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	Semanticâ€“geometric visual place recognition: a new perspective for reconciling opposing views. International Journal of Robotics Research, 2022, 41, 573-598.	5.8	48
2	Uncertainty for Identifying Open-Set Errors in Visual Object Detection. IEEE Robotics and Automation Letters, 2022, 7, 215-222.	3.3	18
3	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
4	Bio-inspired Multi-scale Visual Place Recognition for the Aerial Vehicle Navigation. Lecture Notes in Electrical Engineering, 2022, , 1039-1049.	0.3	2
5	MultiRes-NetVLAD: Augmenting Place Recognition Training With Low-Resolution Imagery. IEEE Robotics and Automation Letters, 2022, 7, 3882-3889.	3.3	15
6	Improving Road Segmentation in Challenging Domains Using Similar Place Priors. IEEE Robotics and Automation Letters, 2022, 7, 3555-3562.	3.3	1
7	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
8	Spiking Neural Networks for Visual Place Recognition Via Weighted Neuronal Assignments. IEEE Robotics and Automation Letters, 2022, 7, 4094-4101.	3.3	10
9	Predicting to Improve: Integrity Measures for Assessing Visual Localization Performance. IEEE Robotics and Automation Letters, 2022, 7, 9627-9634.	3.3	4
10	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
11	A Survey on Terrain Traversability Analysis for Autonomous Ground Vehicles: Methods, Sensors, and Challenges. , 2022, 2, 1567-1627.		21
12	OpenSceneVLAD: Appearance Invariant, Open Set Scene Classification. , 2022, , .		2
13	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
14	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
15	Probabilistic Visual Place Recognition for Hierarchical Localization. IEEE Robotics and Automation Letters, 2021, 6, 311-318.	3.3	10
16	ConvSequential-SLAM: A Sequence-Based, Training-Less Visual Place Recognition Technique for Changing Environments. IEEE Access, 2021, 9, 118673-118683.	2.6	13
17	Incorporating Hierarchical Information for UAV based Semantic Mapping. , 2021, , .		2
18	Intelligent Reference Curation for Visual Place Recognition Via Bayesian Selective Fusion. IEEE Robotics and Automation Letters, 2021, 6, 588-595.	3.3	7

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19	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
20	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
21	Corrections to â€œProbabilistic Visual Place Recognition for Hierarchical Localizationâ€. IEEE Robotics and Automation Letters, 2021, 6, 6139-6139.	3.3	0
22	Improving Visual Place Recognition Performance by Maximising Complementarity. IEEE Robotics and Automation Letters, 2021, 6, 5976-5983.	3.3	8
23	SeqNet: Learning Descriptors for Sequence-Based Hierarchical Place Recognition. IEEE Robotics and Automation Letters, 2021, 6, 4305-4312.	3.3	47
24	Where Is Your Place, Visual Place Recognition?. , 2021, , .		41
25	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
26	Probabilistic Appearance-Invariant Topometric Localization With New Place Awareness. IEEE Robotics and Automation Letters, 2021, 6, 6985-6992.	3.3	7
27	Class Anchor Clustering: A Loss for Distance-based Open Set Recognition. , 2021, , .		56
28	Early Bird: Loop Closures from Opposing Viewpoints for Perceptually-aliased Indoor Environments. , 2021, , .		1
29	Patch-NetVLAD: Multi-Scale Fusion of Locally-Global Descriptors for Place Recognition. , 2021, , .		151
30	Fast and Robust Bio-inspired Teach and Repeat Navigation. , 2021, , .		10
31	RoRD: Rotation-Robust Descriptors and Orthographic Views for Local Feature Matching. , 2021, , .		6
32	Zero-Shot Day-Night Domain Adaptation with a Physics Prior. , 2021, , .		22
33	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
34	Self-Driving Vehicles: Key Technical Challenges and Progress Off the Road. IEEE Potentials, 2020, 39, 37-45.	0.2	16
35	Fast, Compact and Highly Scalable Visual Place Recognition through Sequence-based Matching of Overloaded Representations. , 2020, , .		16
36	Hierarchical Multi-Process Fusion for Visual Place Recognition. , 2020, , .		14

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37	Residual Reactive Navigation: Combining Classical and Learned Navigation Strategies For Deployment in Unknown Environments. , 2020, , .		7
38	Delta Descriptors: Change-Based Place Representation for Robust Visual Localization. IEEE Robotics and Automation Letters, 2020, 5, 5120-5127.	3.3	26
39	Event-Based Visual Place Recognition With Ensembles of Temporal Windows. IEEE Robotics and Automation Letters, 2020, 5, 6924-6931.	3.3	30
40	C. Elegans inspires self-driving cars. Nature Machine Intelligence, 2020, 2, 661-662.	8.3	5
41	Towards Simulating Semantic Onboard UAV Navigation. , 2020, , .		3
42	CityLearn: Diverse Real-World Environments for Sample-Efficient Navigation Policy Learning. , 2020, , .		1
43	A Method for Evaluating and Selecting Suitable Hardware for Deployment of Embedded System on UAVs. Sensors, 2020, 20, 4420.	2.1	6
44	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
45	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
46	Exploring Performance Bounds of Visual Place Recognition Using Extended Precision. IEEE Robotics and Automation Letters, 2020, 5, 1688-1695.	3.3	25
47	A Hybrid Compact Neural Architecture for Visual Place Recognition. IEEE Robotics and Automation Letters, 2020, 5, 993-1000.	3.3	46
48	Bio-inspired multi-scale fusion. Biological Cybernetics, 2020, 114, 209-229.	0.6	5
49	Semantics for Robotic Mapping, Perception and Interaction: A Survey. Foundations and Trends in Robotics, 2020, 8, 1-224.	5.0	55
50	QuadricSLAM: Dual Quadrics From Object Detections as Landmarks in Object-Oriented SLAM. IEEE Robotics and Automation Letters, 2019, 4, 1-8.	3.3	132
51	Evaluating Merging Strategies for Sampling-based Uncertainty Techniques in Object Detection. , 2019, , .		59
52	LookUP: Vision-Only Real-Time Precise Underground Localisation for Autonomous Mining Vehicles. , 2019, , .		9
53	BTEL: A Binary Tree Encoding Approach for Visual Localization. IEEE Robotics and Automation Letters, 2019, 4, 4354-4361.	3.3	4
54	Adversarial discriminative sim-to-real transfer of visuo-motor policies. International Journal of Robotics Research, 2019, 38, 1229-1245.	5.8	26

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55	Automatic Coverage Selection for Surface-Based Visual Localization. IEEE Robotics and Automation Letters, 2019, 4, 3900-3907.	3.3	5
56	Visual Place Recognition for Aerial Robotics: Exploring Accuracy-Computation Trade-off for Local Image Descriptors. , 2019, , .		13
57	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
58	Look No Deeper: Recognizing Places from Opposing Viewpoints under Varying Scene Appearance using Single-View Depth Estimation. , 2019, , .		17
59	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
60	NeuroSLAM: a brain-inspired SLAM system for 3D environments. Biological Cybernetics, 2019, 113, 515-545.	0.6	56
61	Learning to Fuse Multiscale Features for Visual Place Recognition. IEEE Access, 2019, 7, 5723-5735.	2.6	14
62	Multi-Process Fusion: Visual Place Recognition Using Multiple Image Processing Methods. IEEE Robotics and Automation Letters, 2019, 4, 1924-1931.	3.3	55
63	Hierarchical Encoding of Sequential Data With Compact and Sub-Linear Storage Cost. , 2019, , .		0
64	Filter Early, Match Late: Improving Network-Based Visual Place Recognition. , 2019, , .		8
65	A Binary Optimization Approach for Constrained K-Means Clustering. Lecture Notes in Computer Science, 2019, , 383-398.	1.0	3
66	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
67	Leveraging variable sensor spatial acuity with a homogeneous, multi-scale place recognition framework. Biological Cybernetics, 2018, 112, 209-225.	0.6	7
68	The limits and potentials of deep learning for robotics. International Journal of Robotics Research, 2018, 37, 405-420.	5.8	320
69	Multimodal Trip Hazard Affordance Detection on Construction Sites. IEEE Robotics and Automation Letters, 2018, 3, 1-8.	3.3	21
70	QuadricSLAM: Dual Quadrics as SLAM Landmarks. , 2018, , .		1
71	OpenSeqSLAM2.0: An Open Source Toolbox for Visual Place Recognition Under Changing Conditions. , 2018, , .		18
72	Semi-Supervised SLAM: Leveraging Low-Cost Sensors on Underground Autonomous Vehicles for Position Tracking. , 2018, , .		17

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73	Addressing Challenging Place Recognition Tasks Using Generative Adversarial Networks. , 2018, , .		23
74	Don't Look Back: Robustifying Place Categorization for Viewpoint- and Condition-Invariant Place Recognition. , 2018, , .		30
75	Automating analysis of vegetation with computer vision: Cover estimates and classification. Ecology and Evolution, 2018, 8, 6005-6015.	0.8	7
76	An adaptive localization system for image storage and localization latency requirements. Robotics and Autonomous Systems, 2018, 107, 246-261.	3.0	6
77	Action recognition: From static datasets to moving robots. , 2017, , .		27
78	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
79	Deep learning features at scale for visual place recognition. , 2017, , .		218
80	3D tracking of water hazards with polarized stereo cameras. , 2017, , .		10
81	Biologically-inspired visual place recognition with adaptive multiple scales. Robotics and Autonomous Systems, 2017, 96, 224-237.	3.0	10
82	Tuning Modular Networks with Weighted Losses for Hand-Eye Coordination. , 2017, , .		0
83	Meaningful maps with object-oriented semantic mapping. , 2017, , .		140
84	DÃ©jÃ vu: Scalable place recognition using mutually supportive feature frequencies. , 2017, , .		3
85	Improving condition- and environment-invariant place recognition with semantic place categorization. , 2017, , .		18
86	Unlocking neural complexity with a robotic key. Journal of Physiology, 2016, 594, 6559-6567.	1.3	2
87	High-fidelity simulation for evaluating robotic vision performance. , 2016, , .		13
88	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
89	Supervised and Unsupervised Linear Learning Techniques for Visual Place Recognition in Changing Environments. IEEE Transactions on Robotics, 2016, 32, 600-613.	7.3	42
90	Place categorization and semantic mapping on a mobile robot. , 2016, , .		87

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91	Skyline-based localisation for aggressively manoeuvring robots using UV sensors and spherical harmonics. , 2016, , .		17
92	2D visual place recognition for domestic service robots at night. , 2016, , .		8
93	Visual Place Recognition: A Survey. IEEE Transactions on Robotics, 2016, 32, 1-19.	7.3	729
94	RatSLAM: Using Models of Rodent Hippocampus for Robot Navigation and Beyond. Springer Tracts in Advanced Robotics, 2016, , 467-485.	0.3	24
95	Distance metric learning for feature-agnostic place recognition. , 2015, , .		10
96	Sequence searching with deep-learnt depth for condition- and viewpoint-invariant route-based place recognition. , 2015, , .		41
97	Building beliefs: Unsupervised generation of observation likelihoods for probabilistic localization in changing environments. , 2015, , .		4
98	Online place recognition calibration for out-of-the-box SLAM. , 2015, , .		9
99	Bio-inspired homogeneous multi-scale place recognition. Neural Networks, 2015, 72, 48-61.	3.3	17
100	On the performance of ConvNet features for place recognition. , 2015, , .		347
101	Automatic image scaling for place recognition in changing environments. , 2015, , .		7
102	Autonomous Multisensor Calibration and Closedâ€loop Fusion for SLAM. Journal of Field Robotics, 2015, 32, 85-122.	3.2	22
103	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
104	Biologically inspired SLAM using Wi-Fi. , 2014, , .		13
105	All-environment visual place recognition with SMART. , 2014, , .		85
106	Condition-invariant, top-down visual place recognition. , 2014, , .		26
107	Towards training-free appearance-based localization: Probabilistic models for whole-image descriptors. , 2014, , .		14
108	Visionâ€based Simultaneous Localization and Mapping in Changing Outdoor Environments. Journal of Field Robotics, 2014, 31, 780-802.	3.2	26

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109	Multi-scale bio-inspired place recognition. , 2014, , .		14
110	Transforming morning to afternoon using linear regression techniques. , 2014, , .		28
111	Featureless Visual Processing for SLAM in Changing Outdoor Environments. Springer Tracts in Advanced Robotics, 2014, , 569-583.	0.3	8
112	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
113	OpenRatSLAM: an open source brain-based SLAM system. Autonomous Robots, 2013, 34, 149-176.	3.2	103
114	Autonomous movement-driven place recognition calibration for generic multi-sensor robot platforms. , 2013, , .		4
115	Vision-based place recognition: how low can you go?. International Journal of Robotics Research, 2013, 32, 766-789.	5.8	118
116	Odometry-driven inference to link multiple exemplars of a location. , 2013, , .		0
117	Brain-inspired sensor fusion for navigating robots. , 2013, , .		13
118	Long exposure localization in darkness using consumer cameras. , 2013, , .		10
119	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
120	Towards persistent indoor appearance-based localization, mapping and navigation using CAT-Graph. , 2012, , .		16
121	OpenFABMAP: An open source toolbox for appearance-based loop closure detection. , 2012, , .		114
122	SeqSLAM: Visual route-based navigation for sunny summer days and stormy winter nights. , 2012, , .		628
123	CAT-SLAM: probabilistic localisation and mapping using a continuous appearance-based trajectory. International Journal of Robotics Research, 2012, 31, 429-451.	5.8	86
124	Capping computation time and storage requirements for appearance-based localization with CAT-SLAM. , 2012, , .		11
125	Maintaining a Cognitive Map in Darkness: The Need to Fuse Boundary Knowledge with Path Integration. PLoS Computational Biology, 2012, 8, e1002651.	1.5	46
126	Lingodroids: Studies in spatial cognition and language. , 2011, , .		11

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127	Aerial SLAM with a single camera using visual expectation. , 2011, , .		29
128	The race to learn: Spike timing and STDP can coordinate learning and recall in CA3. Hippocampus, 2011, 21, 647-660.	0.9	18
129	Continuous appearance-based trajectory SLAM. , 2011, , .		21
130	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
131	Hybrid robot control and SLAM for persistent navigation and mapping. Robotics and Autonomous Systems, 2010, 58, 1096-1104.	3.0	26
132	Solving Navigational Uncertainty Using Grid Cells on Robots. PLoS Computational Biology, 2010, 6, e1000995.	1.5	65
133	Persistent Navigation and Mapping using a Biologically Inspired SLAM System. International Journal of Robotics Research, 2010, 29, 1131-1153.	5.8	221
134	FAB-MAP + RatSLAM: Appearance-based SLAM for multiple times of day. , 2010, , .		147
135	Spatial cognition for robots. IEEE Robotics and Automation Magazine, 2009, 16, 24-32.	2.2	63
136	The implementation of a novel, bio-inspired, robotic security system. , 2009, , .		2
137	Single camera vision-only SLAM on a suburban road network. , 2008, , .		34
138	Mapping a Suburb With a Single Camera Using a Biologically Inspired SLAM System. IEEE Transactions on Robotics, 2008, 24, 1038-1053.	7.3	267
139	RatSLAM: An Extended Hippocampal Model. , 2008, , 87-116.		0
140	Robotic Mapping Methods. , 2008, , 15-28.		3
141	Extending RatSLAM: The Experience Mapping Algorithm. , 2008, , 129-143.		0
142	Exploration, Goal Recall, and Adapting to Change. , 2008, , 145-161.		0
143	Mapping and Navigation. , 2008, , 9-13.		0
144	Biological Navigation Systems. , 2008, , 29-39.		0

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145	Emulating Nature: Models of Hippocampus. , 2008, , 41-53.		0
146	Robotic or Bio-inspired: A Comparison. , 2008, , 55-60.		0
147	Pilot Study of a Hippocampal Model. , 2008, , 61-86.		0
148	Goal Memory: A Pilot Study. , 2008, , 117-128.		0
149	Learning spatial concepts from RatSLAM representations. Robotics and Autonomous Systems, 2007, 55, 403-410.	3.0	25
150	Spatial Mapping and Map Exploitation: A Bio-inspired Engineering Perspective. , 2007, , 203-221.		10
151	Outdoor Simultaneous Localisation and Mapping Using RatSLAM. , 2006, , 143-154.		10
152	RatSLAM on the Edge: Revealing a Coherent Representation from an Overloaded Rat Brain. , 2006, , .		21
153	Outdoor Simultaneous Localisation and Mapping Using RatSLAM. , 2006, , 143-154.		1
154	RatSLAM: a hippocampal model for simultaneous localization and mapping. , 2004, , .		226
155	Biologically inspired visual landmark processing for simultaneous localization and mapping. , 0, , .		2
156	Efficient Goal Directed Navigation using RatSLAM. , 0, , .		6
157	The RatSLAM project: robot spatial navigation. , 0, , 87-108.		1
158	Towards Persistent Localization and Mapping with a Continuous Appearance-based Topology. , 0, , .		12
159	Visual Route Recognition with a Handful of Bits. , 0, , .		24
160	Place Recognition with ConvNet Landmarks: Viewpoint-Robust, Condition-Robust, Training-Free. , 0, , .		232
161	LoST? Appearance-Invariant Place Recognition for Opposite Viewpoints using Visual Semantics. , 0, , .		69