Michael J Milford

List of Publications by Year
in descending order

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161 papers	6,721 citations	236612 25 h-index	149479 56 g-index
164 all docs	164 docs citations	164 times ranked	3135 citing authors

#	Article	IF	Citations
1	Visual Place Recognition: A Survey. IEEE Transactions on Robotics, 2016, 32, 1-19.	7.3	729
2	SeqSLAM: Visual route-based navigation for sunny summer days and stormy winter nights. , 2012, , .		628
3	On the performance of ConvNet features for place recognition. , 2015, , .		347
4	The limits and potentials of deep learning for robotics. International Journal of Robotics Research, 2018, 37, 405-420.	5.8	320
5	Mapping a Suburb With a Single Camera Using a Biologically Inspired SLAM System. IEEE Transactions on Robotics, 2008, 24, 1038-1053.	7.3	267
6	Place Recognition with ConvNet Landmarks: Viewpoint-Robust, Condition-Robust, Training-Free. , 0, , .		232
7	RatSLAM: a hippocampal model for simultaneous localization and mapping. , 2004, , .		226
8	Persistent Navigation and Mapping using a Biologically Inspired SLAM System. International Journal of Robotics Research, 2010, 29, 1131-1153.	5.8	221
9	Deep learning features at scale for visual place recognition. , 2017, , .		218
10	Patch-NetVLAD: Multi-Scale Fusion of Locally-Global Descriptors for Place Recognition. , 2021, , .		151
11	FAB-MAP + RatSLAM: Appearance-based SLAM for multiple times of day. , 2010, , .		147
12	Meaningful maps with object-oriented semantic mapping. , 2017, , .		140
13	QuadricSLAM: Dual Quadrics From Object Detections as Landmarks in Object-Oriented SLAM. IEEE Robotics and Automation Letters, 2019, 4, 1-8.	3.3	132
14	Vision-based place recognition: how low can you go?. International Journal of Robotics Research, 2013, 32, 766-789.	5.8	118
15	OpenFABMAP: An open source toolbox for appearance-based loop closure detection. , 2012, , .		114
16	OpenRatSLAM: an open source brain-based SLAM system. Autonomous Robots, 2013, 34, 149-176.	3.2	103
17	Place categorization and semantic mapping on a mobile robot. , 2016, , .		87
18	CAT-SLAM: probabilistic localisation and mapping using a continuous appearance-based trajectory. International Journal of Robotics Research, 2012, 31, 429-451.	5.8	86

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19	All-environment visual place recognition with SMART. , 2014, , .		85
20	A Holistic Visual Place Recognition Approach Using Lightweight CNNs for Significant ViewPoint and Appearance Changes. IEEE Transactions on Robotics, 2020, 36, 561-569.	7.3	84
21	LoST? Appearance-Invariant Place Recognition for Opposite Viewpoints using Visual Semantics. , 0, , .		69
22	Solving Navigational Uncertainty Using Grid Cells on Robots. PLoS Computational Biology, 2010, 6, e1000995.	1.5	65
23	CoHOG: A Light-Weight, Compute-Efficient, and Training-Free Visual Place Recognition Technique for Changing Environments. IEEE Robotics and Automation Letters, 2020, 5, 1835-1842.	3.3	64
24	Spatial cognition for robots. IEEE Robotics and Automation Magazine, 2009, 16, 24-32.	2.2	63
25	Evaluating Merging Strategies for Sampling-based Uncertainty Techniques in Object Detection. , 2019, , .		59
26	NeuroSLAM: a brain-inspired SLAM system for 3D environments. Biological Cybernetics, 2019, 113, 515-545.	0.6	56
27	Class Anchor Clustering: A Loss for Distance-based Open Set Recognition. , 2021, , .		56
28	Multi-Process Fusion: Visual Place Recognition Using Multiple Image Processing Methods. IEEE Robotics and Automation Letters, 2019, 4, 1924-1931.	3.3	55
29	Semantics for Robotic Mapping, Perception and Interaction: A Survey. Foundations and Trends in Robotics, 2020, 8, 1-224.	5.0	55
30	VPR-Bench: An Open-Source Visual Place Recognition Evaluation Framework with Quantifiable Viewpoint and Appearance Change. International Journal of Computer Vision, 2021, 129, 2136-2174.	10.9	52
31	Semanticâ€“geometric visual place recognition: a new perspective for reconciling opposing views. International Journal of Robotics Research, 2022, 41, 573-598.	5.8	48
32	SeqNet: Learning Descriptors for Sequence-Based Hierarchical Place Recognition. IEEE Robotics and Automation Letters, 2021, 6, 4305-4312.	3.3	47
33	Maintaining a Cognitive Map in Darkness: The Need to Fuse Boundary Knowledge with Path Integration. PLoS Computational Biology, 2012, 8, e1002651.	1.5	46
34	A Hybrid Compact Neural Architecture for Visual Place Recognition. IEEE Robotics and Automation Letters, 2020, 5, 993-1000.	3.3	46
35	Supervised and Unsupervised Linear Learning Techniques for Visual Place Recognition in Changing Environments. IEEE Transactions on Robotics, 2016, 32, 600-613.	7.3	42
36	Sequence searching with deep-learnt depth for condition- and viewpoint-invariant route-based place recognition. , 2015, , .		41

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37	Where Is Your Place, Visual Place Recognition?. , 2021, , .		41
38	Single camera vision-only SLAM on a suburban road network. , 2008, , .		34
39	Don't Look Back: Robustifying Place Categorization for Viewpoint- and Condition-Invariant Place Recognition. , 2018, , .		30
40	Event-Based Visual Place Recognition With Ensembles of Temporal Windows. IEEE Robotics and Automation Letters, 2020, 5, 6924-6931.	3.3	30
41	Aerial SLAM with a single camera using visual expectation. , 2011, , .		29
42	Transforming morning to afternoon using linear regression techniques. , 2014, , .		28
43	Action recognition: From static datasets to moving robots. , 2017, , .		27
44	Hybrid robot control and SLAM for persistent navigation and mapping. Robotics and Autonomous Systems, 2010, 58, 1096-1104.	3.0	26
45	Condition-invariant, top-down visual place recognition. , 2014, , .		26
46	Visionâ€based Simultaneous Localization and Mapping in Changing Outdoor Environments. Journal of Field Robotics, 2014, 31, 780-802.	3.2	26
47	A hierarchical model of goal directed navigation selects trajectories in a visual environment. Neurobiology of Learning and Memory, 2015, 117, 109-121.	1.0	26
48	Adversarial discriminative sim-to-real transfer of visuo-motor policies. International Journal of Robotics Research, 2019, 38, 1229-1245.	5.8	26
49	Delta Descriptors: Change-Based Place Representation for Robust Visual Localization. IEEE Robotics and Automation Letters, 2020, 5, 5120-5127.	3.3	26
50	Learning spatial concepts from RatSLAM representations. Robotics and Autonomous Systems, 2007, 55, 403-410.	3.0	25
51	Principles of goal-directed spatial robot navigation in biomimetic models. Philosophical Transactions of the Royal Society B: Biological Sciences, 2014, 369, 20130484.	1.8	25
52	Exploring Performance Bounds of Visual Place Recognition Using Extended Precision. IEEE Robotics and Automation Letters, 2020, 5, 1688-1695.	3.3	25
53	RatSLAM: Using Models of Rodent Hippocampus for Robot Navigation and Beyond. Springer Tracts in Advanced Robotics, 2016, , 467-485.	0.3	24
54	Visual Route Recognition with a Handful of Bits. , 0, , .		24

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55	Addressing Challenging Place Recognition Tasks Using Generative Adversarial Networks. , 2018, , .		23
56	Autonomous Multisensor Calibration and Closedâ€loop Fusion for SLAM. Journal of Field Robotics, 2015, 32, 85-122.	3.2	22
57	Zero-Shot Day-Night Domain Adaptation with a Physics Prior. , 2021, , .		22
58	RatSLAM on the Edge: Revealing a Coherent Representation from an Overloaded Rat Brain. , 2006, , .		21
59	Continuous appearance-based trajectory SLAM. , 2011, , .		21
60	Multimodal Trip Hazard Affordance Detection on Construction Sites. IEEE Robotics and Automation Letters, 2018, 3, 1-8.	3.3	21
61	A Survey on Terrain Traversability Analysis for Autonomous Ground Vehicles: Methods, Sensors, and Challenges. , 2022, 2, 1567-1627.		21
62	Routed roads: Probabilistic vision-based place recognition for changing conditions, split streets and varied viewpoints. International Journal of Robotics Research, 2016, 35, 1057-1179.	5.8	19
63	The race to learn: Spike timing and STDP can coordinate learning and recall in CA3. Hippocampus, 2011, 21, 647-660.	0.9	18
64	Improving condition- and environment-invariant place recognition with semantic place categorization. , 2017, , .		18
65	OpenSeqSLAM2.0: An Open Source Toolbox for Visual Place Recognition Under Changing Conditions. , 2018, , .		18
66	Uncertainty for Identifying Open-Set Errors in Visual Object Detection. IEEE Robotics and Automation Letters, 2022, 7, 215-222.	3.3	18
67	Bio-inspired homogeneous multi-scale place recognition. Neural Networks, 2015, 72, 48-61.	3.3	17
68	Skyline-based localisation for aggressively manoeuvring robots using UV sensors and spherical harmonics. , 2016, , .		17
69	Semi-Supervised SLAM: Leveraging Low-Cost Sensors on Underground Autonomous Vehicles for Position Tracking. , 2018, , .		17
70	Look No Deeper: Recognizing Places from Opposing Viewpoints under Varying Scene Appearance using Single-View Depth Estimation. , 2019, , .		17
71	Towards persistent indoor appearance-based localization, mapping and navigation using CAT-Graph. , 2012, , .		16
72	Self-Driving Vehicles: Key Technical Challenges and Progress Off the Road. IEEE Potentials, 2020, 39, 37-45.	0.2	16

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73	Fast, Compact and Highly Scalable Visual Place Recognition through Sequence-based Matching of Overloaded Representations. , 2020, , .		16
74	A Hierarchical Dual Model of Environment- and Place-Specific Utility for Visual Place Recognition. IEEE Robotics and Automation Letters, 2021, 6, 6969-6976.	3.3	16
75	MultiRes-NetVLAD: Augmenting Place Recognition Training With Low-Resolution Imagery. IEEE Robotics and Automation Letters, 2022, 7, 3882-3889.	3.3	15
76	Towards training-free appearance-based localization: Probabilistic models for whole-image descriptors. , 2014, , .		14
77	Multi-scale bio-inspired place recognition. , 2014, , .		14
78	Learning to Fuse Multiscale Features for Visual Place Recognition. IEEE Access, 2019, 7, 5723-5735.	2.6	14
79	Hierarchical Multi-Process Fusion for Visual Place Recognition. , 2020, , .		14
80	What localizes beneath: A metric multisensor localization and mapping system for autonomous underground mining vehicles. Journal of Field Robotics, 2021, 38, 5-27.	3.2	14
81	Brain-inspired sensor fusion for navigating robots. , 2013, , .		13
82	Biologically inspired SLAM using Wi-Fi. , 2014, , .		13
83	High-fidelity simulation for evaluating robotic vision performance. , 2016, , .		13
84	Visual Place Recognition for Aerial Robotics: Exploring Accuracy-Computation Trade-off for Local Image Descriptors. , 2019, , .		13
85	Memorable Maps: A Framework for Re-Defining Places in Visual Place Recognition. IEEE Transactions on Intelligent Transportation Systems, 2021, 22, 7355-7369.	4.7	13
86	ConvSequential-SLAM: A Sequence-Based, Training-Less Visual Place Recognition Technique for Changing Environments. IEEE Access, 2021, 9, 118673-118683.	2.6	13
87	The Olympics, Jesse Owens, Burke, and the Implications of Media Framing in Symbolic Boasting. Mass Communication and Society, 2012, 15, 485-505.	1.2	12
88	Using Strategic Movement to Calibrate a Neural Compass: A Spiking Network for Tracking Head Direction in Rats and Robots. PLoS ONE, 2011, 6, e25687.	1.1	12
89	Towards Persistent Localization and Mapping with a Continuous Appearance-based Topology. , 0, , .		12
90	Lingodroids: Studies in spatial cognition and language. , 2011, , .		11

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91	Capping computation time and storage requirements for appearance-based localization with CAT-SLAM. , 2012, , .		11
92	Outdoor Simultaneous Localisation and Mapping Using RatSLAM. , 2006, , 143-154.		10
93	Long exposure localization in darkness using consumer cameras. , 2013, , .		10
94	Distance metric learning for feature-agnostic place recognition. , 2015, , .		10
95	3D tracking of water hazards with polarized stereo cameras. , 2017, , .		10
96	Biologically-inspired visual place recognition with adaptive multiple scales. Robotics and Autonomous Systems, 2017, 96, 224-237.	3.0	10
97	Probabilistic Visual Place Recognition for Hierarchical Localization. IEEE Robotics and Automation Letters, 2021, 6, 311-318.	3.3	10
98	Spatial Mapping and Map Exploitation: A Bio-inspired Engineering Perspective. , 2007, , 203-221.		10
99	Fast and Robust Bio-inspired Teach and Repeat Navigation. , 2021, , .		10
100	An Efficient and Scalable Collection of Fly-Inspired Voting Units for Visual Place Recognition in Changing Environments. IEEE Robotics and Automation Letters, 2022, 7, 2527-2534.	3.3	10
101	Spiking Neural Networks for Visual Place Recognition Via Weighted Neuronal Assignments. IEEE Robotics and Automation Letters, 2022, 7, 4094-4101.	3.3	10
102	Online place recognition calibration for out-of-the-box SLAM. , 2015, , .		9
103	LookUP: Vision-Only Real-Time Precise Underground Localisation for Autonomous Mining Vehicles. , 2019, , .		9
104	Featureless Visual Processing for SLAM in Changing Outdoor Environments. Springer Tracts in Advanced Robotics, 2014, , 569-583.	0.3	8
105	2D visual place recognition for domestic service robots at night. , 2016, , .		8
106	Rhythmic Representations: Learning Periodic Patterns for Scalable Place Recognition at a Sublinear Storage Cost. IEEE Robotics and Automation Letters, 2018, 3, 811-818.	3.3	8
107	Filter Early, Match Late: Improving Network-Based Visual Place Recognition. , 2019, , .		8
108	Improving Visual Place Recognition Performance by Maximising Complementarity. IEEE Robotics and Automation Letters, 2021, 6, 5976-5983.	3.3	8

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109	Automatic image scaling for place recognition in changing environments. , 2015, , .		7
110	Leveraging variable sensor spatial acuity with a homogeneous, multi-scale place recognition framework. Biological Cybernetics, 2018, 112, 209-225.	0.6	7
111	Automating analysis of vegetation with computer vision: Cover estimates and classification. Ecology and Evolution, 2018, 8, 6005-6015.	0.8	7
112	Residual Reactive Navigation: Combining Classical and Learned Navigation Strategies For Deployment in Unknown Environments. , 2020, , .		7
113	Intelligent Reference Curation for Visual Place Recognition Via Bayesian Selective Fusion. IEEE Robotics and Automation Letters, 2021, 6, 588-595.	3.3	7
114	Probabilistic Appearance-Invariant Topometric Localization With New Place Awareness. IEEE Robotics and Automation Letters, 2021, 6, 6985-6992.	3.3	7
115	Efficient Goal Directed Navigation using RatSLAM. , 0, , .		6
116	Look No Further: Adapting the Localization Sensory Window to the Temporal Characteristics of the Environment. IEEE Robotics and Automation Letters, 2017, 2, 2209-2216.	3.3	6
117	An adaptive localization system for image storage and localization latency requirements. Robotics and Autonomous Systems, 2018, 107, 246-261.	3.0	6
118	TIMTAM: Tunnel-Image Texturally Accorded Mosaic for Location Refinement of Underground Vehicles With a Single Camera. IEEE Robotics and Automation Letters, 2019, 4, 4362-4369.	3.3	6
119	A Method for Evaluating and Selecting Suitable Hardware for Deployment of Embedded System on UAVs. Sensors, 2020, 20, 4420.	2.1	6
120	Unsupervised Selection of Optimal Operating Parameters for Visual Place Recognition Algorithms Using Gaussian Mixture Models. IEEE Robotics and Automation Letters, 2021, 6, 343-350.	3.3	6
121	RoRD: Rotation-Robust Descriptors and Orthographic Views for Local Feature Matching. , 2021, , .		6
122	Automatic Coverage Selection for Surface-Based Visual Localization. IEEE Robotics and Automation Letters, 2019, 4, 3900-3907.	3.3	5
123	C. Elegans inspires self-driving cars. Nature Machine Intelligence, 2020, 2, 661-662.	8.3	5
124	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.	2.0	5
125	Bio-inspired multi-scale fusion. Biological Cybernetics, 2020, 114, 209-229.	0.6	5
126	Improving Worst Case Visual Localization Coverage via Place-Specific Sub-Selection in Multi-Camera Systems. IEEE Robotics and Automation Letters, 2022, 7, 10112-10119.	3.3	5

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127	Autonomous movement-driven place recognition calibration for generic multi-sensor robot platforms. , 2013, , .		4
128	Building beliefs: Unsupervised generation of observation likelihoods for probabilistic localization in changing environments. , 2015, , .		4
129	BTEL: A Binary Tree Encoding Approach for Visual Localization. IEEE Robotics and Automation Letters, 2019, 4, 4354-4361.	3.3	4
130	Predicting to Improve: Integrity Measures for Assessing Visual Localization Performance. IEEE Robotics and Automation Letters, 2022, 7, 9627-9634.	3.3	4
131	DÃ©jÃ vu: Scalable place recognition using mutually supportive feature frequencies. , 2017, , .		3
132	Towards Simulating Semantic Onboard UAV Navigation. , 2020, , .		3
133	A Binary Optimization Approach for Constrained K-Means Clustering. Lecture Notes in Computer Science, 2019, , 383-398.	1.0	3
134	Robotic Mapping Methods. , 2008, , 15-28.		3
135	Biologically inspired visual landmark processing for simultaneous localization and mapping. , 0, , .		2
136	The implementation of a novel, bio-inspired, robotic security system. , 2009, , .		2
137	Unlocking neural complexity with a robotic key. Journal of Physiology, 2016, 594, 6559-6567.	1.3	2
138	Incorporating Hierarchical Information for UAV based Semantic Mapping. , 2021, , .		2
139	A RoboStack Tutorial: Using the Robot Operating System Alongside the Conda and Jupyter Data Science Ecosystems. IEEE Robotics and Automation Magazine, 2022, 29, 65-74.	2.2	2
140	Bio-inspired Multi-scale Visual Place Recognition for the Aerial Vehicle Navigation. Lecture Notes in Electrical Engineering, 2022, , 1039-1049.	0.3	2
141	OpenSceneVLAD: Appearance Invariant, Open Set Scene Classification. , 2022, , .		2
142	The RatSLAM project: robot spatial navigation. , 0, , 87-108.		1
143	QuadricSLAM: Dual Quadrics as SLAM Landmarks. , 2018, , .		1
144	Where Do We Go From Here? Debates on the Future of Robotics Research at ICRA 2019 [From the Field]. IEEE Robotics and Automation Magazine, 2019, 26, 7-10.	2.2	1

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145	CityLearn: Diverse Real-World Environments for Sample-Efficient Navigation Policy Learning. , 2020, , .		1
146	Early Bird: Loop Closures from Opposing Viewpoints for Perceptually-aliased Indoor Environments. , 2021, , .		1
147	Outdoor Simultaneous Localisation and Mapping Using RatSLAM. , 2006, , 143-154.		1
148	Improving Road Segmentation in Challenging Domains Using Similar Place Priors. IEEE Robotics and Automation Letters, 2022, 7, 3555-3562.	3.3	1
149	RatSLAM: An Extended Hippocampal Model. , 2008, , 87-116.		0
150	Odometry-driven inference to link multiple exemplars of a location. , 2013, , .		0
151	Tuning Modular Networks with Weighted Losses for Hand-Eye Coordination. , 2017, , .		0
152	Hierarchical Encoding of Sequential Data With Compact and Sub-Linear Storage Cost. , 2019, , .		0
153	Corrections to â€œProbabilistic Visual Place Recognition for Hierarchical Localizationâ€• IEEE Robotics and Automation Letters, 2021, 6, 6139-6139.	3.3	0
154	Extending RatSLAM: The Experience Mapping Algorithm. , 2008, , 129-143.		0
155	Exploration, Goal Recall, and Adapting to Change. , 2008, , 145-161.		0
156	Mapping and Navigation. , 2008, , 9-13.		0
157	Biological Navigation Systems. , 2008, , 29-39.		0
158	Emulating Nature: Models of Hippocampus. , 2008, , 41-53.		0
159	Robotic or Bio-inspired: A Comparison. , 2008, , 55-60.		0
160	Pilot Study of a Hippocampal Model. , 2008, , 61-86.		0
161	Goal Memory: A Pilot Study. , 2008, , 117-128.		0