Table of Contents

Title **Page No.**

List of Figures vii
List of Tables viii
Acknowledgment ix
Abstract x

I Background 1-4

1.1 Introduction 1
1.2 Problem Statement 2
1.3 Motivation 2
1.4 Objectives 3
1.5 Organization of the Thesis 3

II Literature Survey 5-17

2.1 Introduction 5
2.2 IoT 5
2.3 Automated System 6
2.4 Smart Home Environment 6
2.5 Face Detection 8
2.5.1 Dfferent Types of Face Detection 8
2.5.2 Viola jones Algorithm 9
2.5.2.1 Integral Image 9
2.5.2.2 Cascade 10
2.5.2.3 Haar Cascade Classifiers 10
2.5.2.4 Adaboost 11
2.5.2.5 Viola-Jones Face Objects Detection Algorithm 11
2.6 Face Recognition 12
2.6.1 Steps of Face Recognition 12
2.6.1.1 Acquisition of Face Data 12
2.6.1.2 Extracting Face Feature 13
2.6.1.3 Recognition Of Face 13

2.6.2 Fisher's Linear Discriminant Based Face Recognition 13
2.6.2.1 Basic Steps Employed in FLD 14
2.6.2.2 Fisher Face Algorithm for FLD 15
2.7 Hardware And Software 15
2.7.1 GSM Modem 15
2.7.2 MATLAB 16
2.7.3 Android Studio 2.1.2 16
2.8 Conclusion 17
III Existing Systems & Problems 18-22
3.1 Introduction 18
3.2 Related Works 18
3.2.1 A Smart Visitors' Notification System with Automatic Secure Door Lock using Mobile Communication Technology 18
3.2.2 Android Based Home Automation and Vision Surveillance Using R-PI 18
3.2.3 Development of an IoT-based visitor detection system 19
3.2.4 Face Identification in Smart Car Security System in Real Time 19
3.2.5 Automated Security System using Surveillance 20
3.2.6 Automatic Door Access System Using Face Recognition 20
3.2.7 Child monitoring system 20
3.2.8 Anti Theft Mechanism through Face Recognition 20
3.2.9 An Efficient Approach of Face Detection and Recognition from Digital for Modern Security and Office Hour Attendance System 21
3.2.10 Web-based online embedded door access control and home security 21
3.3 Description of Problems 22
3.4 Conclusion 22
IV Methodology 23-29
4.1 Introduction 23
4.2 System Architecture 23
4.2.1 Face Detection 24
4.2.2 Face Recognition 25
4.2.3 Texting and Managing Android Application 26
4.3 Steps of the system 26
4.4 Challenges 29
4.5 Conclusion 29

V Experimental Results and Analysis 30-34

5.1 Introduction 30
5.2 Implementation 30
5.2.1 Results Analysis 32
5.2.2 Cost Analysis 33
5.3 Comparison 33
5.4 Conclusion 34

VI Conclusions and Future Plan 35-36

6.1 Conclusions 35
6.2 Limitations and Future Plan 35

Refferences 37-40