Attendance System using FACIAL RECOGNITION

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CONTENTS

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- PROBLEM STATEMENT
- PURPOSE OF THE PROJECT
- INTRODUCTION
- HOW IT WORKS
- EXISTING VS PURPOSED
- LANGUAGES AND PLATFORM USED
- OPERATING ENVIRONMENT
- SCREENSHOTS
- CONCLUSION AND FUTURE SCOPE

PROBLEM STATEMENT

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Taking and tracking students' attendance manually, losing attendance sheets, dishonesty, wasted time and high error scales are problems facing the lecturers use the existing attendance system. It is a hard process, take time and cause a lot of paper-based work. As a result, in order to solve these problems and avoid errors we suggest to computerize this process by providing a system that record and manage students' attendance automatically without needing to lecturers' interference.

PURPOSE OF THE PROJECT

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Our primary goal is to help the lecturers, improve and organize the process of track and manage student attendance and absenteeism. Additionally, we seek to:

- Provide a valuable attendance service for both teachers and students.
- Reduce manual process errors by provide automated and a reliable attendance system uses face recognition technology.
- Increase privacy and security which student cannot presenting himself or his friend while they are not.
- Produce monthly reports for lecturers.
- Flexibility, Lectures capability of editing attendance records.

INTRODUCTION

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"**Office automation** refers to the collective hardware, software and processes that enable automation of the information processing and communication tasks in an organization. It involves using computers and software to digitize, store, process and communicate most routine tasks and processes in a standard office."

In addition, attendance considered as the biggest issues that may face lecturers in class. It takes time, effort and difficult to manage. Therefore, our project will focus on online student attendance. In another word, the aim of this project is to build a system that help lecturers take students' attendance in a professional way.

HOW IT WORKS

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The entire system can be divided into 3 parts
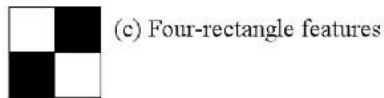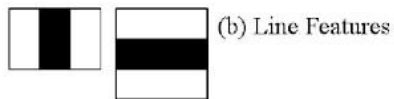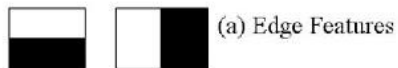
      1 - Face Detection

      2 - Face Recognition
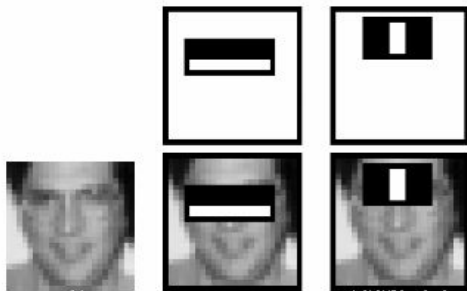
      3 - Database updation and report generation

1. Face Detection

Face detection is done using HaarCascade Classifier.

Uses a set of positive and negative images.

(a) Edge Features

(b) Line Features

(c) Four-rectangle features

Each feature is a single value obtained by subtracting sum of pixels under the white rectangle from sum of pixels under the black rectangle.
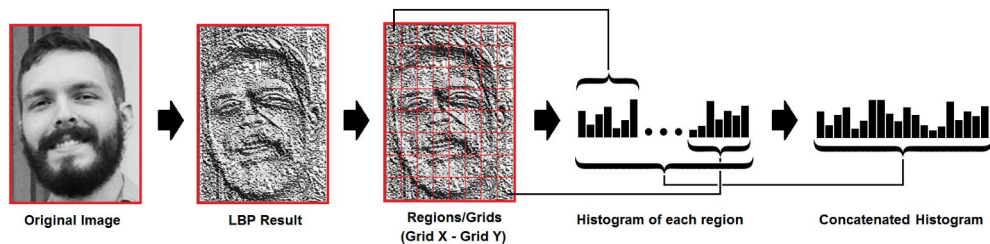
2. Face Recognition

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Face recognition is achieved using LBPH (Local Binary Pattern Histogram)

3x3 pixels — Threshold 90 — Binary 10001101 — Decimal 141
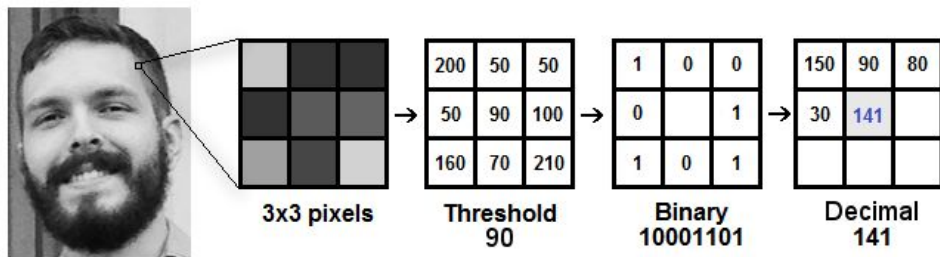
3 x 3 pixel intensities compared with central intensity values and a binary patterns are generated. The binary values are converted into decimal value.

Original Image — LBP Result — Regions/Grids (Grid X - Grid Y) — Histogram of each region — Concatenated Histogram

The decimal values represent the image with better characteristics. The image is divided into regions and histograms are computed. Finally the histograms of all the regions are concatenated together.

2. contd

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Each face have a unique histogram. The test image histogram is compared with train image histogram for similarities. Euclidean Distance method is used

3. Database & Report Generation

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Sqlite3 is used as the database. Sqlite3 provide easier integration with python.

CSV module is used to generate attendance reports

EXISTING VS PURPOSED

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EXISTING SYSTEM

In the present system all work is done on paper. The whole session attendance is stored in register and at the end of the session the reports are generated. The disadvantages found in the existing system are:

- Not User Friendly
- Difficulty in report generating
- Manual control
- Lots of paperwork
- Time consuming

PROPOSED SYSTEM

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The proposed system is based on facial recognition and machine learning.The system initially gets trained on a huge data set of pictures,depicting various facial expressions,belonging to different students of the class. The advantages of the newly proposed system are:

- User Friendly
- Reports are easily generated
- Very less paperwork
- Computer operator control

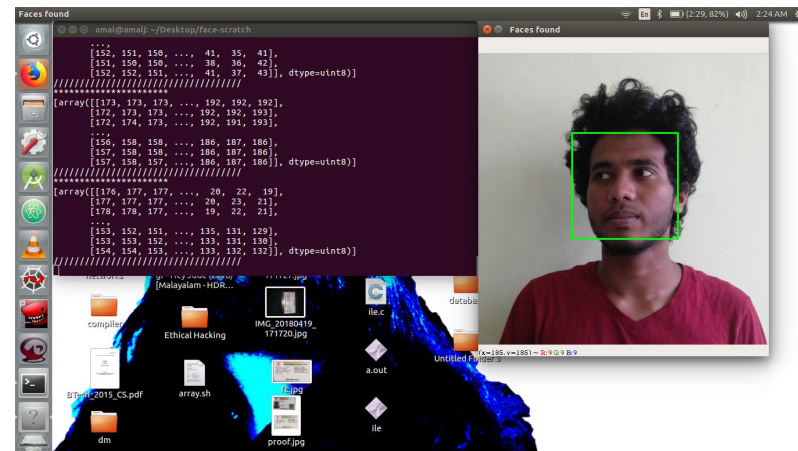# LANGUAGES AND PLATFORM USED

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LANGUAGE : PYTHON

DATABASE : SQLITE3
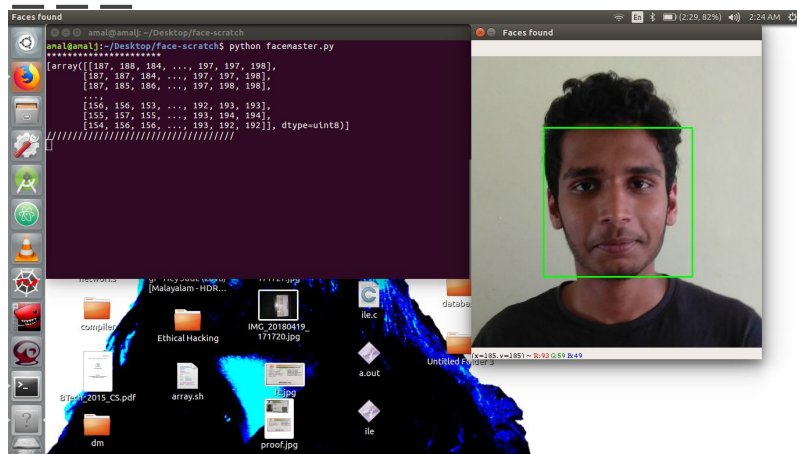
OPERATING ENVIRONMENT

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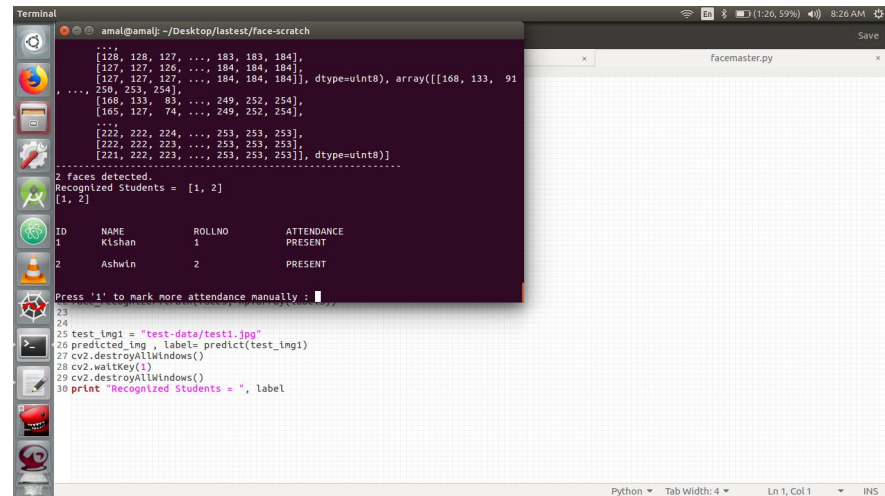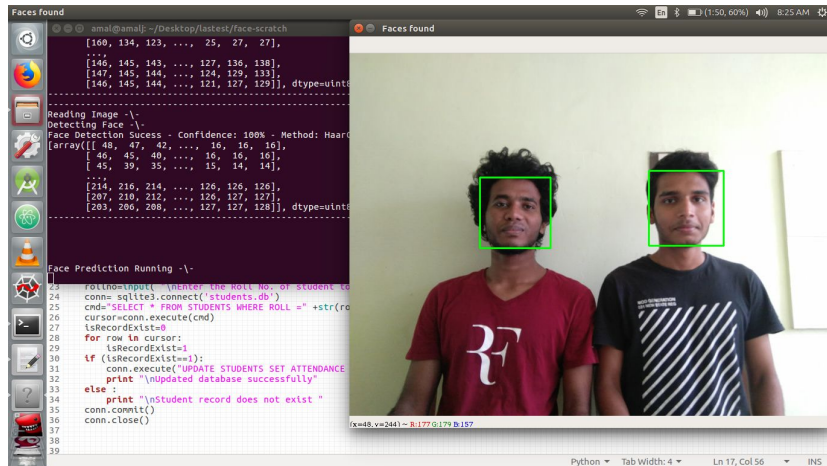
PROCESSOR   : MIN 1GHZ

OPERATING SYSTEM : LINUX,WINDOWS,MAC

MEMORY   : 512 MB RAM OR MORE

SCREENSHOTS

TRAINING THE SYSTEM

Predicting the result

Report Generated:

THANK YOU !!