

LIST OF FIGURES

Figure 4.1: Generic model of Ship Detection Algorithm	29
Figure 4.2: Methodology of Medium resolution data processing.....	30
Figure 4.3: Methodology of Fine resolution SLC PolSAR Processing	30
Figure 4.4: Histogram Frequency Slicing Concept.....	33
Figure 4.5: Erdas clumb sieve model.....	34
Figure 5.1: Training Images of Ship and Water Class for SVM	37
Figure 5.2: Subset Test Image of Sentinel-1A.....	38
Figure 5.3: Clump & Sieve operation on Sentinel-1A.....	38
Figure 5.4: Histogram Frequency Sliced Images of Sentinel-1A	39
Figure 5.5: ENVI Decision Tree Classifier for visualisation.....	39
Figure 5.6: ENVI Decision Tree Classified Image of Sentinel-1A	40
Figure 5.7: Test ship MV Nand Panna (Source: www.marinetraffic.com)	40
Figure 5.8: Test Ship Located in ENVI Decision Tree Classified Image of Sentinel-1A	41
Figure 5.9: Detection Comparision of Manual vs SVM mtehods	44
Figure 5.10: Co-polar vs Cross polar data selection based on the Incidence angle (ENVI).....	45
Figure 5.11: Effect of Sieve operation and the minimum detectable ship (ENVI)	46
Figure 5.12: Subset Image for processing of RISAT-1 MRS CEOS data (ERDAS IMAGINE)	47
Figure 5.13: Manual Selection of detection threshold (ENVI).....	48
Figure 5.14: Threshold selection of RISAT-1 HH MRS data using Horizontal profile (ENVI).....	48
Figure 5.15: Threshold selection of RISAT-1 HV MRS data using Horizontal profile (ENVI).....	49
Figure 5.16: Histogram Frequency Slicing of RISAT-1 MRS data (ERDAS IMAGINE).....	49
Figure 5.17: Comparison of SVM Techniques (ERDAS IMAGINE).....	50
Figure 5.18: Comparison of SVM linear and SVM polynomial degree-2 classification (ENVI)	50
Figure 5.19: Comparison of SVM sigma and SVM RBF (ENVI).....	51
Figure 5.20: Ship Oranje (Source: www.marinetraffic.com)	52
Figure 5.21: Detection Performance of RISAT-1 MRS data analysis.....	54
Figure 5.22: Raney Decomposition - Container ship (C2 Matrix of RISAT-1 CTLR data)	57
Figure 5.23: Raney Decomposition - Oil tanker (C2 Matrix of RISAT-1 CTLR data).....	58
Figure 5.24: Raney Decomposition - offshore tug (C2 Matrix of RISAT CTLR data).....	58
Figure 5.25: Kroger Coherent decomposition - Oil tanker (T3 Matrix of Psuedo-quad derived from C2)	59
Figure 5.26: Kroger Coherent decomposition - Offshore tug (T3 Matrix of Psuedo-quad derived from C2)	59
Figure 5.27: Kroger Coherent decomposition - Container Ship (T3 Matrix of Psuedo-quad derived from C2)	60

Figure 5.28: Freeman incoherent decomposition - Oil tanker (T3 Matrix of Psuedo-quad derived from C2) 60

Figure 5.29: Freeman incoherent decomposition - Container ship (T3 Matrix of Psuedo-quad derived from C2)..... 61

Figure 5.30: Freeman incoherent decomposition - Off shore (T3 Matrix of Psuedo-quad derived from C2) 61

Figure 5.31: Yamaguchi Decomposition - Oil tanker (T3 Matrix of Psuedo-quad derived from C2) 62

Figure 5.32: Yamaguchi Decomposition - Container ship (T3 Matrix of Psuedo-quad derived from C2) 62

Figure 5.33: Yamaguchi Decomposition - Offshore tug (T3 Matrix of Psuedo-quad derived from C2) 63