## Vector-based navigation using grid-like representation

Nature 557, 429-433 DOI: 10.1038/s41586-018-0102-6

Citation Report

#	Article	IF	CITATIONS
1	HESS Opinions: Incubating deep-learning-powered hydrologic science advances as a community. Hydrology and Earth System Sciences, 2018, 22, 5639-5656.	4.9	169
3	WEBCA: Weakly-Electric-Fish Bioinspired Cognitive Architecture. Procedia Computer Science, 2018, 145, 365-369.	2.0	0
4	Learning Representations of Spatial Displacement through Sensorimotor Prediction. , 2018, , .		2
5	Deep Reinforcement Learning in Robotics Logistic Task Coordination. , 2018, , .		0
6	Deep Learning-Based Automated Classification of Multi-Categorical Abnormalities From Optical Coherence Tomography Images. Translational Vision Science and Technology, 2018, 7, 41.	2.2	105
7	WearableDL: Wearable Internet-of-Things and Deep Learning for Big Data Analytics—Concept, Literature, and Future. Mobile Information Systems, 2018, 2018, 1-20.	0.6	21
8	PLC-Integrated Sensing Technology in Mountain Regions for Drone Landing Sites: Focusing on Software Technology. Sensors, 2018, 18, 2693.	3.8	14
9	Hexadirectional Modulation of Theta Power in Human Entorhinal Cortex during Spatial Navigation. Current Biology, 2018, 28, 3310-3315.e4.	3.9	42
10	Cities, from Information to Interaction. Entropy, 2018, 20, 834.	2.2	14
11	What Is a Cognitive Map? Organizing Knowledge for Flexible Behavior. Neuron, 2018, 100, 490-509.	8.1	580
12	The Neurobiology of Mammalian Navigation. Current Biology, 2018, 28, R1023-R1042.	3.9	117
13	Navigation Patterns and Scent Marking: Underappreciated Contributors to Hippocampal and Entorhinal Spatial Representations?. Frontiers in Behavioral Neuroscience, 2018, 12, 98.	2.0	9
14	Will ocean zones with low oxygen levels expand or shrink?. Nature, 2018, 557, 314-315.	27.8	15
15	Inferring circuit mechanisms from sparse neural recording and global perturbation in grid cells. ELife, 2018, 7, .	6.0	11
16	How the Brain's Navigation System Shapes Our Visual Experience. Trends in Cognitive Sciences, 2018, 22, 810-825.	7.8	64
17	Al mimics brain codes for navigation. Nature, 2018, 557, 313-314.	27.8	8
18	Grid-like units help deep learning agent to navigate. Learning and Behavior, 2019, 47, 3-4.	1.0	1
19	Automatic Object Searching and Behavior Learning for Mobile Robots in Unstructured Environment by Deep Belief Networks. IEEE Transactions on Cognitive and Developmental Systems, 2019, 11, 395-404.	3.8	15

#	Article	IF	CITATIONS
20	Convergent Temperature Representations in Artificial and Biological Neural Networks. Neuron, 2019, 103, 1123-1134.e6.	8.1	24
21	Solid-State Synapses Modulated by Wavelength-Sensitive Temporal Correlations in Optic Sensory Inputs. ACS Applied Electronic Materials, 2019, 1, 1189-1197.	4.3	3
22	The effects of developmental alcohol exposure on the neurobiology of spatial processing. Neuroscience and Biobehavioral Reviews, 2019, 107, 775-794.	6.1	23
23	Retina-inspired Visual Module for Robot Navigation in Complex Environments. , 2019, , .		2
24	Zebrafish Neuroscience: Using Artificial Neural Networks to Help Understand Brains. Current Biology, 2019, 29, R1138-R1140.	3.9	6
25	Towards combining a neocortex model with entorhinal grid cells for mobile robot localization. , 2019, , .		2
26	Harnessing behavioral diversity to understand neural computations for cognition. Current Opinion in Neurobiology, 2019, 58, 229-238.	4.2	40
27	A deep learning framework for neuroscience. Nature Neuroscience, 2019, 22, 1761-1770.	14.8	563
28	Project Thyia: A Forever Gameplayer. , 2019, , .		3
29	Thalamocortical Circuit Motifs: A General Framework. Neuron, 2019, 103, 762-770.	8.1	171
29 30	Thalamocortical Circuit Motifs: A General Framework. Neuron, 2019, 103, 762-770. NeuroSLAM: a brain-inspired SLAM system for 3D environments. Biological Cybernetics, 2019, 113, 515-545.	8.1 1.3	171 56
	NeuroSLAM: a brain-inspired SLAM system for 3D environments. Biological Cybernetics, 2019, 113,		
30	NeuroSLAM: a brain-inspired SLAM system for 3D environments. Biological Cybernetics, 2019, 113, 515-545. Navigation behavior based on self-organized spatial representation in hierarchical recurrent neural	1.3	56
30 31	NeuroSLAM: a brain-inspired SLAM system for 3D environments. Biological Cybernetics, 2019, 113, 515-545.         Navigation behavior based on self-organized spatial representation in hierarchical recurrent neural network. Advanced Robotics, 2019, 33, 539-549.         A diverse range of factors affect the nature of neural representations underlying short-term	1.3 1.8	56 4
30 31 32	NeuroSLAM: a brain-inspired SLAM system for 3D environments. Biological Cybernetics, 2019, 113, 515-545.         Navigation behavior based on self-organized spatial representation in hierarchical recurrent neural network. Advanced Robotics, 2019, 33, 539-549.         A diverse range of factors affect the nature of neural representations underlying short-term memory. Nature Neuroscience, 2019, 22, 275-283.	1.3 1.8 14.8	56 4 102
30 31 32 33	NeuroSLAM: a brain-inspired SLAM system for 3D environments. Biological Cybernetics, 2019, 113, 515-545.         Navigation behavior based on self-organized spatial representation in hierarchical recurrent neural network. Advanced Robotics, 2019, 33, 539-549.         A diverse range of factors affect the nature of neural representations underlying short-term memory. Nature Neuroscience, 2019, 22, 275-283.         Theories of Error Back-Propagation in the Brain. Trends in Cognitive Sciences, 2019, 23, 235-250.         Waypoint Path Planning With Synaptic-Dependent Spike Latency. IEEE Transactions on Circuits and	1.3 1.8 14.8 7.8	56 4 102 247
30 31 32 33 34	NeuroSLAM: a brain-inspired SLAM system for 3D environments. Biological Cybernetics, 2019, 113, 515-545.         Navigation behavior based on self-organized spatial representation in hierarchical recurrent neural network. Advanced Robotics, 2019, 33, 539-549.         A diverse range of factors affect the nature of neural representations underlying short-term memory. Nature Neuroscience, 2019, 22, 275-283.         Theories of Error Back-Propagation in the Brain. Trends in Cognitive Sciences, 2019, 23, 235-250.         Waypoint Path Planning With Synaptic-Dependent Spike Latency. IEEE Transactions on Circuits and Systems I: Regular Papers, 2019, 66, 1544-1557.         An Approach to State of Charge Estimation of Lithium-Ion Batteries Based on Recurrent Neural	1.3 1.8 14.8 7.8 5.4	<ul> <li>56</li> <li>4</li> <li>102</li> <li>247</li> <li>13</li> </ul>

#	Article	IF	CITATIONS
38	Completing Explorer Games with a Deep Reinforcement Learning Framework Based on Behavior Angle Navigation. Electronics (Switzerland), 2019, 8, 576.	3.1	4
39	Toward personalized cognitive diagnostics of at-genetic-risk Alzheimer's disease. Proceedings of the National Academy of Sciences of the United States of America, 2019, 116, 9285-9292.	7.1	118
40	Deep Reinforcement Learning for Target Searching in Cognitive Electronic Warfare. IEEE Access, 2019, 7, 37432-37447.	4.2	24
41	Decoding Movements from Cortical Ensemble Activity Using a Long Short-Term Memory Recurrent Network. Neural Computation, 2019, 31, 1085-1113.	2.2	30
42	Grid-like Neural Representations Support Olfactory Navigation of a Two-Dimensional Odor Space. Neuron, 2019, 102, 1066-1075.e5.	8.1	108
43	Bayesian nonparametric models characterize instantaneous strategies in a competitive dynamic game. Nature Communications, 2019, 10, 1808.	12.8	17
44	Self-Agency and Self-Ownership in Cognitive Mapping. Trends in Cognitive Sciences, 2019, 23, 476-487.	7.8	35
45	Locations in the Neocortex: A Theory of Sensorimotor Object Recognition Using Cortical Grid Cells. Frontiers in Neural Circuits, 2019, 13, 22.	2.8	24
46	Deep neural network models of sensory systems: windows onto the role of task constraints. Current Opinion in Neurobiology, 2019, 55, 121-132.	4.2	78
47	Reinforcement learning in artificial and biological systems. Nature Machine Intelligence, 2019, 1, 133-143.	16.0	157
48	Guest editorial for spatial agent-based models: current practices and future trends. GeoInformatica, 2019, 23, 163-167.	2.7	7
49	The roles of supervised machine learning in systems neuroscience. Progress in Neurobiology, 2019, 175, 126-137.	5.7	88
50	Decision-making in brains and robots — the case for an interdisciplinary approach. Current Opinion in Behavioral Sciences, 2019, 26, 137-145.	3.9	8
51	Entorhinal Neurons Exhibit Cue Locking in Rodent VR. Frontiers in Cellular Neuroscience, 2018, 12, 512.	3.7	14
52	Origin and role of path integration in the cognitive representations of the hippocampus: computational insights into open questions. Journal of Experimental Biology, 2019, 222, .	1.7	59
53	Bio-Inspired Deep Reinforcement Learning for Autonomous Navigation of Artificial Agents. IEEE Latin America Transactions, 2019, 17, 2037-2044.	1.6	1
54	Cross-View Policy Learning for Street Navigation. , 2019, , .		14
55	DeepMapping: Unsupervised Map Estimation From Multiple Point Clouds. , 2019, , .		38

#	Article	IF	CITATIONS
56	Brain-Inspired Spatial Representation Based on Grid Cells with Finite-Spacing Firing Field. , 2019, , .		0
57	A Scalable Sampling-Based Optimal Path Planning Approach via Search Space Reduction. IEEE Access, 2019, 7, 153921-153935.	4.2	4
58	Explainable Artificial Intelligence for Neuroscience: Behavioral Neurostimulation. Frontiers in Neuroscience, 2019, 13, 1346.	2.8	81
59	An overview of deep learning in medical imaging focusing on MRI. Zeitschrift Fur Medizinische Physik, 2019, 29, 102-127.	1.5	1,266
60	On the Crossroad of Artificial Intelligence: A Revisit to Alan Turing and Norbert Wiener. IEEE Transactions on Cybernetics, 2019, 49, 3618-3626.	9.5	20
61	Mechanisms for Enhanced State Retention and Stability in Redoxâ€Gated Organic Neuromorphic Devices. Advanced Electronic Materials, 2019, 5, 1800686.	5.1	66
62	High-performance medicine: the convergence of human and artificial intelligence. Nature Medicine, 2019, 25, 44-56.	30.7	2,938
63	Training Spiking Neural Networks for Cognitive Tasks: A Versatile Framework Compatible With Various Temporal Codes. IEEE Transactions on Neural Networks and Learning Systems, 2020, 31, 1285-1296.	11.3	26
64	Concepts and Compositionality: In Search of the Brain's Language of Thought. Annual Review of Psychology, 2020, 71, 273-303.	17.7	56
65	Classification and mapping of urban canyon geometry using Google Street View images and deep multitask learning. Building and Environment, 2020, 167, 106424.	6.9	61
66	SRS-DNN: a deep neural network with strengthening response sparsity. Neural Computing and Applications, 2020, 32, 8127-8142.	5.6	7
67	An Air Combat Decision Learning System Based on a Brain-Like Cognitive Mechanism. Cognitive Computation, 2020, 12, 128-139.	5.2	19
68	Transition Scale-Spaces: A Computational Theory for the Discretized Entorhinal Cortex. Neural Computation, 2020, 32, 330-394.	2.2	2
69	Deforming the metric of cognitive maps distorts memory. Nature Human Behaviour, 2020, 4, 177-188.	12.0	45
70	Evolutionary shifts dramatically reorganized the human hippocampal complex. Journal of Comparative Neurology, 2020, 528, 3143-3170.	1.6	11
71	Egocentric and allocentric representations of space in the rodent brain. Current Opinion in Neurobiology, 2020, 60, 12-20.	4.2	85
72	Big data, machine learning and artificial intelligence: a neurologist's guide. Practical Neurology, 2020, , practneurol-2020-002688.	1.1	14
73	Cognitive Modeling of Automation Adaptation in a Time Critical Task. Frontiers in Psychology, 2020, 11, 2149.	2.1	4

#	Article	IF	CITATIONS
74	End-to-End Automated Lane-Change Maneuvering Considering Driving Style Using a Deep Deterministic Policy Gradient Algorithm. Sensors, 2020, 20, 5443.	3.8	16
75	When Autonomous Systems Meet Accuracy and Transferability through Al: A Survey. Patterns, 2020, 1, 100050.	5.9	15
76	Fast Estimation of L1-Regularized Linear Models in the Mass-Univariate Setting. Neuroinformatics, 2021, 19, 385-392.	2.8	5
77	Map Making: Constructing, Combining, and Inferring on Abstract Cognitive Maps. Neuron, 2020, 107, 1226-1238.e8.	8.1	115
78	Deep Reinforcement Learning and Its Neuroscientific Implications. Neuron, 2020, 107, 603-616.	8.1	102
79	Visual Navigation with Asynchronous Proximal Policy Optimization in Artificial Agents. Journal of Robotics, 2020, 2020, 1-7.	0.9	6
80	Bayesian models of human navigation behaviour in an augmented reality audiomaze. European Journal of Neuroscience, 2021, 54, 8308-8317.	2.6	5
81	Controlling a cargo ship without human experience using deep Q-network. Journal of Intelligent and Fuzzy Systems, 2020, 39, 7363-7379.	1.4	5
82	Topometric Imitation Learning For Route Following Under Appearance Change. , 2020, , .		0
83	Lessons from reinforcement learning for biological representations of space. Vision Research, 2020, 174, 79-93.	1.4	3
84	The Neuroscience of Spatial Navigation and the Relationship to Artificial Intelligence. Frontiers in Computational Neuroscience, 2020, 14, 63.	2.1	30
85	Efficient point-of-interest recommendation with hierarchical attention mechanism. Applied Soft Computing Journal, 2020, 96, 106536.	7.2	15
86	Deep reinforcement learning based AGVs real-time scheduling with mixed rule for flexible shop floor in industry 4.0. Computers and Industrial Engineering, 2020, 149, 106749.	6.3	93
87	A Brain-Inspired Adaptive Space Representation Model Based on Grid Cells and Place Cells. Computational Intelligence and Neuroscience, 2020, 2020, 1-12.	1.7	0
88	Towards a multi-level understanding in insect navigation. Current Opinion in Insect Science, 2020, 42, 110-117.	4.4	6
89	Single-neuron representation of learned complex sounds in the auditory cortex. Nature Communications, 2020, 11, 4361.	12.8	29
90	Recurrent MADDPG for Object Detection and Assignment in Combat Tasks. IEEE Access, 2020, 8, 163334-163343.	4.2	19
91	CityLearn: Diverse Real-World Environments for Sample-Efficient Navigation Policy Learning. , 2020, , .		1

#	Article	IF	CITATIONS
92	A Survey on Visual Navigation for Artificial Agents With Deep Reinforcement Learning. IEEE Access, 2020, 8, 135426-135442.	4.2	52
93	Understanding biological plume tracking behavior using deep reinforcement-learning. , 2020, , .		1
94	Low-Light Image Enhancement With Regularized Illumination Optimization and Deep Noise Suppression. IEEE Access, 2020, 8, 145297-145315.	4.2	43
95	Will We Ever Have Conscious Machines?. Frontiers in Computational Neuroscience, 2020, 14, 556544.	2.1	18
96	The Tolman-Eichenbaum Machine: Unifying Space and Relational Memory through Generalization in the Hippocampal Formation. Cell, 2020, 183, 1249-1263.e23.	28.9	259
97	Neurobiologically Inspired Self-Monitoring Systems. Proceedings of the IEEE, 2020, 108, 976-986.	21.3	3
98	A Bio-Inspired Goal-Directed Visual Navigation Model for Aerial Mobile Robots. Journal of Intelligent and Robotic Systems: Theory and Applications, 2020, 100, 289-310.	3.4	5
99	Imagining and Experiencing the Self on Cognitive Maps. , 2020, , 311-331.		1
100	Crossing the Cleft: Communication Challenges Between Neuroscience and Artificial Intelligence. Frontiers in Computational Neuroscience, 2020, 14, 39.	2.1	12
101	Toward a unified framework for interpreting machine-learning models in neuroimaging. Nature Protocols, 2020, 15, 1399-1435.	12.0	88
102	The Self-Motion Information Response Model in Brain-Inspired Navigation. IEEE Access, 2020, 8, 49717-49729.	4.2	0
103	A computational model for grid maps in neural populations. Journal of Computational Neuroscience, 2020, 48, 149-159.	1.0	5
104	Neurobiological successor features for spatial navigation. Hippocampus, 2020, 30, 1347-1355.	1.9	31
105	A review of deep learning with special emphasis on architectures, applications and recent trends. Knowledge-Based Systems, 2020, 194, 105596.	7.1	222
106	Home, head direction stability, and grid cell distortion. Journal of Neurophysiology, 2020, 123, 1392-1406.	1.8	11
107	A Hybrid Compact Neural Architecture for Visual Place Recognition. IEEE Robotics and Automation Letters, 2020, 5, 993-1000.	5.1	46
108	GNM: GridCell navigational model. Expert Systems With Applications, 2020, 148, 113217.	7.6	3
109	Reevaluating the Role of Persistent Neural Activity in Short-Term Memory. Trends in Cognitive Sciences, 2020, 24, 242-258.	7.8	52

ARTICLE IF CITATIONS # The missing G. Al and Society, 2020, 35, 995-1007. 110 4.6 5 Learning System for Air Combat Decision Inspired by Cognitive Mechanisms of the Brain. IEEE Access, 4.2 2020, 8, 8129-8144. Identifying Core Regions for Path Integration on Medial Entorhinal Cortex of Hippocampal Formation. 112 2.3 9 Brain Sciences, 2020, 10, 28. Learning Cognitive Map Representations for Navigation by Sensory–Motor Integration. IEEE Transactions on Cybernetics, 2022, 52, 508-521. Cognitive swarming in complex environments with attractor dynamics and oscillatory computing. 114 1.3 19 Biological Cybernetics, 2020, 114, 269-284. Artificial Intelligence in Clinical Neuroscience: Methodological and Ethical Challenges. AJOB 1.1 Neuroscience, 2020, 11, 77-87. 116 Bio-inspired multi-scale fusion. Biological Cybernetics, 2020, 114, 209-229. 1.3 5 Intelligent Collaborative Navigation and Control for AUV Tracking. IEEE Transactions on Industrial 11.3 Informatics, 2021, 17, 1732-1741. EEG-Based Drowsiness Estimation for Driving Safety Using Deep Q-Learning. IEEE Transactions on 118 4.9 12 Emerging Topics in Computational Intelligence, 2021, 5, 583-594. Location recognition of unmanned vehicles based on visual semantic information and geometric distribution. Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering, 2021, 235, 552-563. 120 Higher-order theories do just fine. Cognitive Neuroscience, 2021, 12, 77-78. 2 1.4 If deep learning is the answer, what is the question?. Nature Reviews Neuroscience, 2021, 22, 55-67. 185 Learning allocentric representations of space for navigation. Neurocomputing, 2021, 453, 579-589. 122 5.9 3 Future Developments in Geographical Agentâ€Based Models: Challenges and Opportunities. Geographical 3.5 Analysis, 2021, 53, 76-91. Spatial inference without a cognitive map: the role of higherâ€order path integration. Biological 124 10.4 7 Reviews, 2021, 96, 52-65. An Improved Dyna-<i>Q</i> Algorithm for Mobile Robot Path Planning in Unknown Dynamic 23 Environment. IÉEE Transactions on Systems, Man, and Cybernetics: Systems, 2022, 52, 4415-4425. Multi-Scale Extension in an Entorhinal-Hippocampal Model for Cognitive Map Building. Frontiers in 126 2.8 3 Neurorobotics, 2020, 14, 592057. Low-Dimensional Manifolds Support Multiplexed Integrations in Recurrent Neural Networks. Neural 2.2

CITATION REPORT

Computation, 2021, 33, 1063-1112.

#	Article	IF	CITATIONS
128	EgoMap: Projective Mapping and Structured Egocentric Memory for Deep RL. Lecture Notes in Computer Science, 2021, , 525-540.	1.3	6
129	Modeling the Self-navigation Behavior of Patients with Alzheimer's Disease in Virtual Reality. Communications in Computer and Information Science, 2021, , 121-136.	0.5	0
130	Finding Optimal Paths Using Networks Without Learning—Unifying Classical Approaches. IEEE Transactions on Neural Networks and Learning Systems, 2022, 33, 7877-7887.	11.3	2
131	General Value Function Networks. Journal of Artificial Intelligence Research, 0, 70, 497-543.	7.0	4
132	Visual Navigation With Multiple Goals Based on Deep Reinforcement Learning. IEEE Transactions on Neural Networks and Learning Systems, 2021, 32, 5445-5455.	11.3	21
133	Entorhinal and ventromedial prefrontal cortices abstract and generalize the structure of reinforcement learning problems. Neuron, 2021, 109, 713-723.e7.	8.1	54
134	Deep reinforcement learning to study spatial navigation, learning and memory in artificial and biological agents. Biological Cybernetics, 2021, 115, 131-134.	1.3	4
135	Towards a Predictive Bio-Inspired Navigation Model. Information (Switzerland), 2021, 12, 100.	2.9	6
137	Predictive learning as a network mechanism for extracting low-dimensional latent space representations. Nature Communications, 2021, 12, 1417.	12.8	35
138	Two views on the cognitive brain. Nature Reviews Neuroscience, 2021, 22, 359-371.	10.2	92
139	What are grid-like responses doing in the orbitofrontal cortex?. Behavioral Neuroscience, 2021, 135, 218-225.	1.2	8
140	<i>APOE</i> ε4 alters associations between docosahexaenoic acid and preclinical markers of Alzheimer's disease. Brain Communications, 2021, 3, fcab085.	3.3	10
141	Deep belief networks with self-adaptive sparsity. Applied Intelligence, 2022, 52, 237-253.	5.3	5
142	Cognitive maps and novel inferences: a flexibility hierarchy. Current Opinion in Behavioral Sciences, 2021, 38, 141-149.	3.9	20
143	Optogenetic pacing of medial septum parvalbumin-positive cells disrupts temporal but not spatial firing in grid cells. Science Advances, 2021, 7, .	10.3	16
145	Improving scalability in systems neuroscience. Neuron, 2021, 109, 1776-1790.	8.1	14
146	Deep limitations? Examining expert disagreement over deep learning. Progress in Artificial Intelligence, 2021, 10, 449-464.	2.4	15
147	Supporting generalization in non-human primate behavior by tapping into structural knowledge: Examples from sensorimotor mappings, inference, and decision-making. Progress in Neurobiology, 2021, 201, 101996.	5.7	14

#	Article	IF	CITATIONS
148	Categorization in Unsupervised Generative Selflearning Systems. International Journal of Modern Education and Computer Science, 2021, 13, 68-78.	2.7	6
149	Epistemic Autonomy: Self-supervised Learning in the Mammalian Hippocampus. Trends in Cognitive Sciences, 2021, 25, 582-595.	7.8	2
151	Grid Cell as Interface Representation between Animal Brains and Artificial Neural Networks. , 2021, , .		0
152	Quantifying the separability of data classes in neural networks. Neural Networks, 2021, 139, 278-293.	5.9	26
153	Microcircuits for spatial coding in the medial entorhinal cortex. Physiological Reviews, 2022, 102, 653-688.	28.8	36
154	EdgeLSTM: Towards Deep and Sequential Edge Computing for IoT Applications. IEEE/ACM Transactions on Networking, 2021, 29, 1895-1908.	3.8	20
155	Recurrent dynamics in the cerebral cortex: Integration of sensory evidence with stored knowledge. Proceedings of the National Academy of Sciences of the United States of America, 2021, 118, .	7.1	44
156	Inferences on a multidimensional social hierarchy use a grid-like code. Nature Neuroscience, 2021, 24, 1292-1301.	14.8	66
157	How Do We Find Our Way? Grid Cells in the Brain. Frontiers for Young Minds, 0, 9, .	0.8	0
158	Statistical Mechanics of Deep Linear Neural Networks: The Backpropagating Kernel Renormalization. Physical Review X, 2021, 11, .	8.9	15
159	Visibility matters during wayfinding in the vertical. Scientific Reports, 2021, 11, 18980.	3.3	5
160	A Plane-Dependent Model of 3D Grid Cells for Representing Both 2D and 3D Spaces Under Various Navigation Modes. Frontiers in Computational Neuroscience, 2021, 15, 739515.	2.1	3
162	SpikePropamine: Differentiable Plasticity in Spiking Neural Networks. Frontiers in Neurorobotics, 2021, 15, 629210.	2.8	5
163	Challenges, tasks, and opportunities in modeling agent-based complex systems. Ecological Modelling, 2021, 457, 109685.	2.5	65
164	Measuring and modeling the motor system with machine learning. Current Opinion in Neurobiology, 2021, 70, 11-23.	4.2	44
165	Why grid cells function as a metric for space. Neural Networks, 2021, 142, 128-137.	5.9	10
166	The whole brain architecture approach: Accelerating the development of artificial general intelligence by referring to the brain. Neural Networks, 2021, 144, 478-495.	5.9	7
167	Reinforcement learning approaches to hippocampus-dependent flexible spatial navigation. Brain and Neuroscience Advances, 2021, 5, 239821282097563.	3.4	7

		15	0
#	ARTICLE Measurement, manipulation and modeling of brain-wide neural population dynamics. Nature	IF	CITATIONS
169	Communications, 2021, 12, 633.	12.8	23
170	An uncertainty principle for neural coding: Conjugate representations of position and velocity are mapped onto firing rates and coâ€firing rates of neural spike trains. Hippocampus, 2020, 30, 396-421.	1.9	3
171	Learning Structures: Predictive Representations, Replay, and Generalization. Current Opinion in Behavioral Sciences, 2020, 32, 155-166.	3.9	92
172	Is coding a relevant metaphor for building AI?. Behavioral and Brain Sciences, 2019, 42, e240.	0.7	2
196	Effect of boundaries on grid cell patterns. Physical Review Research, 2020, 2, .	3.6	5
197	Assessing responsibility for program output. Communications of the ACM, 2018, 61, 12-13.	4.5	1
198	Learning to Navigate. , 2019, , .		10
199	Striatal and hippocampal contributions to flexible navigation in rats and humans. Brain and Neuroscience Advances, 2020, 4, 239821282097977.	3.4	26
200	A geometric attractor mechanism for self-organization of entorhinal grid modules. ELife, 2019, 8, .	6.0	26
201	Processing of different spatial scales in the human brain. ELife, 2019, 8, .	6.0	44
202	Gait Self-learning for Damaged Robots Combining Bionic Inspiration and Deep Reinforcement Learning. , 2021, , .		0
203	Multi-Task Long-Range Urban Driving Based on Hierarchical Planning and Reinforcement Learning. , 2021, , .		1
204	A new computational model for human navigation. Nature Computational Science, 2021, 1, 642-643.	8.0	2
205	Presynaptic stochasticity improves energy efficiency and helps alleviate the stability-plasticity dilemma. ELife, 2021, 10, .	6.0	7
207	A connectome of the Drosophila central complex reveals network motifs suitable for flexible navigation and context-dependent action selection. ELife, 2021, 10, .	6.0	168
208	Convergent Temperature Representations in Artificial and Biological Neural Networks. SSRN Electronic Journal, 0, , .	0.4	1
209	Al recreates activity patterns that brain cells use in navigation. Nature, 0, , .	27.8	0
217	Sparsified and Twisted Residual Autoencoders. Advances in Intelligent Systems and Computing, 2020, , 321-332.	0.6	0

ARTICLE IF CITATIONS # Categorized Representations and General Learning. Advances in Intelligent Systems and Computing, 219 0.6 7 2020, , 93-100. Da forma urbana à cidade como informação. Urbe, 0, 12, . 0.3 On Unsupervised Categorization in Deep Autoencoder Models. Advances in Intelligent Systems and 223 0.6 0 Computing, 2021, , 255-265. Theta oscillations coordinate grid-like representations between ventromedial prefrontal and entorhinal cortex. Science Advances, 2021, 7, eabj0200. Overview of Meta-Reinforcement Learning Research., 2020,,. 228 1 Estimating the cognitive load in physical spatial navigation., 2020,,. A Model of Information Circulation and Transmission Network of Grid Cells in Entorhinal Cortex and 230 0 Place Cells in the Hippocampus of Rat., 2020, , . Unsupervised stereo image depth estimation of midan recovery structure. Journal of Physics: 0.4 Conference Series, 2020, 1693, 012144. Multi-modal shared module that enables the bottom-up formation of map representation and 234 0 1.8 top-down map reading. Advanced Robotics, 0, , 1-15. Neural Circuits and Symbolic Processing. Neurobiology of Learning and Memory, 2021, 186, 107552. Universality and individuality in neural dynamics across large populations of recurrent networks. 237 10 2.8 Advances in Neural Information Processing Systems, 2019, 2019, 15629-15641. Can the Brain Do Backpropagation? -Exact Implementation of Backpropagation in Predictive Coding 2.8 Networks. Advances in Neural Information Processing Systems, 2020, 33, 22566-22579. S-BRRT\*: A Spline-based Bidirectional RRT with Strategies under Nonholonomic Constraint., 2021,,. 239 1 Semi-Bionic SLAM Based on Visual Odometry and Deep Learning Network., 2021, , . 240 Dynamical self-organization and efficient representation of space by grid cells. Current Opinion in 241 4.2 2 Neurobiology, 2021, 70, 206-213. Context-dependent persistency as a coding mechanism for robust and widely distributed value coding. Neuron, 2022, 110, 502-515.e11. 242 8.1 A nonlinear hidden layer enables actor–critic agents to learn multiple paired association navigation. 243 2.9 1 Cerebral Cortex, 2022, 32, 3917-3936. Hierarchical deep reinforcement learning reveals a modular mechanism of cell movement. Nature 244 Machine Intelligence, 2022, 4, 73-83.

ARTICLE IF CITATIONS # Building human-like communicative intelligence: A grounded perspective. Cognitive Systems Research, 245 2.7 6 2022, 72, 63-79. Developing deep LSTM model for real-time path planning in unknown environments., 2020,,. 246 A Bionic Spatial Cognition Model and Method for Robots Based on the Hippocampus Mechanism. 247 2.8 1 Frontiers in Neurorobotics, 2021, 15, 769829. Planning in the brain. Neuron, 2022, 110, 914-934. 248 8.1 Relational attention-based Markov logic network for visual navigation. Journal of Supercomputing, 0, 249 3.6 0 , 1. Spatial goal coding in the hippocampal formation. Neuron, 2022, 110, 394-422. 8.1 Grid cell modeling with mapping representation of self-motion for path integration. Neural 251 5.6 0 Computing and Applications, 0, , 1. Beyond the shortest-path: Towards cognitive occupancy modeling in BIM. Automation in 9.8 Construction, 2022, 135, 104131. A Hybrid Loop Closure Detection Method Based on Brain-Inspired Models. IEEE Transactions on 253 3.8 2 Cognitive and Developmental Systems, 2022, 14, 1532-1543. Robotic Navigation Based on Experiences and Predictive Map Inspired by Spatial Cognition. IEEE/ASME 254 5.8 Transactions on Mechatronics, 2022, 27, 4316-4326. Superposition mechanism as a neural basis for understanding others. Scientific Reports, 2022, 12, 2859. 255 3.3 5 Online learning for orientation estimation during translation in an insect ring attractor network. 3.3 Scientific Reports, 2022, 12, 3210. UnIC: Towards Unmanned Intelligent Cluster and Its Integration into Society. Engineering, 2022, 12, 257 6.7 5 24-38. Visual language navigation: a survey and open challenges. Artificial Intelligence Review, 2023, 56, 15.7 365-427 Construction of the rat brain spatial cell firing model on a quadruped robot. CAAI Transactions on 262 8.1 2 Intelligence Technology, 2022, 7, 732-743. Improving indoor visual navigation generalization with scene priors and Markov relational reasoning. Applied Intelligence, 2022, 52, 17600-17613. Hippocampal formation-inspired probabilistic generative model. Neural Networks, 2022, 151, 317-335. 264 5.97 Marine Vehicles Localization Using Grid Cells for Path Integration., 2021,,.

#	Article	IF	CITATIONS
266	Accessing the Environmental Cognition Ability of Drivers for Intelligent Vehicles Using Brain-inspired Grid Cell Model. , 2021, , .		0
268	Towards predictive and decentralized bio-inspired navigation models for distributed systems. , 2021, , .		0
269	Population coding using magnetic tunnel junctions and its application in unsupervised classification. Wuli Xuebao/Acta Physica Sinica, 2022, .	0.5	1
270	Organization of a Latent Space structure in VAE/GAN trained by navigation data. Neural Networks, 2022, 152, 234-243.	5.9	4
274	Excitatory-Inhibitory Recurrent Dynamics Produce Robust Visual Grids and Stable Attractors. SSRN Electronic Journal, 0, , .	0.4	1
275	Receding-Horizon Trajectory Planning for Under-Actuated Autonomous Vehicles Based on Collaborative Neurodynamic Optimization. IEEE/CAA Journal of Automatica Sinica, 2022, 9, 1909-1923.	13.1	6
276	Dynamics and Information Import in Recurrent Neural Networks. Frontiers in Computational Neuroscience, 2022, 16, 876315.	2.1	8
277	HDPP: High-Dimensional Dynamic Path Planning Based on Multi-Scale Positioning and Waypoint Refinement. Applied Sciences (Switzerland), 2022, 12, 4695.	2.5	1
278	The Revisiting Problem in Simultaneous Localization and Mapping: A Survey on Visual Loop Closure Detection. IEEE Transactions on Intelligent Transportation Systems, 2022, 23, 19929-19953.	8.0	46
282	Representation learning in the artificial and biological neural networks underlying sensorimotor integration. Science Advances, 2022, 8, .	10.3	5
285	Learning accurate path integration in ring attractor models of the head direction system. ELife, 0, 11, .	6.0	7
286	Gradient-based learning drives robust representations in recurrent neural networks by balancing compression and expansion. Nature Machine Intelligence, 2022, 4, 564-573.	16.0	11
287	Are Grid-Like Representations a Component of All Perception and Cognition?. Frontiers in Neural Circuits, 0, 16, .	2.8	1
289	Predictive maps in rats and humans for spatial navigation. Current Biology, 2022, 32, 3676-3689.e5.	3.9	36
291	How to Create an Area When Playing against a Machine. International Journal of Human-Computer Interaction, 0, , 1-13.	4.8	0
294	An integrated deep learningâ€based model of spatial cells that combines selfâ€motion with sensory information. Hippocampus, 2022, 32, 716-730.	1.9	2
297	The Thalamus in Navigation. , 2022, , 340-360.		1
298	From remembering to reconstruction: The transformative neural representation of episodic memory. Progress in Neurobiology, 2022, 219, 102351.	5.7	11

#	Article	IF	CITATIONS
299	The Revisiting Problem in Simultaneous Localization and Mapping. Springer Tracts in Advanced Robotics, 2022, , 1-33.	0.4	2
300	NeoSLAM: Neural Object SLAM forÂLoop Closure andÂNavigation. Lecture Notes in Computer Science, 2022, , 443-455.	1.3	0
301	TransNav: spatial sequential transformer network for visual navigation. Journal of Computational Design and Engineering, 2022, 9, 1866-1878.	3.1	1
302	Spatial representation by ramping activity of neurons in the retrohippocampal cortex. Current Biology, 2022, 32, 4451-4464.e7.	3.9	2
304	How to build a cognitive map. Nature Neuroscience, 2022, 25, 1257-1272.	14.8	56
305	Spatio-temporal categorization for first-person-view videos using a convolutional variational autoencoder and Gaussian processes. Frontiers in Robotics and Al, 0, 9, .	3.2	1
306	Finish-line photography system based on multi-scale convolutional neural network deblurring. Proceedings of the Institution of Mechanical Engineers, Part P: Journal of Sports Engineering and Technology, 0, , 175433712211220.	0.7	0
307	Inferring Mechanisms of Auditory Attentional Modulation with Deep Neural Networks. Neural Computation, 0, , 1-21.	2.2	1
308	Robot Navigation Strategy in Complex Environment Based on Episode Cognition. Journal of Bionic Engineering, 2023, 20, 1-15.	5.0	12
309	Deep Learning for Cognitive Neuroscience. , 2020, , 703-716.		22
310	A unified theory for the computational and mechanistic origins of grid cells. Neuron, 2023, 111, 121-137.e13.	8.1	26
312	Uncovering the Secrets of the Concept of Place in Cognitive Maps Aided by Artificial Intelligence. Cognitive Computation, 0, , .	5.2	0
314	Navigation task and action space drive the emergence of egocentric and allocentric spatial representations. PLoS Computational Biology, 2022, 18, e1010320.	3.2	7
315	Simulation of oscillatory dynamics induced by an approximation of grid cell output. Reviews in the Neurosciences, 2022, .	2.9	0
316	Attractor and integrator networks in the brain. Nature Reviews Neuroscience, 2022, 23, 744-766.	10.2	66
317	Inferring the location of neurons within an artificial network from their activity. Neural Networks, 2023, 157, 160-175.	5.9	1
318	Wave-like patterns in parameter space interpreted as evidence for macroscopic effects resulting from quantum or quantum-like processes in the brain. Scientific Reports, 2022, 12, .	3.3	0
319	Artificial intelligence insights into hippocampal processing. Frontiers in Computational Neuroscience, 0, 16, .	2.1	0

#	ARTICLE	IF	CITATIONS
321	Towards a systematic multi-modal representation learning for network data. , 2022, , .		5
323	Learned and Native Concepts in Latent Representations of Terrain Images. Communications in Computer and Information Science, 2022, , 64-84.	0.5	0
324	New Approaches to 3D Vision. Philosophical Transactions of the Royal Society B: Biological Sciences, 2023, 378, .	4.0	3
326	An artificial neural network explains how bats might use vision for navigation. Communications Biology, 2022, 5, .	4.4	0
327	Place cells dynamically refine grid cell activities to reduce error accumulation during path integration in a continuous attractor model. Scientific Reports, 2022, 12, .	3.3	0
329	Excitatory-inhibitory recurrent dynamics produce robust visual grids and stable attractors. Cell Reports, 2022, 41, 111777.	6.4	2
330	A rubric for human-like agents and NeuroAI. Philosophical Transactions of the Royal Society B: Biological Sciences, 2023, 378, .	4.0	7
331	Efficient processing of natural scenes in visual cortex. Frontiers in Cellular Neuroscience, 0, 16, .	3.7	1
332	Spatial Consciousness Model of Intrinsic Reward in Partially Observable Environments. Journal of Intelligent and Robotic Systems: Theory and Applications, 2022, 106, .	3.4	0
333	Understanding 3D vision as a policy network. Philosophical Transactions of the Royal Society B: Biological Sciences, 2023, 378, .	4.0	3
334	Using artificial neural networks to ask â€~why' questions of minds and brains. Trends in Neurosciences, 2023, 46, 240-254.	8.6	32
336	Emergent behaviour and neural dynamics in artificial agents tracking odour plumes. Nature Machine Intelligence, 2023, 5, 58-70.	16.0	10
338	Foundations of human spatial problem solving. Scientific Reports, 2023, 13, .	3.3	5
339	Image Captioning: From Encoder-Decoder to Reinforcement Learning. , 2022, , .		0
340	Unsupervised Visual Odometry and Action Integration for PointGoal Navigation in Indoor Environment. IEEE Transactions on Circuits and Systems for Video Technology, 2023, 33, 6173-6184.	8.3	1
341	A computational model of learning flexible navigation in a maze by layout-conforming replay of place cells. Frontiers in Computational Neuroscience, 0, 17, .	2.1	0
342	Chronic stress is associated with specific path integration deficits. Behavioural Brain Research, 2023, 442, 114305.	2.2	3
343	Effects of neuromodulation-inspired mechanisms on the performance of deep neural networks in a spatial learning task. IScience, 2023, 26, 106026.	4.1	1

		CITATION REPORT		
#	Article		IF	CITATIONS
344	Neural mechanism of long-term memory storage andmodulation. Chinese Science Bulletin, 20.	23,,.	0.7	0
346	Execution of new trajectories toward a stable goal without a functional hippocampus. Hippoca 0, , .	ampus,	1.9	1
348	CoBeL-RL: A neuroscience-oriented simulation framework for complex behavior and learning. Frontiers in Neuroinformatics, 0, 17, .		2.5	3
349	NeuroAl: If grid cells are the answer, is path integration the question?. Current Biology, 2023, R190-R192.	83,	3.9	2
350	Rapid learning of predictive maps with STDP and theta phase precession. ELife, 0, 12, .		6.0	16
351	Are grid cells used for navigation? On local metrics, subjective spaces, and black holes. Neuror 111, 1858-1875.	, 2023,	8.1	11
354	Modeling the grid cell activity based on cognitive space transformation. Cognitive Neurodynar	nics, 0, ,	4.0	1
355	A computational model of prefrontal and striatal interactions in perceptual category learning. and Cognition, 2023, 168, 105970.	Brain	1.8	0
359	Subgraph Learning for Topological Geolocalization with Graph Neural Networks. Sensors, 202 5098.	3, 23,	3.8	1
362	Self-Location Based on Grid-like Representations for Artificial Agents. Electronics (Switzerland) 12, 2735.	, 2023,	3.1	0
363	A deep network-based model of hippocampal memory functions under normal and Alzheimerâ conditions. Frontiers in Neural Circuits, 0, 17, .	€™s disease	2.8	1
364	Navigating to objects in the real world. Science Robotics, 2023, 8, .		17.6	8
365	Unpacking the black box of deep learning for identifying El Niño-Southern Oscillation. Communications in Theoretical Physics, 0, , .		2.5	0
366	Future directions in human mobility science. Nature Computational Science, 2023, 3, 588-600		8.0	6
367	Automatic Cell Rotation Method Based on Deep Reinforcement Learning. , 2023, , .			0
368	How Do You Build a Cognitive Map? The Development of Circuits and Computations for the Representation of Space in the Brain. Annual Review of Neuroscience, 2023, 46, 281-299.		10.7	1
369	Sphere2Vec: A general-purpose location representation learning over a spherical surface for large-scale geospatial predictions. ISPRS Journal of Photogrammetry and Remote Sensing, 202 439-462.	.3, 202,	11.1	3
370	A multilevel account of hippocampal function in spatial and concept learning: Bridging models behavior and neural assemblies. Science Advances, 2023, 9, .	of	10.3	3

#	Article	IF	CITATIONS
371	Predictive coding and stochastic resonance as fundamental principles of auditory phantom perception. Brain, 2023, 146, 4809-4825.	7.6	9
372	Dissociating effects of aging and genetic risk of sporadic Alzheimer's disease on path integration. Neurobiology of Aging, 2023, 131, 170-181.	3.1	4
373	Acute stress impairs visual path integration. Neurobiology of Stress, 2023, 26, 100561.	4.0	0
374	Neuromorphic electronics for robotic perception, navigation and control: A survey. Engineering Applications of Artificial Intelligence, 2023, 126, 106838.	8.1	Ο
375	Testing methods of neural systems understanding. Cognitive Systems Research, 2023, 82, 101156.	2.7	0
376	Plasticity mechanism and memory formation in the chemical synapse. Nonlinear Dynamics, 2023, 111, 19411-19423.	5.2	2
377	A Navigation Path Search and Optimization Method for Mobile Robots Based on the Rat Brain's Cognitive Mechanism. Biomimetics, 2023, 8, 427.	3.3	0
378	On the importance of severely testing deep learning models of cognition. Cognitive Systems Research, 2023, 82, 101158.	2.7	Ο
379	How Can We Track Cognitive Representations with Deep Neural Networks and Intracranial EEG?. Studies in Neuroscience, Psychology and Behavioral Economics, 2023, , 849-862.	0.3	0
380	Leaky-Integrate-and-Fire Neuron-Like Long-Short-Term-Memory Units as Model System in Computational Biology. , 2023, , .		1
381	Representing Latent Dimensions Using Compressed Number Lines. , 2023, , .		0
383	Human-inspired autonomous driving: A survey. Cognitive Systems Research, 2024, 83, 101169.	2.7	1
384	Human-like decision making for lane change based on the cognitive map and hierarchical reinforcement learning. Transportation Research Part C: Emerging Technologies, 2023, 156, 104328.	7.6	0
386	From lazy to rich to exclusive task representations in neural networks and neural codes. Current Opinion in Neurobiology, 2023, 83, 102780.	4.2	1
387	Coherently remapping toroidal cells but not Grid cells are responsible for path integration in virtual agents. IScience, 2023, 26, 108102.	4.1	2
388	KI als Modell für das Gehirn. , 2023, , 217-222.		0
390	Evaluation of the Hierarchical Correspondence between the Human Brain and Artificial Neural Networks: A Review. Biology, 2023, 12, 1330.	2.8	1
391	Scalable Optimal Formation Path Planning for Multiple Interconnected Robots via Convex Polygon Trees. Journal of Intelligent and Robotic Systems: Theory and Applications, 2023, 109, .	3.4	0

#	Article	IF	CITATIONS
392	A spatial cognition approach based on grid cell group representation for embodied intelligence. Chinese Science Bulletin, 2023, 68, 4872-4884.	0.7	1
396	A Comparison Study between Traditional and Deep-Reinforcement-Learning-Based Algorithms for Indoor Autonomous Navigation in Dynamic Scenarios. Sensors, 2023, 23, 9672.	3.8	0
397	The grid-cell normative model: Unifying â€~principles'. BioSystems, 2024, 235, 105091.	2.0	0
399	Trajectory Tracking via Multiscale Continuous Attractor Networks. , 2023, , .		0
400	Brain Cognition Mechanism-Inspired Hierarchical Navigation Method for Mobile Robots. Journal of Bionic Engineering, 2024, 21, 852-865.	5.0	0
402	Spontaneous emergence of rudimentary music detectors in deep neural networks. Nature Communications, 2024, 15, .	12.8	0
404	Multi-Object Navigation with dynamically learned neural implicit representations. , 2023, , .		0
405	Grid codes underlie multiple cognitive maps in the human brain. Progress in Neurobiology, 2024, 233, 102569.	5.7	0
406	Review of Reinforcement Learning in Chrome Dino Game. , 2023, , .		0
409	RatInABox, a toolkit for modelling locomotion and neuronal activity in continuous environments. ELife, 0, 13, .	6.0	0
410	The role of strategic visibility in shaping wayfinding behavior in multilevel buildings. Scientific Reports, 2024, 14, .	3.3	0
411	Minimal logical teleology in artifacts and biology connects the two domains and frames mechanisms via epistemic circularity. Studies in History and Philosophy of Science Part A, 2024, 104, 23-37.	1.2	0
412	Bayesian inference is facilitated by modular neural networks with different time scales. PLoS Computational Biology, 2024, 20, e1011897.	3.2	0