MÃ¡tÃ© Lengyel

List of Publications by Year
in descending order

124 papers	22,977 citations	38660 50 h-index	20307 116 g-index
139 all docs	139 docs citations	139 times ranked	14106 citing authors

#	Article	IF	Citations
1	Planning in the brain. Neuron, 2022, 110, 914-934.	3.8	37
2	Adaptive erasure of spurious sequences in sensory cortical circuits. Neuron, 2022, , .	3.8	3
3	Reach adaption to a visuomotor gain with terminal error feedback involves reinforcement learning. PLoS ONE, 2022, 17, e0269297.	1.1	0
4	Multiple decisions about one object involve parallel sensory acquisition but time-multiplexed evidence incorporation. ELife, 2021, 10, .	2.8	26
5	Representations of uncertainty: where art thou?. Current Opinion in Behavioral Sciences, 2021, 38, 150-162.	2.0	27
6	Motor memories of object dynamics are categorically organized. ELife, 2021, 10, .	2.8	11
7	Contextual inference underlies the learning of sensorimotor repertoires. Nature, 2021, 600, 489-493.	13.7	82
8	Cortical-like dynamics in recurrent circuits optimized for sampling-based probabilistic inference. Nature Neuroscience, 2020, 23, 1138-1149.	7.1	76
9	Motor memories in manipulation tasks are linked to contact goals between objects. Journal of Neurophysiology, 2020, 124, 994-1004.	0.9	4
10	Human decision making anticipates future performance in motor learning. PLoS Computational Biology, 2020, 16, e1007632.	1.5	10
11	Age-related reduction in motor adaptation: brain structural correlates and the role of explicit memory. Neurobiology of Aging, 2020, 90, 13-23.	1.5	42
12	Model-Free Robust Optimal Feedback Mechanisms of Biological Motor Control. Neural Computation, 2020, 32, 562-595.	1.3	26
13	Editorial overview: Computational neuroscience. Current Opinion in Neurobiology, 2019, 58, iii-vii.	2.0	0
14	Internal Models in Biological Control. Annual Review of Control, Robotics, and Autonomous Systems, 2019, 2, 339-364.	7.5	137
15	Rapid Visuomotor Responses Reflect Value-Based Decisions. Journal of Neuroscience, 2019, 39, 3906-3920.	1.7	45
16	The visual geometry of a tool modulates generalization during adaptation. Scientific Reports, 2019, 9, 2731.	1.6	3
17	Separate motor memories are formed when controlling different implicitly specified locations on a tool. Journal of Neurophysiology, 2019, 121, 1342-1351.	0.9	4
18	Representational untangling by the firing rate nonlinearity in V1 simple cells. ELife, 2019, 8, .	2.8	4

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19	Unimodal statistical learning produces multimodal object-like representations. ELife, 2019, 8, .	2.8	11
20	Multiple motor memories are learned to control different points on a tool. Nature Human Behaviour, 2018, 2, 300-311.	6.2	47
21	Adaptive coupling influences generalization of sensorimotor learning. PLoS ONE, 2018, 13, e0207482.	1.1	4
22	Global and Multiplexed Dendritic Computations under InÂVivo-like Conditions. Neuron, 2018, 100, 579-592.e5.	3.8	83
23	Increasing muscle co-contraction speeds up internal model acquisition during dynamic motor learning. Scientific Reports, 2018, 8, 16355.	1.6	40
24	Imagery of movements immediately following performance allows learning of motor skills that interfere. Scientific Reports, 2018, 8, 14330.	1.6	30
25	Increasing Motor Noise Impairs Reinforcement Learning in Healthy Individuals. ENeuro, 2018, 5, ENEURO.0050-18.2018.	0.9	48
26	The Redemption of Noise: Inference with Neural Populations. Trends in Neurosciences, 2018, 41, 767-770.	4.2	5
27	The Dynamical Regime of Sensory Cortex: Stable Dynamics around a Single Stimulus-Tuned Attractor Account for Patterns of Noise Variability. Neuron, 2018, 98, 846-860.e5.	3.8	121
28	Counterfactual Reasoning Underlies the Learning of Priors in Decision Making. Neuron, 2018, 99, 1083-1097.e6.	3.8	41
29	Decision-making in sensorimotor control. Nature Reviews Neuroscience, 2018, 19, 519-534.	4.9	183
30	Rapid Automatic Motor Encoding of Competing Reach Options. Cell Reports, 2017, 18, 1619-1626.	2.9	36
31	Rapid visuomotor feedback gains are tuned to the task dynamics. Journal of Neurophysiology, 2017, 118, 2711-2726.	0.9	33
32	With or without you: predictive coding and Bayesian inference in the brain. Current Opinion in Neurobiology, 2017, 46, 219-227.	2.0	185
33	Grip force when reaching with target uncertainty provides evidence for motor optimization over averaging. Scientific Reports, 2017, 7, 11703.	1.6	21
34	Piercing of Consciousness as a Threshold-Crossing Operation. Current Biology, 2017, 27, 2285-2295.e6.	1.8	49
35	Rapid target foraging with reach or gaze: The hand looks further ahead than the eye. PLoS Computational Biology, 2017, 13, e1005504.	1.5	28
36	An error-tuned model for sensorimotor learning. PLoS Computational Biology, 2017, 13, e1005883.	1.5	11

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37	Target Uncertainty Mediates Sensorimotor Error Correction. PLoS ONE, 2017, 12, e0170466.	1.1	18
38	Statistical treatment of looking-time data.. Developmental Psychology, 2016, 52, 521-536.	1.2	116
39	The Hamiltonian Brain: Efficient Probabilistic Inference with Excitatory-Inhibitory Neural Circuit Dynamics. PLoS Computational Biology, 2016, 12, e1005186.	1.5	53
40	Confidence Is the Bridge between Multi-stage Decisions. Current Biology, 2016, 26, 3157-3168.	1.8	93
41	Motor Planning, Not Execution, Separates Motor Memories. Neuron, 2016, 92, 773-779.	3.8	113
42	Theoretical perspectives on active sensing. Current Opinion in Behavioral Sciences, 2016, 11, 100-108.	2.0	95
43	Neural Variability and Sampling-Based Probabilistic Representations in the Visual Cortex. Neuron, 2016, 92, 530-543.	3.8	196
44	Ageing increases reliance on sensorimotor prediction through structural and functional differences in frontostriatal circuits. Nature Communications, 2016, 7, 13034.	5.8	101
45	The sequential encoding of competing action goals involves dynamic restructuring of motor plans in working memory. Journal of Neurophysiology, 2016, 115, 3113-3122.	0.9	34
46	Comment on â€œSingle-trial spike trains in parietal cortex reveal discrete steps during decision-makingâ€. Science, 2016, 351, 1406-1406.	6.0	26
47	Enhanced crosslimb transfer of force-field learning for dynamics that are identical in extrinsic and joint-based coordinates for both limbs. Journal of Neurophysiology, 2016, 115, 445-456.	0.9	15
48	Goal-Directed Decision Making with Spiking Neurons. Journal of Neuroscience, 2016, 36, 1529-1546.	1.7	62
49	Effective reinforcement learning following cerebellar damage requires a balance between exploration and motor noise. Brain, 2016, 139, 101-114.	3.7	161
50	Parallel specification of competing sensorimotor control policies for alternative action options. Nature Neuroscience, 2016, 19, 320-326.	7.1	102
51	Computations underlying sensorimotor learning. Current Opinion in Neurobiology, 2016, 37, 7-11.	2.0	86
52	When Optimal Feedback Control Is Not Enough: Feedforward Strategies Are Required for Optimal Control with Active Sensing. PLoS Computational Biology, 2016, 12, e1005190.	1.5	42
53	The Sensorimotor System Can Sculpt Behaviorally Relevant Representations for Motor Learning. ENeuro, 2016, 3, ENEURO.0070-16.2016.	0.9	13
54	A common mechanism underlies changes of mind about decisions and confidence. ELife, 2016, 5, e12192.	2.8	172

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55	Active sensing in the categorization of visual patterns. ELife, 2016, 5, .	2.8	75
56	Coordinate Representations for Interference Reduction in Motor Learning. PLoS ONE, 2015, 10, e0129388.	1.1	11
57	The Value of the Follow-Through Derives from Motor Learning Depending on Future Actions. Current Biology, 2015, 25, 397-401.	1.8	73
58	Action plan co-optimization reveals the parallel encoding of competing reach movements. Nature Communications, 2015, 6, 7428.	5.8	67
59	Rapid Visuomotor Corrective Responses during Transport of Hand-Held Objects Incorporate Novel Object Dynamics. Journal of Neuroscience, 2015, 35, 10572-10580.	1.7	27
60	Dendritic nonlinearities are tuned for efficient spike-based computations in cortical circuits. ELife, 2015, 4, .	2.8	37
61	Modeling information integration in sequential visual decision-making. Journal of Vision, 2015, 15, 90.	0.1	0
62	Seeing what you want to see: priors for one's own actions represent exaggerated expectations of success. Frontiers in Behavioral Neuroscience, 2014, 8, 232.	1.0	34
63	On the Origins of Suboptimality in Human Probabilistic Inference. PLoS Computational Biology, 2014, 10, e1003661.	1.5	129
64	Computations in Sensorimotor Learning. Cold Spring Harbor Symposia on Quantitative Biology, 2014, 79, 93-98.	2.0	4
65	Optimal Recall from Bounded Metaplastic Synapses: Predicting Functional Adaptations in Hippocampal Area CA3. PLoS Computational Biology, 2014, 10, e1003489.	1.5	17
66	Fast But Fleeting: Adaptive Motor Learning Processes Associated with Aging and Cognitive Decline. Journal of Neuroscience, 2014, 34, 13411-13421.	1.7	84
67	Fractionation of the visuomotor feedback response to directions of movement and perturbation. Journal of Neurophysiology, 2014, 112, 2218-2233.	0.9	29
68	Functional Magnetic Resonance Imaging of Impaired Sensory Prediction in Schizophrenia. JAMA Psychiatry, 2014, 71, 28.	6.0	138
69	A Trade-Off Between Dendritic Democracy and Independence in Neurons with Intrinsic Subthreshold Membrane Potential Oscillations. Springer Series in Computational Neuroscience, 2014, , 347-364.	0.3	2
70	Motor Effort Alters Changes of Mind in Sensorimotor Decision Making. PLoS ONE, 2014, 9, e92681.	1.1	78
71	Cognitive Tomography Reveals Complex, Task-Independent Mental Representations. Current Biology, 2013, 23, 2169-2175.	1.8	44
72	Motor control is decision-making. Current Opinion in Neurobiology, 2012, 22, 996-1003.	2.0	333

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73	31.1:Invited Paper: Programmable Electrostatic Surface for Tactile Perceptions. Digest of Technical Papers SID International Symposium, 2012, 43, 407-410.	0.1	11
74	A Theoretical Framework for the Dynamics of Multiple Intrinsic Oscillators in Single Neurons. , 2012, , 53-72.		9
75	Spontaneous Cortical Activity Reveals Hallmarks of an Optimal Internal Model of the Environment. Science, 2011, 331, 83-87.	6.0	593
76	Principles of sensorimotor learning. Nature Reviews Neuroscience, 2011, 12, 739-751.	4.9	1,161
77	Representations of uncertainty in sensorimotor control. Current Opinion in Neurobiology, 2011, 21, 629-635.	2.0	55
78	Inferring Visuomotor Priors for Sensorimotor Learning. PLoS Computational Biology, 2011, 7, e1001112.	1.5	26
79	Motor learning. Current Biology, 2010, 20, R467-R472.	1.8	94
80	Q&A: Robotics as a tool to understand the brain. BMC Biology, 2010, 8, 92.	1.7	19
81	Synapses with short-term plasticity are optimal estimators of presynaptic membrane potentials. Nature Neuroscience, 2010, 13, 1271-1275.	7.1	61
82	Democracy-Independence Trade-Off in Oscillating Dendrites and Its Implications for Grid Cells. Neuron, 2010, 66, 429-437.	3.8	53
83	Statistically optimal perception and learning: from behavior to neural representations. Trends in Cognitive Sciences, 2010, 14, 119-130.	4.0	539
84	The role of ongoing dendritic oscillations in single-neuron dynamics. Nature Precedings, 2009, , .	0.1	0
85	Requirements for a single cell mechanism of entorhinal "grid field" activity: role of dendritic oscillators and coupling. Nature Precedings, 2009, , .	0.1	0
86	The Role of Ongoing Dendritic Oscillations in Single-Neuron Dynamics. PLoS Computational Biology, 2009, 5, e1000493.	1.5	54
87	Changes of mind in decision-making. Nature, 2009, 461, 263-266.	13.7	528
88	A modular planar robotic manipulandum with end-point torque control. Journal of Neuroscience Methods, 2009, 181, 199-211.	1.3	199
89	Noise in the nervous system. Nature Reviews Neuroscience, 2008, 9, 292-303.	4.9	2,230
90	Phase Coding: Spikes Get a Boost from Local Fields. Current Biology, 2008, 18, R349-R351.	1.8	12

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91	Flexible Representations of Dynamics Are Used in Object Manipulation. Current Biology, 2008, 18, 763-768.	1.8	56
92	Bayesian learning of visual chunks by human observers. Proceedings of the National Academy of Sciences of the United States of America, 2008, 105, 2745-2750.	3.3	194
93	Computational principles of sensorimotor control that minimize uncertainty and variability. Journal of Physiology, 2007, 578, 387-396.	1.3	284
94	Probabilistic models in human sensorimotor control. Human Movement Science, 2007, 26, 511-524.	0.6	154
95	Bayesian decision theory in sensorimotor control. Trends in Cognitive Sciences, 2006, 10, 319-326.	4.0	724
96	Matching storage and recall: hippocampal spike timingâ€"dependent plasticity and phase response curves. Nature Neuroscience, 2005, 8, 1677-1683.	7.1	112
97	Dendritic spiking accounts for rate and phase coding in a biophysical model of a hippocampal place cell. Neurocomputing, 2005, 65-66, 331-341.	3.5	2
98	Theta oscillation-coupled dendritic spiking integrates inputs on a long time scale. Hippocampus, 2005, 15, 950-962.	0.9	24
99	Computational theories on the function of theta oscillations. Biological Cybernetics, 2005, 92, 393-408.	0.6	34
100	Failure to Consolidate the Consolidation Theory of Learning for Sensorimotor Adaptation Tasks. Journal of Neuroscience, 2004, 24, 8662-8671.	1.7	232
101	Bayesian integration in sensorimotor learning. Nature, 2004, 427, 244-247.	13.7	1,688
102	Effect of dendritic location and different components of LTP expression on the bursting activity of hippocampal CA1 pyramidal cells. Neurocomputing, 2004, 58-60, 691-697.	3.5	3
103	TOPS (Task Optimization in the Presence of Signal-Dependent Noise) model. Systems and Computers in Japan, 2004, 35, 48-58.	0.2	33
104	Theta-Modulated Feedforward Network Generates Rate and Phase Coded Firing in the Entorhino-Hippocampal System. IEEE Transactions on Neural Networks, 2004, 15, 1092-1099.	4.8	14
105	Dynamically detuned oscillations account for the coupled rate and temporal code of place cell firing. Hippocampus, 2003, 13, 700-714.	0.9	145
106	A unifying computational framework for motor control and social interaction. Philosophical Transactions of the Royal Society B: Biological Sciences, 2003, 358, 593-602.	1.8	956
107	Perspectives and problems in motor learning. Trends in Cognitive Sciences, 2001, 5, 487-494.	4.0	667
108	Hippocampal rhythm generation: Gamma-related theta-frequency resonance in CA3 interneurons. Biological Cybernetics, 2001, 84, 123-132.	0.6	26

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109	Intrahippocampal gamma and theta rhythm generation in a network model of inhibitory interneurons. Neurocomputing, 2001, 38-40, 713-719.	3.5	10
110	MOSAIC Model for Sensorimotor Learning and Control. Neural Computation, 2001, 13, 2201-2220.	1.3	714
111	Episodic Memory and Cognitive Map in a Rate Model Network of the Rat Hippocampus. Lecture Notes in Computer Science, 2001, , 1135-1140.	1.0	0
112	Computational principles of movement neuroscience. Nature Neuroscience, 2000, 3, 1212-1217.	7.1	1,709
113	Learning and Decay of Prediction in Object Manipulation. Journal of Neurophysiology, 2000, 84, 334-343.	0.9	50
114	Evidence for an Eye-Centered Spherical Representation of the Visuomotor Map. Journal of Neurophysiology, 1999, 81, 935-939.	0.9	132
115	Predictive Motor Learning of Temporal Delays. Journal of Neurophysiology, 1999, 82, 2039-2048.	0.9	79
116	Single Cell and Population Activities in Cortical-like Systems. Reviews in the Neurosciences, 1999, 10, 201-12.	1.4	3
117	The effect of visuomotor displacements on arm movement paths. Experimental Brain Research, 1999, 127, 213-223.	0.7	45
118	Location-dependent differences between somatic and dendritic IPSPs. Neurocomputing, 1999, 26-27, 193-197.	3.5	1
119	Spatio-Temporal Prediction Modulates the Perception of Self-Produced Stimuli. Journal of Cognitive Neuroscience, 1999, 11, 551-559.	1.1	749
120	Central cancellation of self-produced tickle sensation. Nature Neuroscience, 1998, 1, 635-640.	7.1	1,195
121	Maintaining internal representations: the role of the human superior parietal lobe. Nature Neuroscience, 1998, 1, 529-533.	7.1	670
122	Signal-dependent noise determines motor planning. Nature, 1998, 394, 780-784.	13.7	2,197
123	Modular decomposition in visuomotor learning. Nature, 1997, 386, 392-395.	13.7	204
124	Probabilistic Mechanisms in Sensorimotor Control. Novartis Foundation Symposium, 0, , 191-202.	1.2	4