## CONTENTS

ACKNOWLEDGMENTS  
INDEX  
INDEX OF ALGORITHMS, FLOWCHARTS, FIGURES AND TABLES

## INDEX

### Chapter 1: Introduction  
01-40

1.1 Introduction  
1.2 Digital Images  
1.2.1 RGB Channel of Digital Image  
1.3 Digital Image Processing  
1.3.1 Image Enhancement  
1.3.1.1 De-blurring  
1.3.1.2 De-noising  
1.3.2 Image Segmentation  
1.3.2.1 Threshold Based Segmentation  
1.3.2.2 Edge based segmentation  
1.3.2.3 Region based segmentation  
1.3.2.4 Clustering techniques  
1.3.3 Image Acquisition  
1.3.4 Image Registration  
1.3.5 Feature Detection  
1.3.6 Object Recognition  
1.4 Information Hiding and Security  
1.4.1 Security Threats  
1.4.1.1 Natural Threats
1.4.1.2 Intentional Threats 12
1.4.1.3 Unintentional Threats 12
1.5 Various Methods of Information Hiding 12
  1.5.1 Digital Steganography 12
  1.5.2 Cryptography 13
    1.5.2.1 Cryptography Types 15
  1.5.3 Digital Watermarking 16
  1.5.4 Comparison of Various Information Hiding Techniques 20
1.6 History of Information Hiding and Steganography 21
  1.6.1 Information Hiding 21
  1.6.2 Steganography 22
1.7 Steganalysis 23
  1.7.1 Attacks 24
    1.7.1.1 Visual Attacks 24
    1.7.1.2 Structural Attacks 24
    1.7.1.3 Statistical Attacks 25
  1.7.2 Blind Steganalysis 25
1.8 Fractals 26
  1.8.1 Techniques for Generating Fractals 27
    1.8.1.1 Iterated Function Systems 27
    1.8.1.2 Escape Time Fractals 27
    1.8.1.3 Random Fractals 27
  1.8.2 Fractals and self-similarity 28
    1.8.2.1 Exact self-similarity 28
    1.8.2.2 Quasi-self-similarity 28
    1.8.2.3 Statistical self-similarity 28
  1.8.3 Fractal Geometry 28
1.9 Mandelbrot Fractal 31
1.10 Hilbert Curve 32
4.3 Summary 126

Chapter 5: Conclusions 131-132
  5.1 Conclusions 127
  5.2 The Path Ahead 131

Bibliography 133-143