

Table of Contents

Table of Contents	II	
List of Figures	IIV	
List of Tables	VI	
List of Abbreviations	VII	
List of Appendices	IX	
Abstract	X	
1 Introduction		1
1.1	Research Motivation.....	1
1.2	Importance of CAD systems	5
1.3	Related Work	6
1.4	Main Contributions	9
1.5	Thesis Outline.....	10
2 Masses Detection Methodology and Techniques		11
2.1	General Methodology for Mass Diagnosis.....	11
2.1.1	Preprocessing Techniques	12
2.1.1.1	Intensity Transformations	14
2.1.1.2	Spatial Smoothing Filters	15
2.1.2	Segmentation Techniques.....	16
2.1.2.1	Thresholding techniques	17
2.1.2.2	Edge detection.....	20
2.1.2.3	Automatic Thresholding	20
2.1.2.4	Region-Based Techniques.....	21
2.1.2.5	Morphological Operations	21
2.1.3	Feature Extraction.....	22
2.1.3.1	Intensity features	23
2.1.3.2	Geometric features	23
2.1.3.3	Textural features	23
2.1.4	Feature selection.....	24
2.1.4.1	Stepwise feature selection.....	25
2.1.4.2	Genetic algorithm (GA)	25
2.1.5	Classification.....	26
2.1.5.1	Linear discriminant analysis (LDA).....	27
2.1.5.2	Artificial Neural Network (ANN)	28