Machine vision based Facial Recognition system with Database Management System for Gate Access Control and Attendance System

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I certify that this research work titled "*Machine vision based Facial Recognition system with Database Management System for Gate Access Control and Attendance System."* is my own work. The work has not been presented elsewhere for assessment. The material that has been used from other sources it has been properly acknowledged / referred.

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This thesis has been read by an English expert and is free of typing, syntax, semantic, grammatical and spelling mistakes. Thesis is also according to the format given by the university.

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Abstract

During the last two decades' security of men and materials remains a vital concern in the whole world. In particular, Pakistan being a victim of multiple terrorist attacks on military and civil setups suffered massive damage. To encounter a security threat, a lot of efforts have been done to improve the organization's security and various enhanced safety checks were incorporated. Moreover, with the emergence of novel coronavirus pandemic, face masks have become an important part of daily routine life. Nearly every organization in the world has adopted face masks as a primary precautionary measure to secure their workplaces. Masked faces have made existing technology ineffective in several scenarios, such as facial recognition access control and facial security checks at public places This presents a new challenge to any organization's security. Since timely identification of masked faces is vital for an organization. For any setup to ensure right entry at the gate with an automated system for human face recognition (even with mask) in a real-time background is the latest requirement. A face recognition system is an application of computer vision that can perform two tasks identifying and verifying a person from a given database, intending to reduce the manual efforts of the management and security staff. This research thus focuses on implementing a face recognition system (even with a face mask) by using a machine vision-based approach. A dataset of masked faces was collected to train the Support Vector Machine classifier on state-of-the-art Facial Recognition Feature Extractor Convolution Neural Network. Proposed Methodology gives recognition accuracy of 98% with masked faces, and results in an effective gate access control and attendance system.

Table of Contents

Declaration…… iii

Language Correctness Certificate…….. iv

Copyright Statement…… v

Acknowledgements…….. vi

Abstract…… viii

Table of Contents……. ix

List of Figures……... xi

List of Tables…… xiii

CHAPTER 1: INTRODUCTION 1

1.1 Introduction…….…….. 1

1.2 Problem Statement…… 1

1.3 Objective……... 2

CHAPTER 2: LITERATURE REVIEW 3

2.1 Background……... 3

2.2 Face Detection……... 4

2.3 Preprocessesing……...……... 6

2.4 Challenges……...……... 7

2.5 Deep Learning and Convulutional Neural Network (CNN).....……... 10

2.6 Feature Extraction…….....……... 17

2.7 Classification…….…….... 21

2.8 Databases……..……...……... 24

2.9 Applications of Face Recognition……...……... 30

CHAPTER 3: TOOLS AND TECHNIQUES 33

3.1 Development Platform Used…….……...……. 33

3.2 Facial Recognition Techniques…… ……... 36

3.3 Algorithm Selection.…...……...……... 42

CHAPTER 4: EXPERIMENTATION 43

4.1 Proposes Model Implementation.…….. 43

4.2 System Architecture…...…….…….. 48

4.3 Experimental Setup……...……...…… 51

CHAPTER 5: RESULTS AND DISCUSSION 53

5.1 Classification…….……...…….. 53

5.2 Performance of Multiple Datasets…….…… 54

5.3 Masked Faces Recognition System……..……. 57

Table of Contents (cont)

CHAPTER 6: CHALLENGES……... 62
CHAPTER 7: CONCLUSION AND FUTURE WORK……... 64
APPENDIX A……... 66
REFERENCES……. 79

List of Figures

Figure 2.1: General face recognition pipeline ……. 3
Figure 2.2: Common Haar Features …… 4
Figure 2.3: Visualization of the HOG detector from the library ……. 6
Figure 2.4: All 68 points of reference, which will recognize the algorithm on the face ……. 7
Figure 2.5: Different expression variations shown between same person …….. 8
Figure 2.6: Under different illumination conditions ……... 8
Figure 2.7: Under different pose condition, face patch changes ……. 9
Figure 2.8: Different types of occlusions …… 10
Figure 2.9: How CNN relates to AI, ML and DL ……... 11
Figure 2.10: How Neural Network works ……... 12
Figure 2.11: Automated Feature Leaning Capability of CNNs ……... 14
Figure 2.12: Basic CNN Architecture ……. 15
Figure 2.13: Model of a CNN with many convolutional layers……... 16
Figure 2.14: A database with 10 faces and each face patch is of 100 by 100 size …….. 18
Figure 2.15: Block Diagram of PCA based face recognition system …….. 19
Figure 2.16: PCA maps the samples ……... 20
Figure 2.17: Three-layer perceptron ……..... 22
Figure 2.18: Typical framework of CNN …… 23
Figure 2.19: SVM Classification ……. 23
Figure 2.20: The Feret database example with frontal pose …… 25
Figure 2.21: Images of the same individual in LFW ……... 25
Figure 2.22: Five subsets of the subject in extended Yale B database …… 26
Figure 2.23: VGGFace2 template examples ……... 27
Figure 2.24: CMU-PIE database sample with (a) light OFF and (b) lights ON …….. 28
Figure 2.25: Some images from MUCT database ……... 28
Figure 2.26: Some images from MUCT database ……... 29
Figure 2.27: Example of a pair of a face image, with mask and without mask …….. 29
Figure 2.28: Face recognition applications ……. 30
Figure 2.29: Face recognition-based security system ……. 30
Figure 2.30: Basic surveillance system structure ……..... 31
Figure 3.1: Proposed Methodology ……. 33
Figure 3.2: Registered personals of the organization …….. 34
Figure 3.3: Personal IN record in database …….. 35
Figure 3.4: Database management available options …….. 35
Figure 3.5: Database management available options …….. 36
Figure 3.6: The triplet loss …….. 37

Figure 3.7: Deepface pipeline diagram ……... 39
Figure 3.8: The alignment process …….. 39
Figure 3.9: Outline of the deepface architecture ……. 40
Figure 4.1: Pipeline diagram of proposed face recognition system ……..... 43
Figure 4.2: Face detection and preprocessing ……. 44
Figure 4.3: Training model for CNN feature extractor for facial recognition ……. 45
Figure 4.4: 128 Embeddings of an input image…… 46
Figure 4.5: SVM classifier dataset of masked faces …… 47
Figure 4.6: Masked faces dataset…….. 48
Figure 4.7: Block diagram of complete facial recognition system……..... 48
Figure 4.8: Front end display…… 49
Figure 4.9: GUI of the proposed system……... 49
Figure 4.10: Organization's personal registration step ….……... 50
Figure 4.11: Registration steps for visitors ….……. 50
Figure 4.12: Multiple attendance rule options……... 51
Figure 4.13: Real time record of IN personals…….. 51
Figure 4.14: Registered employee was granted access to setup……..... 52
Figure 4.15: Unregistered employee declared as stranger…… 52
Figure 5.1: Confusion Matrix……..... 53
Figure 5.2: Model tested on LFW dataset…… 54
Figure 5.3: Model tested on local dataset……. 55
Figure 5.4: Registered Images recognized with names…… 55
Figure 5.5: Unregistered Images recognized as stranger……. 56
Figure 5.6: Image declared as FN…… 56
Figure 5.7: Masked faces recognition trials……. 57
Figure 5.8: Model tested on masked faces without masked classifier …… 58
Figure 5.9: Registered Images recognized as stranger without masked classifier……... 58
Figure 5.10: Masked faces training set……. 59
Figure 5.11: Model tested on masked faces with masked classifier…… 60
Figure 5.12: Registered Images recognized with masked classifier…… 60

List of Tables

Table 3.1: Structure of Zeiler & Fergus based model with 1×1 convolutions having input and output sizes described in rows × cols × #filters…… 38
Table 3.2: Deepface network configuration……..……... 41
Table 3.3: Comparison b/w algorithms ……..... 42
Table 5.1: Performance parameters of classifiers ……..……. 54
Table 5.2: Model Performance parameters on LFW dataset…… 54
Table 5.3: Model Performance parameters on local dataset…… 56
Table 5.4: Model Performance parameters without masked classifier…… 59
Table 5.5: Model Performance parameters with masked classifier……. 61