

# Matt Botvinick

## List of Publications by Year in Descending Order

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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.

99  
papers

28,356  
citations

57  
h-index

106  
g-index

106  
ext. papers

32,959  
ext. citations

11.7  
avg, IF

7.49  
L-index

#	Paper	IF	Citations
99	Meta-learning, social cognition and consciousness in brains and machines. <i>Neural Networks</i> , <b>2022</b> , 145, 80-89	9.1	0
98	Unsupervised deep learning identifies semantic disentanglement in single inferotemporal face patch neurons. <i>Nature Communications</i> , <b>2021</b> , 12, 6456	17.4	5
97	Flexible modulation of sequence generation in the entorhinal-hippocampal system. <i>Nature Neuroscience</i> , <b>2021</b> , 24, 851-862	25.5	8
96	A distributional code for value in dopamine-based reinforcement learning. <i>Nature</i> , <b>2020</b> , 577, 671-675	50.4	119
95	Deep Reinforcement Learning and Its Neuroscientific Implications. <i>Neuron</i> , <b>2020</b> , 107, 603-616	13.9	37
94	Reinforcement Learning, Fast and Slow. <i>Trends in Cognitive Sciences</i> , <b>2019</b> , 23, 408-422	14	171
93	Hierarchical motor control in mammals and machines. <i>Nature Communications</i> , <b>2019</b> , 10, 5489	17.4	61
92	Widespread temporal coding of cognitive control in the human prefrontal cortex. <i>Nature Neuroscience</i> , <b>2019</b> , 22, 1883-1891	25.5	32
91	Subgoal- and Goal-related Reward Prediction Errors in Medial Prefrontal Cortex. <i>Journal of Cognitive Neuroscience</i> , <b>2019</b> , 31, 8-23	3.1	16
90	Toward a universal decoder of linguistic meaning from brain activation. <i>Nature Communications</i> , <b>2018</b> , 9, 963	17.4	97
89	Neural scene representation and rendering. <i>Science</i> , <b>2018</b> , 360, 1204-1210	33.3	178
88	Mental labour. <i>Nature Human Behaviour</i> , <b>2018</b> , 2, 899-908	12.8	65
87	Prefrontal cortex as a meta-reinforcement learning system. <i>Nature Neuroscience</i> , <b>2018</b> , 21, 860-868	25.5	211
86	Dissociable neural mechanisms track evidence accumulation for selection of attention versus action. <i>Nature Communications</i> , <b>2018</b> , 9, 2485	17.4	13
85	Toward a Rational and Mechanistic Account of Mental Effort. <i>Annual Review of Neuroscience</i> , <b>2017</b> , 40, 99-124	17	361
84	The hippocampus as a predictive map. <i>Nature Neuroscience</i> , <b>2017</b> , 20, 1643-1653	25.5	309
83	The successor representation in human reinforcement learning. <i>Nature Human Behaviour</i> , <b>2017</b> , 1, 680-692	22.8	153

82	Neuroscience-Inspired Artificial Intelligence. <i>Neuron</i> , <b>2017</b> , 95, 245-258	13.9	526
81	Dorsal hippocampus contributes to model-based planning. <i>Nature Neuroscience</i> , <b>2017</b> , 20, 1269-1276	25.5	101
80	Building machines that learn and think for themselves. <i>Behavioral and Brain Sciences</i> , <b>2017</b> , 40, e255	0.9	11
79	Complementary learning systems within the hippocampus: a neural network modelling approach to reconciling episodic memory with statistical learning. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> , <b>2017</b> , 372,	5.8	154
78	Predictive representations can link model-based reinforcement learning to model-free mechanisms. <i>PLoS Computational Biology</i> , <b>2017</b> , 13, e1005768	5	127
77	A comparative evaluation of off-the-shelf distributed semantic representations for modelling behavioural data. <i>Cognitive Neuropsychology</i> , <b>2016</b> , 33, 175-90	2.3	48
76	Statistical learning of temporal community structure in the hippocampus. <i>Hippocampus</i> , <b>2016</b> , 26, 3-8	3.5	125
75	Irrational time allocation in decision-making. <i>Proceedings of the Royal Society B: Biological Sciences</i> , <b>2016</b> , 283,	4.4	30
74	Pain in the ACC?. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2016</b> , 113, E2474-5	11.5	104
73	Dorsal anterior cingulate and ventromedial prefrontal cortex have inverse roles in both foraging and economic choice. <i>Cognitive, Affective and Behavioral Neuroscience</i> , <b>2016</b> , 16, 1127-1139	3.5	39
72	Dorsal anterior cingulate cortex and the value of control. <i>Nature Neuroscience</i> , <b>2016</b> , 19, 1286-91	25.5	282
71	Reduced model-based decision-making in schizophrenia. <i>Journal of Abnormal Psychology</i> , <b>2016</b> , 125, 777-787	49	
70	Reinforcement learning, efficient coding, and the statistics of natural tasks. <i>Current Opinion in Behavioral Sciences</i> , <b>2015</b> , 5, 71-77	4	52
69	Evidence integration in model-based tree search. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2015</b> , 112, 11708-13	11.5	22
68	Motivation and cognitive control: from behavior to neural mechanism. <i>Annual Review of Psychology</i> , <b>2015</b> , 66, 83-113	26.1	445
67	Uncovering a missing link in anterior cingulate research. <i>Neuron</i> , <b>2015</b> , 85, 455-7	13.9	3
66	Model-based hierarchical reinforcement learning and human action control. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> , <b>2014</b> , 369,	5.8	82
65	The computational and neural basis of cognitive control: charted territory and new frontiers. <i>Cognitive Science</i> , <b>2014</b> , 38, 1249-85	2.2	151

64	Anterior cingulate engagement in a foraging context reflects choice difficulty, not foraging value. <i>Nature Neuroscience</i> , <b>2014</b> , 17, 1249-54	25.5	157
63	Neurocognitive models of sense-making. <i>Biologically Inspired Cognitive Architectures</i> , <b>2014</b> , 8, 82-89		2
62	Optimal behavioral hierarchy. <i>PLoS Computational Biology</i> , <b>2014</b> , 10, e1003779	5	60
61	A labor/leisure tradeoff in cognitive control. <i>Journal of Experimental Psychology: General</i> , <b>2014</b> , 143, 131-41	4.1	170
60	The expected value of control: an integrative theory of anterior cingulate cortex function. <i>Neuron</i> , <b>2013</b> , 79, 217-40	13.9	1160
59	Using Wikipedia to learn semantic feature representations of concrete concepts in neuroimaging experiments. <i>Artificial Intelligence</i> , <b>2013</b> , 194, 240-252	3.6	28
58	Hierarchical learning induces two simultaneous, but separable, prediction errors in human basal ganglia. <i>Journal of Neuroscience</i> , <b>2013</b> , 33, 5797-805	6.6	57
57	Rats and humans can optimally accumulate evidence for decision-making. <i>Science</i> , <b>2013</b> , 340, 95-8	33.3	378
56	Motivated action: new light on prefrontal-neuromodulatory circuits. <i>Current Biology</i> , <b>2013</b> , 23, R161-3	6.3	4
55	Neural representations of events arise from temporal community structure. <i>Nature Neuroscience</i> , <b>2013</b> , 16, 486-92	25.5	275
54	Simitar: Simplified Searching of Statistically Significant Similarity Structure <b>2013</b> ,		3
53	Neural representation of reward probability: evidence from the illusion of control. <i>Journal of Cognitive Neuroscience</i> , <b>2013</b> , 25, 852-61	3.1	16
52	The intrinsic cost of cognitive control. <i>Behavioral and Brain Sciences</i> , <b>2013</b> , 36, 697-8; discussion 707-26	0.9	36
51	Neural and behavioral evidence for an intrinsic cost of self-control. <i>PLoS ONE</i> , <b>2013</b> , 8, e72626	3.7	71
50	Commentary: why I am not a dynamicist. <i>Topics in Cognitive Science</i> , <b>2012</b> , 4, 78-83; discussion 94-102	2.5	7
49	Goal-directed decision making as probabilistic inference: a computational framework and potential neural correlates. <i>Psychological Review</i> , <b>2012</b> , 119, 120-54	6.3	128
48	Distinguishing grammatical constructions with fMRI pattern analysis. <i>Brain and Language</i> , <b>2012</b> , 123, 174-82	2.9	45
47	Planning as inference. <i>Trends in Cognitive Sciences</i> , <b>2012</b> , 16, 485-8	14	129

46	Errors of interpretation and modeling: a reply to Grinband et al. <i>NeuroImage</i> , <b>2011</b> , 57, 316-9	7.9	60
45	Information mapping with pattern classifiers: a comparative study. <i>NeuroImage</i> , <b>2011</b> , 56, 476-96	7.9	104
44	A neural signature of hierarchical reinforcement learning. <i>Neuron</i> , <b>2011</b> , 71, 370-9	13.9	126
43	Generating text from functional brain images. <i>Frontiers in Human Neuroscience</i> , <b>2011</b> , 5, 72	3.3	25
42	Prefrontal cortex, cognitive control, and the registration of decision costs. <i>Proceedings of the National Academy of Sciences of the United States of America</i> , <b>2010</b> , 107, 7922-6	11.5	187
41	Conflict over cingulate cortex: Between-species differences in cingulate may support enhanced cognitive flexibility in humans. <i>Brain, Behavior and Evolution</i> , <b>2010</b> , 75, 239-40	1.5	16
40	Letting structure emerge: connectionist and dynamical systems approaches to cognition. <i>Trends in Cognitive Sciences</i> , <b>2010</b> , 14, 348-56	14	324
39	Decision making and the avoidance of cognitive demand. <i>Journal of Experimental Psychology: General</i> , <b>2010</b> , 139, 665-82	4.7	531
38	Toward an integrated account of object and action selection: a computational analysis and empirical findings from reaching-to-grasp and tool-use. <i>Neuropsychologia</i> , <b>2009</b> , 47, 671-83	3.2	28
37	Hierarchically organized behavior and its neural foundations: a reinforcement learning perspective. <i>Cognition</i> , <b>2009</b> , 113, 262-280	3.5	356
36	Anticipation of cognitive demand during decision-making. <i>Psychological Research</i> , <b>2009</b> , 73, 835-42	2.5	63
35	An analysis of immediate serial recall performance in a macaque. <i>Animal Cognition</i> , <b>2009</b> , 12, 671-8	3.1	16
34	Effort discounting in human nucleus accumbens. <i>Cognitive, Affective and Behavioral Neuroscience</i> , <b>2009</b> , 9, 16-27	3.5	225
33	Cingulate cortex: diverging data from humans and monkeys. <i>Trends in Neurosciences</i> , <b>2009</b> , 32, 566-74	13.3	98
32	Machine learning classifiers and fMRI: a tutorial overview. <i>NeuroImage</i> , <b>2009</b> , 45, S199-209	7.9	1128
31	Empirical and computational support for context-dependent representations of serial order: reply to Bowers, Damian, and Davis (2009). <i>Psychological Review</i> , <b>2009</b> , 116, 998-1002	6.3	8
30	Goal-directed decision making in prefrontal cortex: A computational framework. <i>Advances in Neural Information Processing Systems</i> , <b>2009</b> , 21, 169-176	2.2	13
29	Hierarchical models of behavior and prefrontal function. <i>Trends in Cognitive Sciences</i> , <b>2008</b> , 12, 201-8	14	342

28	From numerosity to ordinal rank: a gain-field model of serial order representation in cortical working memory. <i>Journal of Neuroscience</i> , <b>2007</b> , 27, 8636-42	6.6	76
27	Multilevel structure in behaviour and in the brain: a model of Fuster's hierarchy. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> , <b>2007</b> , 362, 1615-26	5.8	70
26	Short-term memory for serial order: a recurrent neural network model. <i>Psychological Review</i> , <b>2006</b> , 113, 201-33	6.3	235
25	Resolving conflict: a response to Martin and Cheng (2006). <i>Psychonomic Bulletin and Review</i> , <b>2006</b> , 13, 402-8; discussion 409-11	4.1	58
24	Viewing facial expressions of pain engages cortical areas involved in the direct experience of pain. <i>NeuroImage</i> , <b>2005</b> , 25, 312-9	7.9	439
23	Distraction and action slips in an everyday task: evidence for a dynamic representation of task context. <i>Psychonomic Bulletin and Review</i> , <b>2005</b> , 12, 1011-7	4.1	47
22	Effects of domain-specific knowledge on memory for serial order. <i>Cognition</i> , <b>2005</b> , 97, 135-51	3.5	21
21	Regularization in short-term memory for serial order. <i>Journal of Experimental Psychology: Learning Memory and Cognition</i> , <b>2005</b> , 31, 351-8	2.2	35
20	Neuroscience. Probing the neural basis of body ownership. <i>Science</i> , <b>2004</b> , 305, 782-3	33.3	119
19	Conflict monitoring and anterior cingulate cortex: an update. <i>Trends in Cognitive Sciences</i> , <b>2004</b> , 8, 539-46	4.4	2569
18	Doing without schema hierarchies: a recurrent connectionist approach to normal and impaired routine sequential action. <i>Psychological Review</i> , <b>2004</b> , 111, 395-429	6.3	262
17	The neural basis of error detection: conflict monitoring and the error-related negativity. <i>Psychological Review</i> , <b>2004</b> , 111, 931-959	6.3	593
16	Representing task context: proposals based on a connectionist model of action. <i>Psychological Research</i> , <b>2002</b> , 66, 298-311	2.5	18
15	Conflict monitoring and cognitive control. <i>Psychological Review</i> , <b>2001</b> , 108, 624-52	6.3	4938
14	Anterior cingulate cortex, conflict monitoring, and levels of processing. <i>NeuroImage</i> , <b>2001</b> , 14, 1302-8	7.9	574
13	The contribution of the anterior cingulate cortex to executive processes in cognition. <i>Reviews in the Neurosciences</i> , <b>1999</b> , 10, 49-57	4.7	440
12	Conflict monitoring versus selection-for-action in anterior cingulate cortex. <i>Nature</i> , <b>1999</b> , 402, 179-81	50.4	1620
11	Anterior cingulate cortex, error detection, and the online monitoring of performance. <i>Science</i> , <b>1998</b> , 280, 747-9	33.3	2714

10	Rubber hands feel touch that eyes see. <i>Nature</i> , <b>1998</b> , 391, 756	50.4	2430
9	Predictive representations can link model-based reinforcement learning to model-free mechanisms	8	
8	Identifying Model-Based and Model-Free Patterns in Behavior on Multi-Step Tasks	4	
7	The hippocampus as a predictive map	8	
6	Human dorsal anterior cingulate neurons signal conflict by amplifying task-relevant information	1	
5	Value Representations in the Rodent Orbitofrontal Cortex Drive Learning, not Choice	15	
4	Prefrontal Cortex as a Meta-Reinforcement Learning System	3	
3	Dorsal hippocampus contributes to model-based planning	3	
2	Generative replay for compositional visual understanding in the prefrontal-hippocampal circuit	3	
1	Neural evidence for the successor representation in choice evaluation	2	