# TABLE OF CONTENTS

DECLARATION .................................................. ii  
CERTIFICATE .................................................. iii  
ACKNOWLEDGEMENTS .......................................... iv  
ABSTRACT ...................................................... vi  

LIST OF TABLES ................................................ 1  
LIST OF FIGURES ................................................ 3  

1. Chapter 1 ....................................................... 6  
   1.1 Biometrics .................................................. 8  
       1.1.1 Types of Biometrics .................................. 8  
   1.2 Comparative Study on Biometric Systems ............... 17  
   1.3 Face Recognition .......................................... 18  
       1.3.1 Face Recognition Approaches .................... 18  
   1.4 Face Recognition as a Process .......................... 19  
       1.4.1 Face Detection .................................... 20  
       1.4.2 Feature Extraction ................................. 21  
       1.4.3 Classification ..................................... 21  
   1.5 Video Based Face Recognition ........................... 22  
   1.6 Challenges of Video Based Face Recognition ........... 23
1.6.1 Illumination 23
1.6.2 Pose Variation 24
1.6.3 Occlusion 25
1.7 Applications of Biometrics 26
1.8 Thesis Organization 27

2. Chapter 2 28

2.1 Brief Theory 29

2.1.1 Architecture of Video Based Face Recognition System 29
2.1.2 Application of Video Based Face Recognition System 30
2.1.3 Advantages and Disadvantages 31

2.2 Literature Survey 31

2.2.1 Literature Survey on Video Based Face Recognition 31
2.2.2 Literature Survey on Face Detection Algorithms 38
2.2.3 Literature Survey on Feature Extraction Algorithms 41
2.2.4 Literature Survey on Pose Variant Face Recognition 43
2.2.5 Literature Survey on Face Recognition on Occluded Faces 47
2.2.6 Literature Survey on Inpainting Algorithms 52
2.2.7 Literature survey on reconstructing occluded faces using inpainting 56
2.2.8 Literature Survey on Exemplar Inpainting Technique 57
2.3 Objective

3. Chapter 3

  3.1 Introduction
  3.2 Proposed Model
  3.3 Preprocessing Method
  3.4 Experimental Data
  3.5 Face Detection
  3.6 Feature Extraction using Curvelet Transform
  3.7 Matching
  3.8 Proposed Algorithm
  3.9 Performance Analysis
  3.10 Summary

4. Chapter 4

  4.1 Introduction
  4.2 Procedure of Inpainting
  4.3 Modified Exemplar method
  4.4 Performance Analysis
  4.5 Summary

5. Chapter 5

 
<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Introduction</td>
<td>121</td>
</tr>
<tr>
<td>5.2</td>
<td>Proposed Model</td>
<td>121</td>
</tr>
<tr>
<td>5.3</td>
<td>Face Detection</td>
<td>122</td>
</tr>
<tr>
<td>5.4</td>
<td>Occlusion Detection</td>
<td>126</td>
</tr>
<tr>
<td>5.5</td>
<td>Support Vector Machine for classification</td>
<td>126</td>
</tr>
<tr>
<td>5.6</td>
<td>Feature Extraction</td>
<td>129</td>
</tr>
<tr>
<td>5.7</td>
<td>Inpainting</td>
<td>130</td>
</tr>
<tr>
<td>5.8</td>
<td>Proposed Algorithm</td>
<td>131</td>
</tr>
<tr>
<td>5.9</td>
<td>Performance Analysis</td>
<td>132</td>
</tr>
<tr>
<td>5.10</td>
<td>Summary</td>
<td>136</td>
</tr>
<tr>
<td>6.</td>
<td>Chapter 6</td>
<td>137</td>
</tr>
<tr>
<td>7.</td>
<td>Chapter 7</td>
<td>145</td>
</tr>
<tr>
<td>7.1</td>
<td>Introduction</td>
<td>146</td>
</tr>
<tr>
<td>7.2</td>
<td>Contribution of this Work</td>
<td>147</td>
</tr>
<tr>
<td>7.3</td>
<td>Future Work</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td>BIBLIOGRAPHY</td>
<td>149</td>
</tr>
</tbody>
</table>