FMM Speaker identification Authenticating the identity of computer users Lung Cancer Detection Cervical Cancer Diagnostic Cervical Cancer Diagnostic Detection of Lung Nodules Diagnosis of Lung Cancer Brain Tumor Detection Patient admission prediction Detection of Lung Nodules Diagnosis of Lung Cancer Brain Tumor Detection Patient admission prediction Detection of Lung Nodules Diagnosis of Lung Cancer Brain Tumor Detection Patient admission prediction Modified group search optimizer and FMM Improved FMM FMM FMM FMM FMM Fall Detection Gene Expression Data Fall Detection Fall Detection Glaucoma Images Acute Coronary Syndrome Heart Disease Diagnosis acute coronary syndrome Heart Disease Diagnosis Acute Stroke Patient Diagnosis acute coronary syndrome Heart Disease Diagnosis Intrusion Detection Intrusion Detection Intrusion Detection Business Intelligence Software Reliability Prediction Image Segmentation Golor image Segmentation Color image Segmentation	[55]	2002	Modular GFMM	Speech Recognition
Tol 2009 FMM Computer users	[56]	2011	FMM	Speaker identification
Formula Form	[71]	2009	FMM	
FMCN Detection of Lung Nodules Diagnosis of Lung Cancer Brain Tumor Detection Patient admission prediction Patient admission Patient admission patient admission patient admission Patient admission patient admission Patient admission Patient admission Patient admission Patient admission Patient admission Patient admission Patient admission Patient admission Patient admission Patient admission Patient admission Patient admission Patient admission Patient admission Patient	[76]	2013	Fuzzy C-Means and FMM	
Test	[79]	2013		Cervical Cancer Diagnostic
Reflex FMM	[77]	2014	FMCN	Detection of Lung Nodules
104 2015	[78]	2016	Pruned FMM	Diagnosis of Lung Cancer
[105] 2016 Modified group search optimizer and FMM Gene Expression Data improved FMM Fall Detection [81] 2017 FMM Fall Detection [82] 2017 MLF Fall Detection [75] 2013 DCFMN Glaucoma Images [106] 2008 FMM vs MFMM1 vs MFMM2 [38] 2010 FMM-GA Acute Coronary Syndrome [38] 2010 FMM-GA Acute Stroke Patient Diagnosis acute coronary syndrome [73] 2013 FMM and Firefly Algorithm FMM and Genetic Algorithm FMM and Genetic Algorithm FMM and particle swarm optimization [66] 2016 FMM And Recurrent neural network GRFMM GRFMM Image Retrieval [108] 2016 GRFMM Shadow Detection and Removal Tool [96] 2005 FMM Shadow Detection and Removal Tool [97] 2013 FMM Image Segmentation	[80]	2017	Reflex FMM	Brain Tumor Detection
105 2016	[104]	2015	FMM with Rule extraction	Patient admission prediction
[81] 2017 FMM Fall Detection [82] 2017 MLF Fall Detection [75] 2013 DCFMN Glaucoma Images [106] 2008 FMM vs MFMM1 vs MFMM2 Acute Coronary Syndrome [38] 2010 FMM-GA EFMM Acute Stroke Patient Diagnosis acute coronary syndrome [34] 2015 EFMM and Firefly Algorithm Heart Disease Diagnosis [67] 2015 MLF Intrusion Detection [66] 2016 FMM and Genetic Algorithm Intrusion Detection [65] 2017 FMM and particle swarm optimization Intrusion Detection [64] 2017 FMM Attack intention [107] 2013 FMM and Recurrent neural network Software Reliability Prediction [99] 2016 GRFMM Image Retrieval [100] 2012 Granular reflex FMM Shadow Detection and Removal Tool [96] 2005 FMM Image Segmentation	[105]	2016		Medical Data classification
[82] 2017 MLF Fall Detection [75] 2013 DCFMN Glaucoma Images [106] 2008 FMM vs MFMM1 vs MFMM1 vs MFMM2 Acute Coronary Syndrome [38] 2010 FMM-GA FIM-GA Acute Stroke Patient Diagnosis acute coronary syndrome [73] 2013 FMM and Firefly Algorithm Heart Disease Diagnosis [67] 2015 MLF Intrusion Detection [66] 2016 FMM and Genetic Algorithm Intrusion Detection [65] 2017 FMM and particle swarm optimization Intrusion Detection [64] 2017 FMM Attack intention [107] 2013 FMM and Recurrent neural network Software Reliability Prediction [108] 2016 GRFMM Image Retrieval [100] 2012 Granular reflex FMM Shadow Detection and Removal Tool [96] 2005 FMM Image Segmentation	[83]	2007	improved FMM	Gene Expression Data
Total Company Compan	[81]	2017	FMM	Fall Detection
Tool 2008	[82]	2017	MLF	Fall Detection
106 2008 MFMM2 Acute Coronary Syndrome 138 2010 FMM-GA EFMM Acute Stroke Patient Diagnosis acute coronary syndrome 139 2013 FMM and Firefly Algorithm Heart Disease Diagnosis 167 2015 MLF Intrusion Detection 168 2016 FMM and Genetic Algorithm Intrusion Detection 169 2017 FMM Attack intention Business Intelligence 108 2016 GRFMM Image Retrieval 109 2012 Granular reflex FMM Shadow Detection and Removal 109 2005 FMM Image Segmentation 100 2012 Granular reflex FMM Image Segmentation 101 2013 FMM Image Segmentation 102 2014 Granular reflex FMM Image Segmentation 103 2015 FMM Image Segmentation 104 2016 Image Segmentation 105 2016 Image Segmentation 107 2017 Image Segmentation 108 2018 Image Segmentation 109 2019 Image Segmentation 109 2010 Image Segmentation 100 2010 Image Segmentation 2010 2010 Image Segmentation 20	[75]	2013	DCFMN	Glaucoma Images
[34] 2015 EFMM acute coronary syndrome [73] 2013 FMM and Firefly Algorithm [65] 2016 FMM and Genetic Algorithm [65] 2017 FMM and particle swarm optimization [64] 2017 FMM [107] 2013 FMM [108] 2016 FMM and Recurrent neural network [99] 2016 GRFMM Image Retrieval [100] 2012 Granular reflex FMM [100] 2015 FMM [100] 2016 GRFMM Shadow Detection and Removal Tool [101] 2015 FMM [102] Tool Image Segmentation	[106]	2008		Acute Coronary Syndrome
[73] 2013 FMM and Firefly Algorithm [67] 2015 MLF Intrusion Detection [66] 2016 FMM and Genetic Algorithm [65] 2017 FMM and particle swarm optimization [64] 2017 FMM Attack intention [107] 2013 FMM Business Intelligence [108] 2016 GRFMM Shadow Detection and Removal Tool [96] 2005 FMM Image Segmentation	[38]	2010	FMM-GA	Acute Stroke Patient Diagnosis
Algorithm Heart Disease Diagnosis For a control Female Female Female	[34]	2015	EFMM	acute coronary syndrome
[66] 2016 FMM and Genetic Algorithm [65] 2017 FMM and particle swarm optimization [64] 2017 FMM Attack intention [107] 2013 FMM Business Intelligence [108] 2016 FMM and Recurrent neural network [99] 2016 GRFMM Image Retrieval [100] 2012 Granular reflex FMM Shadow Detection and Removal Tool [96] 2005 FMM Image Segmentation	[73]	2013		Heart Disease Diagnosis
[66] 2016 Algorithm [65] 2017 FMM and particle swarm optimization [64] 2017 FMM Attack intention [107] 2013 FMM Business Intelligence [108] 2016 FMM and Recurrent neural network [99] 2016 GRFMM Image Retrieval [100] 2012 Granular reflex FMM Shadow Detection and Removal Tool [96] 2005 FMM Image Segmentation	[67]	2015	MLF	Intrusion Detection
Column C	[66]	2016	Algorithm	Intrusion Detection
107 2013 FMM Business Intelligence FMM and Recurrent neural network Software Reliability Prediction Image Retrieval 100 2012 Granular reflex FMM Shadow Detection and Removal Tool Image Segmentation Image Segmenta	[65]	2017		Intrusion Detection
[108] 2016 FMM and Recurrent neural network Image Retrieval [100] 2012 Granular reflex FMM Shadow Detection and Removal Tool [106] 2005 FMM Image Segmentation	[64]	2017	FMM	Attack intention
[108] 2016 network network Software Reliability Prediction [99] 2016 GRFMM Image Retrieval [100] 2012 Granular reflex FMM Shadow Detection and Removal Tool [96] 2005 FMM Image Segmentation	[107]	2013	FMM	Business Intelligence
[100] 2012 Granular reflex FMM Shadow Detection and Removal Tool [96] 2005 FMM Image Segmentation	[108]	2016		Software Reliability Prediction
Tool [96] 2005 FMM Image Segmentation	[99]	2016	GRFMM	Image Retrieval
	[100]	2012	Granular reflex FMM	
	[96]	2005	FMM	Image Segmentation
	[97]	2009	Granular reflex FMM	
[98] 2006 FMM clustering Color Image Segmentation		2006	FMM clustering	