AUTOMATIC STUDENTS ATTENDANCE MANAGEMENT SYSTEM USING REAL TIME FACE RECOGNITION

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INTRODUCTION

The purpose of the attendance monitoring system using face recognition is to ease the attendance process which consumes lot of time and efforts , it is a convenient and easy way for students and teacher. The system will capture the images of the students and using face recognition algorithm mark the attendance in the sheet. This way the class-teacher will get their attendance marked without actually spending time in traditional attendance marking.

The identification process to determine the presence of a person in a room or building is currently one of the routine security activities. Every person who will enter a room or building must go through several authentication processes first, that later these information can be used to monitor every single activity in the room for a security purpose. Authentication process that is being used to identify the presence of a person in a room or building still vary. The process varies from writing a name and signatures in the attendance list, using an identity card, or using biometric methods authentication as fingerprint or face scanner.

The Attendance Management System is developed using Machine Learning meets the objectives of the system which it has been developed. The system has reached a steady state where all bugs have been eliminated. The system is operated at a high level of efficiency. The system solves the problem. It was intended to solve as requirement specification.

MOTIVATION

Nowadays many educational institutes are using a manual monitoring system and most of the time they accidentally loss their attendance sheet so that they cannot properly monitor the attendance of their students .Therefore it is important to design software which will help these institutes to mark the attendance of the students by face recognition which will save their time

MODULES

TEACHER

- Login
- Add students
- Update Students
- Capture Images
- View Images
- Generate attendance sheet
- Export attendance sheet

ADMIN

- Login
- Add and manage
- View daily report

Local Binary Pattern Histogram (LBPH):

Introduction to LBPH algorithm

Local Binary Pattern (LBP) is a simple yet very efficient texture operator which labels the pixels of an image by thresholding the neighborhood of each pixel and considers the result as a binary number. The first computational step of the LBPH is to create an intermediate image that describes the original image in a better way, by highlighting the facial characteristics. To do so, the algorithm uses a concept of a sliding window, based on the parameters radius and neighbors.

Applying the LBP operation:

The first computational step of the LBPH is to create an intermediate image that describes the original image in a better way, by highlighting the facial characteristics. To do so, the algorithm uses a concept of a sliding window, based on the parameters radius and neighbors. The image below shows this procedure

Applying the LBP operation

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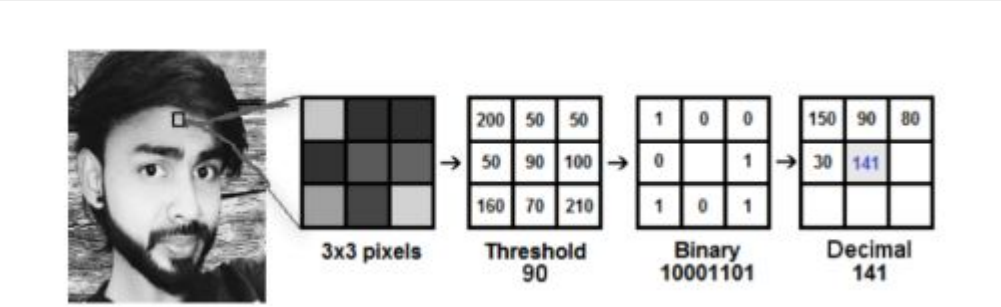
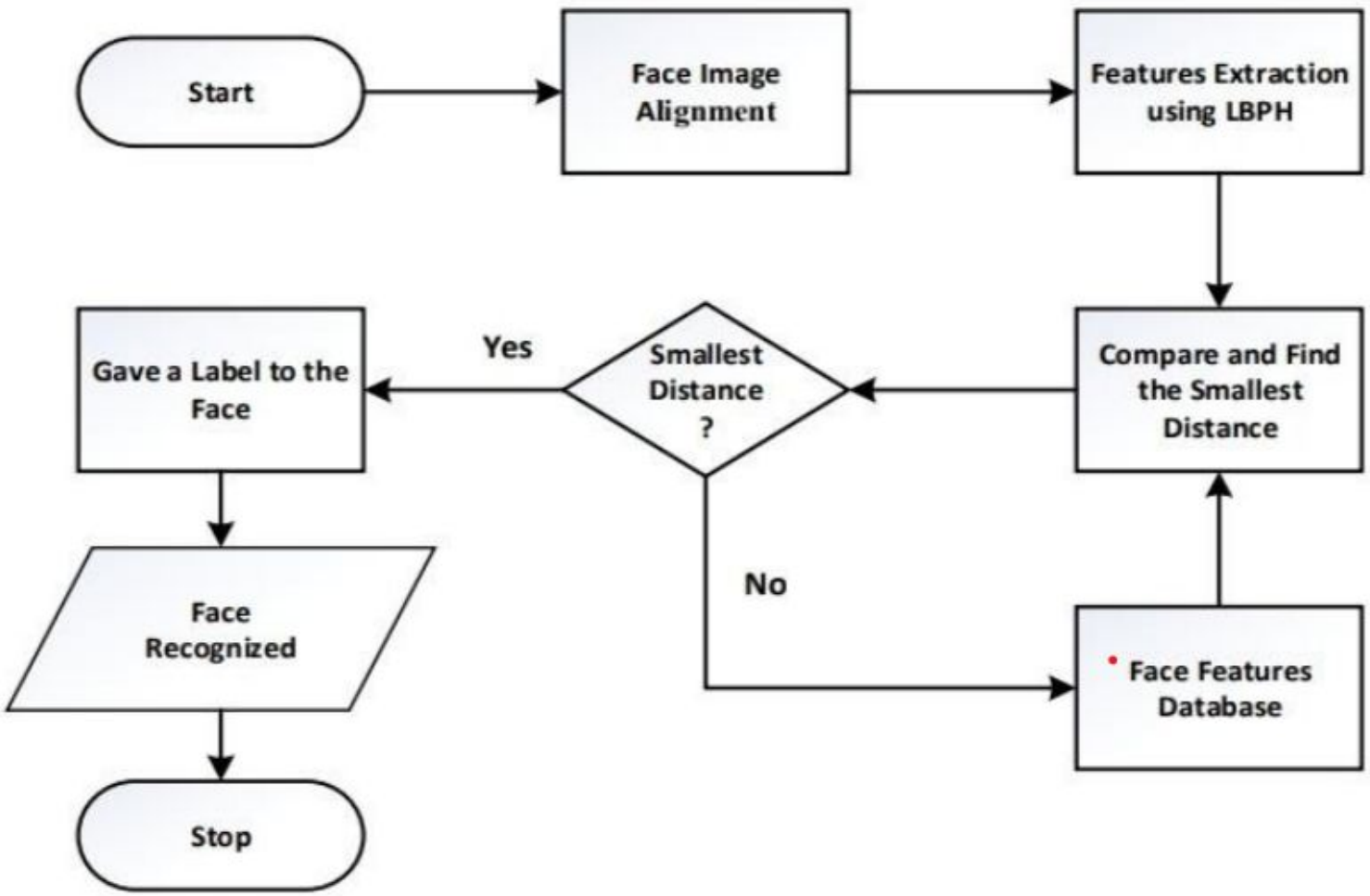
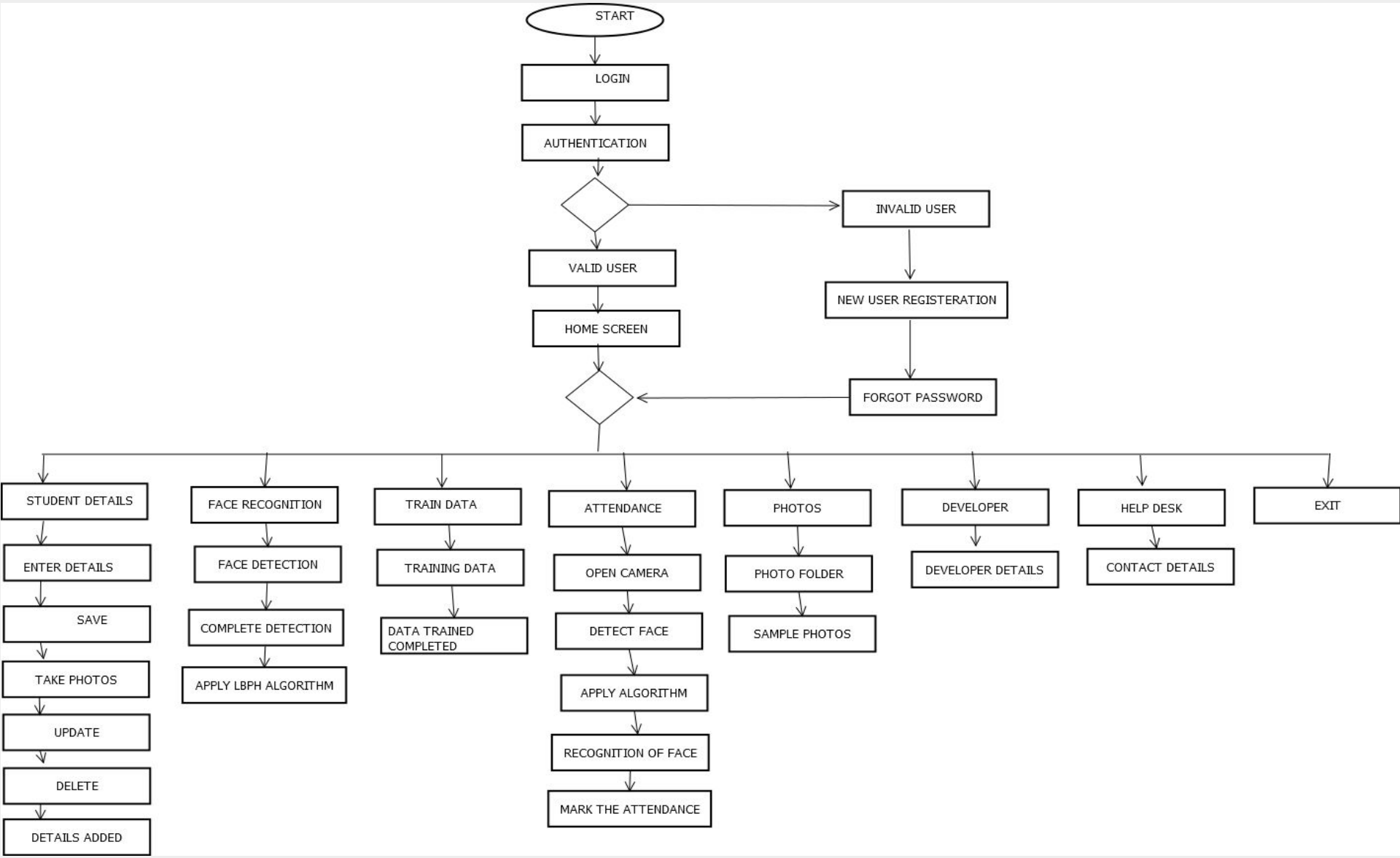


Face alignment and feature extraction



WORKFLOW DIAGRAM

FLOW CHART


START
LOGIN
AUTHENTICATION
INVALID USER
VALID USER
NEW USER REGISTERATION
HOME SCREEN
FORGOT PASSWORD
STUDENT DETAILS
ENTER DETAILS
SAVE
TAKE PHOTOS
UPDATE
DELETE
DETAILS ADDED
FACE RECOGNITION
FACE DETECTION
COMPLETE DETECTION
APPLY LBPH ALGORITHM
TRAIN DATA
TRAINING DATA
DATA TRAINED COMPLETED
ATTENDANCE
OPEN CAMERA
DETECT FACE
APPLY ALGORITHM
RECOGNITION OF FACE
MARK THE ATTENDANCE
PHOTOS
PHOTO FOLDER
SAMPLE PHOTOS
DEVELOPER
DEVELOPER DETAILS
HELP DESK
CONTACT DETAILS
EXIT

Id	Priority	Name
1	high	login successful with correct username and password
2	medium	adding and mange students
3	medium	view the reports of Students Attendance report
4	high	login successful with correct username and password
5	medium	adding and manage Students
6	medium	Edit Students Details

USER STORY

Story ID	As a <Type of user>	I want to	So that i can
1	Admin	login	login successful with correct username and password
2	Admin	Add or manage	adding and mange students
3	Admin	View daily report	view the reports of Students Attendance report
4	Teacher	Login	login successful with correct username and password
5	Teacher	Add Students	adding and manage Students
6	Teacher	Update Students	Edit Students Details

7	high	**Record Attendance of Students**
8	medium	**View Images of Students**
9	medium	**Generate the Attendance sheet**
10	medium	**Exporting Attendance Details to Students**

7	Teacher	Capture Images	Record Attendance of Students
8	Teacher	View Images	View Images of Students
9	Teacher	Generate Attendance sheet	Generate the Attendance sheet
10	Teacher	Export Attendance sheet	Exporting Attendance Details to Students

SPRINT PLAN

Id	Priority	Hours	Sprint	Status	Name
1	medium	2	1	Planned	Registration
2	high	3		Planned	Login
3	high	5	2	Planned	Table Design
4	medium	5		Planned	Coding
5	high	5	3	Planned	Testing data
6	high	5		Planned	output generation

PRODUCT BACKLOG

USER ID	SPRINT	START DATE	END DATE	DAY	STATUS
1 2 3 4	Sprint 1	07/02/2023	01/03/2023	23	completed
5 6 7	Sprint 2	02/03/2023	31/03/2023	29	planned
8 9 10	Sprint 3	01/04/2023	15/05/2023	45	Planned

SPRINT PLAN

Backlog item	Status and completion date	Original estimate (hours)	DAY 1 07/02	DAY 2 08/02	DAY 3 09/02	DAY 4 10/02	DAY 5 13/02	DAY 6 14/02	DAY 7 15/02	DAY 8 16/02	DAY 9 17/02	DAY 10 20/02	DAY 11 21/02	DAY 12 22/02	DAY 13 23/02	DAY 14 24/02	DAY 15 27/02	DAY 16 28/02
UI designing	10/02/2023	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Coding	17/02/2023	6	0	0	0	0	1	2	1	2	0	0	0	0	0	0	0	0
Testing	28/02/2023	2	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
Total		10	1	0	1	0	1	2	1	2	0	0	0	1	0	1	0	0

DEVELOPING ENVIRONMENT

HARDWARE SPECIFICATION

- Processor : Intel Pentium IV or above
- HDD : 80 GB
- RAM : 4 GB or above

SOFTWARE SPECIFICATION

- Operating System : Windows 7 or above
- programming languages : Python , Html
- Platform : Android Studio
- Browser : Chrome/Firefox


Thank You