## CONTENTS

<table>
<thead>
<tr>
<th>Acknowledgements</th>
<th>i</th>
</tr>
</thead>
<tbody>
<tr>
<td>List of Figures</td>
<td>vi</td>
</tr>
<tr>
<td>List of Tables</td>
<td>vii</td>
</tr>
<tr>
<td>Abbreviations</td>
<td>xiii</td>
</tr>
<tr>
<td>Abstract</td>
<td>xvi</td>
</tr>
</tbody>
</table>

### CHAPTER 1  INTRODUCTION

1.1 Need for Clinical Decision Support System 1  
1.2 Clinical Decision Support System 2  
1.3 Purpose of CDSS 2  
1.4 Knowledge Based CDSS 3  
1.5 Non Knowledge Based CDSS 5  
1.6 Benefits of CDSS 7  
1.7 Clinical Decision Support System for appendicitis 8  
1.8 Problem Statement 9  
1.9 Thesis Organization 10

### CHAPTER 2  REVIEW OF RELATED RESEARCH

2.1 Research in Clinical Decision Support System 12  
2.2 Research in Appendicitis Clinical Decision Support System 16  
2.3 Research in Feature Selection 19  
2.4 Research in Feature Extraction 20  
2.5 Research in Classification 21  
2.6 Chapter Conclusions 23
CHAPTER 3  DATA MINING MODEL FOR CDSS

3.1 Knowledge Discovery in CDSS 25
3.2 Data Cleaning 26
3.3 Feature Selection 26
3.4 Classification and Prediction 33
3.5 Comparing Classification and Prediction Methods 43
3.6 Chapter Conclusions 44

CHAPTER 4  FEATURE SELECTION USING GENETIC ALGORITHM

4.1 Genetic Algorithm 45
4.2 Using Genetic Algorithm for feature selection 51
4.3 Implementation of Genetic Algorithm for feature selection using MATLAB 56
4.4 Experimental Datasets 64
4.5 Experimental Results 65
4.6 Chapter Conclusions 66

CHAPTER 5  IMPLEMENTATION OF SUPPORT VECTOR MACHINES FOR CLASSIFICATION OF CLINICAL DATASETS

5.1 Feature extraction 69
5.2 Support Vector Machine 76
5.3 SVM Multi Classification 83
5.4 Experimental Results 84
5.5 Chapter Conclusions 87
CHAPTER 6 A NOVEL NEURO FUZZY LOGIC BASED CLASSIFIER FOR DIAGNOSING APPENDICITIS

6.1 Fuzzy Logic 88
6.2 Methodology 90
6.3 Alvarado scoring system for Appendicitis 90
6.4 Proposed Scoring system for diagnosing the severity of appendicitis using Neuro Fuzzy Logic based classifier 92
6.5 Construction and Working of Fuzzy Inference System 93
6.6 Mamdani’s Fuzzy Inference Method 94
6.7 Designing a Fuzzy Logic Rule based Classifier for appendicitis clinical dataset 100
6.8 Back Propagation Neural Network 107
6.9 Back Propagation Neural Network Algorithm 108
6.10 Back Propagation Neural Network for classification of clinical datasets 110
6.11 Experimental Results 111
6.12 Chapter Conclusions 113

CHAPTER 7 EXPERIMENTAL RESULTS AND ANALYSIS

7.1 Experimental Datasets 114
7.2 Experimental Results 116
7.3 Discussion of Results 152

CHAPTER 8 SUMMARY AND CONCLUSION

8.1 Summary 154
8.2 Conclusion 155
8.3 Future Enhancements 156

REFERENCES 157
LIST OF PUBLICATIONS 168
APPENDIX 169