 45, 1007-1018.	1.6	17

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55	Identification of time-varying dynamics of the human triceps surae stretch reflex. Experimental Brain Research, 1993, 97, 128-138.	1.5	16
56	Neural Representation of Observed, Imagined, and Attempted Grasping Force in Motor Cortex of Individuals with Chronic Tetraplegia. Scientific Reports, 2020, 10, 1429.	3.3	16
57	Selection of an optimal muscle set for a 16-channel standing neuroprosthesis using a human musculoskeletal model. Journal of Rehabilitation Research and Development, 2006, 43, 273.	1.6	14
58	A Neuroprosthesis for High Tetraplegia. Journal of Spinal Cord Medicine, 2001, 24, 109-113.	1.4	13
59	Trunk Acceleration for Neuroprosthetic Control of Standing: A Pilot Study. Journal of Applied Biomechanics, 2012, 28, 85-92.	0.8	13
60	Electrical Stimulation of the Neuromuscular System. , 2005, , 157-191.		10
61	A model-based study of passive joint properties on muscle effort during static stance. Journal of Biomechanics, 2006, 39, 2253-2263.	2.1	10
62	Characterizing and Predicting Submovements during Human Three-Dimensional Arm Reaches. PLoS ONE, 2014, 9, e103387.	2.5	10
63	Case study: Head orientation and neck electromyography for cursor control in persons with high cervical tetraplegia. Journal of Rehabilitation Research and Development, 2016, 53, 519-530.	1.6	10
64	Stable, simultaneous and proportional 4-DoF prosthetic hand control via synergy-inspired linear interpolation: a case series. Journal of NeuroEngineering and Rehabilitation, 2021, 18, 50.	4.6	10
65	Real-Time Control of the Hand by Intracortically Controlled Functional Neuromuscular Stimulation. , 2007, , .		9
66	An optimized proportional-derivative controller for the human upper extremity with gravity. Journal of Biomechanics, 2015, 48, 3692-3700.	2.1	9
67	Signal-independent noise in intracortical brainâ€“computer interfaces causes movement time properties inconsistent with Fittsâ€™ law. Journal of Neural Engineering, 2017, 14, 026010.	3.5	9
68	The Neural Representation of Force across Grasp Types in Motor Cortex of Humans with Tetraplegia. ENeuro, 2021, 8, ENEURO.0231-20.2020.	1.9	9
69	Involuntary, Electrically Excitable Nerve Transfer for Denervation: Results From an Animal Model. Journal of Hand Surgery, 2009, 34, 479-487.e3.	1.6	8
70	Hindsight Experience Replay Improves Reinforcement Learning for Control of a MIMO Musculoskeletal Model of the Human Arm. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2021, 29, 1016-1025.	4.9	8
71	Spiral Nerve Cuff Electrodes for an Upper Extremity Neuroprosthesis. , 2006, 2006, 3584-7.		6
72	Selection of muscle and nerve-cuff electrodes for neuroprostheses using customizable musculoskeletal model. Journal of Rehabilitation Research and Development, 2013, 50, 395.	1.6	6

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73	UPPER AND LOWER EXTREMITY MOTOR NEUROPROSTHESES. Series on Bioengineering and Biomedical Engineering, 2004, , 844-877.	0.1	6
74	EMG-based Control for a C5/C6 Spinal Cord Injury Upper Extremity Neuroprosthesis. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2007, 2007, 2432-5.	0.5	5
75	System identification for 3D force control of a human arm neuroprosthesis using functional electrical stimulation. , 2012, , .		5
76	Evaluation of a semi-parametric model for high-dimensional FES control. , 2015, , .		5
77	THE FUTURE OF MOTOR NEUROPROSTHESES. Series on Bioengineering and Biomedical Engineering, 2004, , 981-1004.	0.1	4
78	User-in-the-loop continuous and proportional control of a virtual prosthesis in a posture matching task. , 2012, 2012, 3557-9.		4
79	System Identification and Neuromuscular Modeling. , 2000, , 134-147.		3
80	Use of Intracortical Recordings to Control a Hand Neuroprosthesis. , 2007, , .		3
81	Predicting the initiation of minimum-jerk submovements in three-dimensional target-oriented human arm trajectories. , 2012, 2012, 6797-800.		3
82	Identifying inverse human arm dynamics using a robotic testbed. , 2014, , .		3
83	Application of system identification methods for decoding imagined single-joint movements in an individual with high tetraplegia. , 2010, 2010, 2678-81.		2
84	Identification of time-varying properties of the human triceps surae stretch reflex: II. rapid imposed movement. , 1992, , .		1
85	Identification of time-varying dynamics of the human triceps surae stretch reflex: I. rapid isometric contractions. , 1992, , .		1
86	Neural and Muscular Properties: Current Views and Controversies. , 2000, , 39-57.		1
87	Command of an upper extremity FES system using a simple set of commands. , 2010, 2010, 6222-5.		1
88	Skeletal Motor Neuroprostheses. Series on Bioengineering and Biomedical Engineering, 2017, , 491-536.	0.1	1
89	Invasive Brainâ€“Computer Interfaces for Functional Restoration. , 2018, , 379-391.		1
90	The Reconnecting the Hand and Arm with Brain (ReHAB) Commentary on â€œAn Integrated Brain-Machine Interface Platform With Thousands of Channelsâ€• Journal of Medical Internet Research, 2019, 21, e16339.	4.3	1

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91	Improving the Learning Rate, Accuracy, and Workspace of Reinforcement Learning Controllers for a Musculoskeletal Model of the Human Arm. IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2021, PP, 1-1.	4.9	1
92	Performance of ensemble time-varying system identification methods: Analog simulations and biological applications. , 1992, , .		0
93	Preface. Neuromodulation, 2001, 4, 139-141.	0.8	0
94	Model-Based FES Muscle Selection for Restoring Arm Movement in High SCI. , 2007, , 33.		0
95	Evaluation of volitional control of hand with vertical force assist device for high tetraplegia. , 2012, 2012, 1339-41.		0
96	Velocity neurons improve performance more than goal or position neurons do in a simulated closed-loop BCI arm-reaching task. Frontiers in Computational Neuroscience, 2015, 9, 84.	2.1	0
97	Restoring Functional Reach-to-Grasp in a Person with Chronic Tetraplegia Using Implanted Functional Electrical Stimulation and Intracortical Brain-Computer Interfaces. Springer Briefs in Electrical and Computer Engineering, 2020, , 35-45.	0.5	0
98	Spiral Nerve Cuff Electrodes for an Upper Extremity Neuroprosthesis. Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2006, , .	0.5	0