***SOFTWARE REQUIREMENTS SPECIFICATION***

**Face Recognition Attendance System**

**Group-14**

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**1.0 Introduction**

Face Recognition is a recognition technique used to detect faces of individuals whose images saved in the data set. Despite the point that other methods of identification can be more accurate, face recognition has always remained a significant focus of research because of it’s non-meddling nature. This document describes all data, functional and behavioral requirements for software development.

**1.1 Goals and objectives**

Recognition of human face is an active issue for authentication purposes specifically in the context of attendance of students. Attendance system using face recognition is a procedure of recognizing students by using face biostatics based on the high-definition monitoring and other computer technologies.

The main goal\of this system is to accomplish digitization of the traditional system of taking attendance by calling names and maintaining pen-paper records.

**1.2 Statement of scope**

This involves taking images of the students using a camera in order to capture their faces and visions. When the result is located on the face website, the taken image is compared individually with the face mask to display student’s face, where presence is noted. This application needs a stand-alone device with a constant power source that is not portable.

**1.3 Software context**

The main function of the proposed system is to capture the face of every student and keep it on the website for them to attend. The face of the expert must be taken in such a way that everyone can see what the student’s face is like, even in seating area and the way the students stand. There is no need for the teacher to be physically present in the classroom because the system capture’s the image and then with continuous face processing steps is monitored and therefore the attendance website is updated.

All the individuals in the category must register themselves by entering the information they require so that their photos can be taken and stored within the database

**1.4 Major constraints**

Biometric detection technology will be used to record attendees with a high-definition camera that detects individual faces so the machine compares known faces with student faces stored within the website. When the face of the code is matched to a saved image, attendees are marked with the current website for further calculation. During this process, there is a chance that the camera will not take the correct picture or will miss the number of individuals in the picture.

**2.0 Usage scenario**

This section provides a usage scenario for the software. It organized information collected during requirements elicitation into use-cases.

**2.1 User profiles**

A camera will need to be installed in each lecture room. All the students must register with their details individually, it will capture their images and store them in the database. So that when the students appear in front of this systems camera, it will match some features with image features already stored in the database. If the features are matched, attendance will be counted for each class.

**2.2 Use-cases**

We have 2 types of users of the system.

* Student profile
* Admin profile
* Following functionalities can be performed by the admin:
* Login page:
* Enter the username and password as admin
* In username, no special character in the beginning of the name
* Password should contain,

1. at least one Alphabets
2. at least one Numbers
3. minimum of 8 characters

* Register new student to the system
* Takes the photo and get the details of the student
* Add student photos to the training data set
* This stores the data in the data base and starts to compare and get the detail in specific number
* Train the model
* This starts to train itself by comparing with other data stored in the data base and using the web camera it gets more detailed face data from the student
* View attendance report of all students. Attendance can be filtered by date or employee.
* This store all the data in csv file
* This result in a report of specific class attendance.
* Following functionalities can be performed by the students:
* Login page
* Enter the username and password
* Each student has their own username and password
* Password should contain,

1. at least one Alphabets
2. at least one Numbers
3. minimum of 8 characters

* Mark his/her present or absent by scanning their face
* Student face are shown in front of the camera
* Once the camera detects the face, it starts to compare the image with the database
* Once the face is confirmed from the data base, it marks the student as present
* If face shown is not in the class database, it will send a message as “no student detail”.
* View attendance report of self
* After login into the account, student can see their individual report of their attendance.

**2.3 Special usage considerations**

This device is not portable and always require internet to access data from the database. With this we can add new student or delete the existing student data from the database.

**3.0 Data Model and Description**

This section describes information domain for the software

**3.1 Data Description**

The data of the students stored in the Data Base that has given on the website by the students manually.

**3.1.1 Data objects**

The Data used in the Date Base have stored in the form of images to recognize the faces captured in the biometric screen by extracting some unique features from the image.

**3.1.2 Relationships**

The Camera scans the students face and undergoes several comparisons with the student’s database data which is collection of images and details of students who registered already. Once the face is recognized with the database, it will mark as present. Otherwise it will send notification as “no student detail”.

**3.1.3 Complete data model:**

This will give you clear view about the relation between attributes present in Student Registration , Teacher Registration, Student Attendance.

Diagram

Description automatically generated

**3.1.4 Data dictionary**

The details of the students are stored in the student table and the details of all days which students are attended to classes are stored in the student attendance table.If any new student want to join, they need to register first and all those details are mentioned in the registration table. Teachers or professors individually can check their class attendance and all those details are given in Registration table.

**4.0 Functional Model and Description**

A description of each major software function and software interface is presented.

**4.1.** **Description of Major Functions**

Each requirement is uniquely identified.

**4.1.1 Requirement 1**

The software consists of web site which have Data of individual student that have developed using HTML, CSS, JavaScript.

**4.1.2 Requirement 2**

The Face recognition technic is developed using Python.

**4.2 Software Interface Description**

The software interface(s) to the outside world is(are) described.

**4.2.1 External machine interfaces**

The machine which is developed is not portable. We can’t carry this with us. It must be fixed with uninterruptable internet connection.

**4.2.2 External system interfaces**

Internet connection is must to match the received face image with stored face image in the database and the device needs a power backup.

**4.2.3 Human interface**

These are among the safest and most effective identification methods in biometric technology. Facial data can be anonymized and kept private to reduce the risk of unauthorized access. Detects the student face and count the attendance.

**5.0 Restrictions, Limitations, and Constraints**

The students cannot access their class attendance that are recorded and stored in the database except their personal information. This right is only given to the professor or teacher.