

SOFTWARE DESIGN SPECIFICATION

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 its 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 Data design

- In order to facilitate the management of company personnel, the system provides different functions for people in different positions. Ordinary employees have the right to view work logs, apply for overtime, withdraw overtime, apply for leave, withdraw leave, and view their attendance records. The department head has the right to approve the employee's leave of absence for no more than one day, approve employee's overtime and view attendance for all employees in the department. The personnel supervisor registers the new employee, revises the employee's department, position information, and sets up working days. The leader has the role of approving the employee's leave of more than one day and modifying the department head. The system also set up an administrator role, this administrator has all the functions of the system.

2.1 Data structures

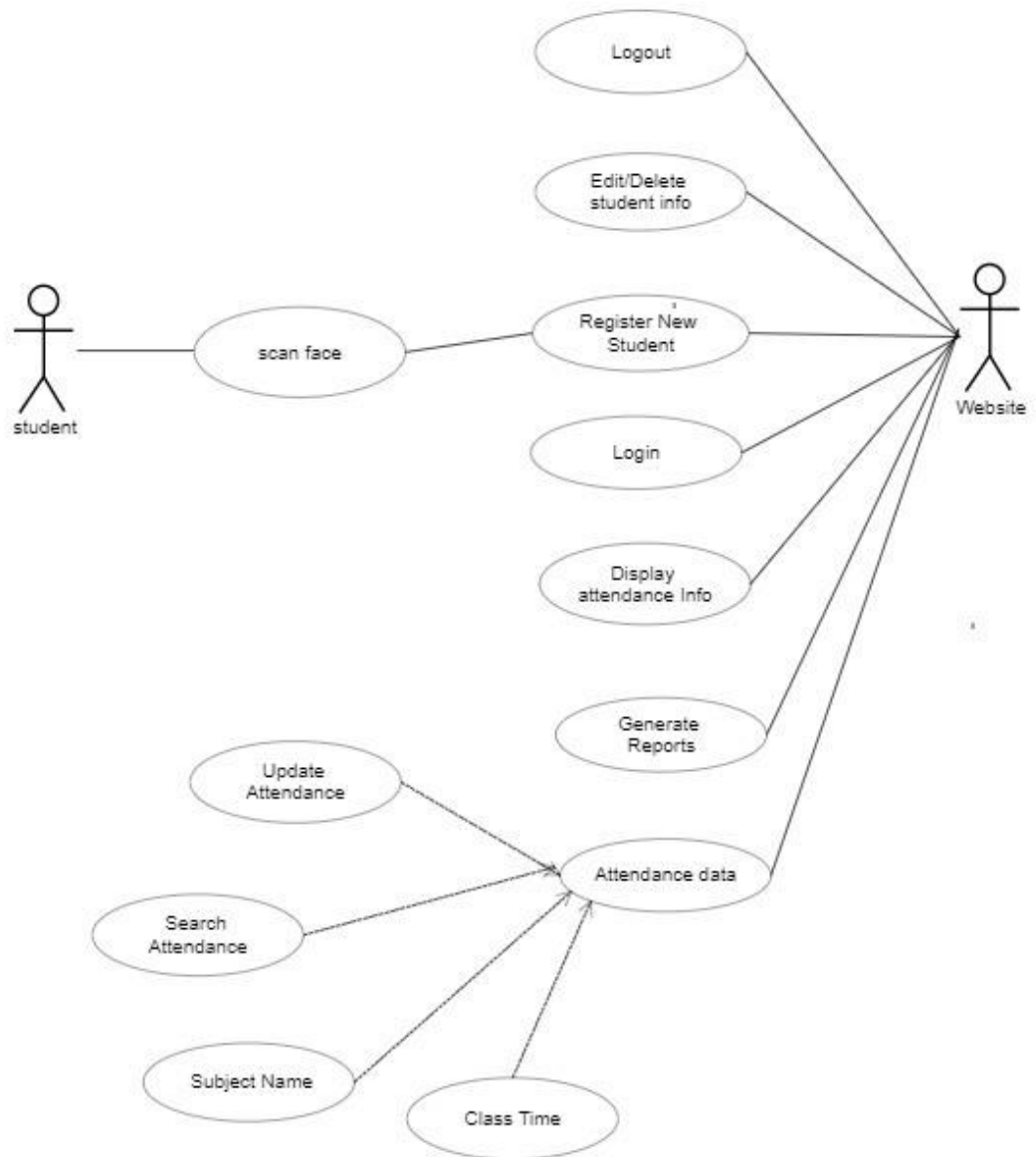
A facial recognition system scans and detects a person's face from a database while matching it with a saved digital image or frame of a video clip. The technology works by pinpointing the facial features of an image and comparing them with other images from the database by using an AI algorithm.

2.2 Database description

The related data stored on this system uses Mysql, which is a relational database. The information in the database mainly contains the basic personal information of employees, as well as the facial feature pictures selected by employees, punch card records, overtime, leave records and employee logs, etc. The personal information table is stored separately from the facial feature table for more efficient reading and search performance. Facial features are an important part of face recognition. The background will take all the face data in the table at one time, package it into a byte number, and provide it to the face module for comparison. Punch card information is the information record of employees clocking in and out of work, and superior leaders and supervisors can view the employee's punch card data. Leave requests and overtime tables store information about employees' leave and overtime, and superior leaders can view, approve, and reject them. The face recognition process is to take out the ace feature infographic from the database and compare it with the facial information of the current camera punch card employee.

3.0 Architectural and component-level design

3.1 Architecture diagrams



3.2 Description for Components

The use-case diagram section depicts the high-level functions and scope of this project's "Face Recognition Attendance system". This use case graphic shows how the characteristics interact, and it is significantly relied on in this project.

3.2.1 Component n description

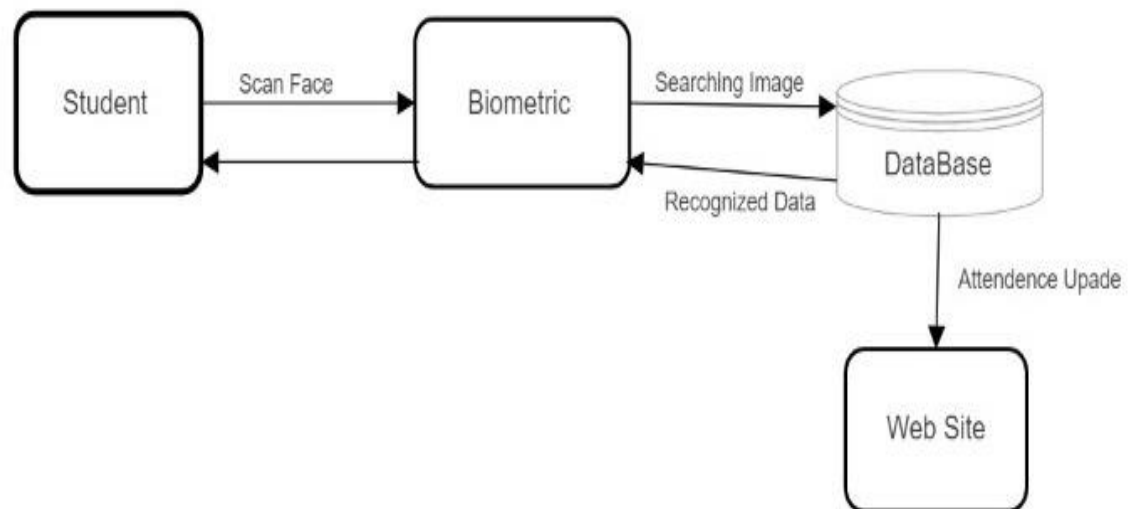
3.2.1.1 Interface description

Inputs: student authentication, teacher authentication, student detail, registering face

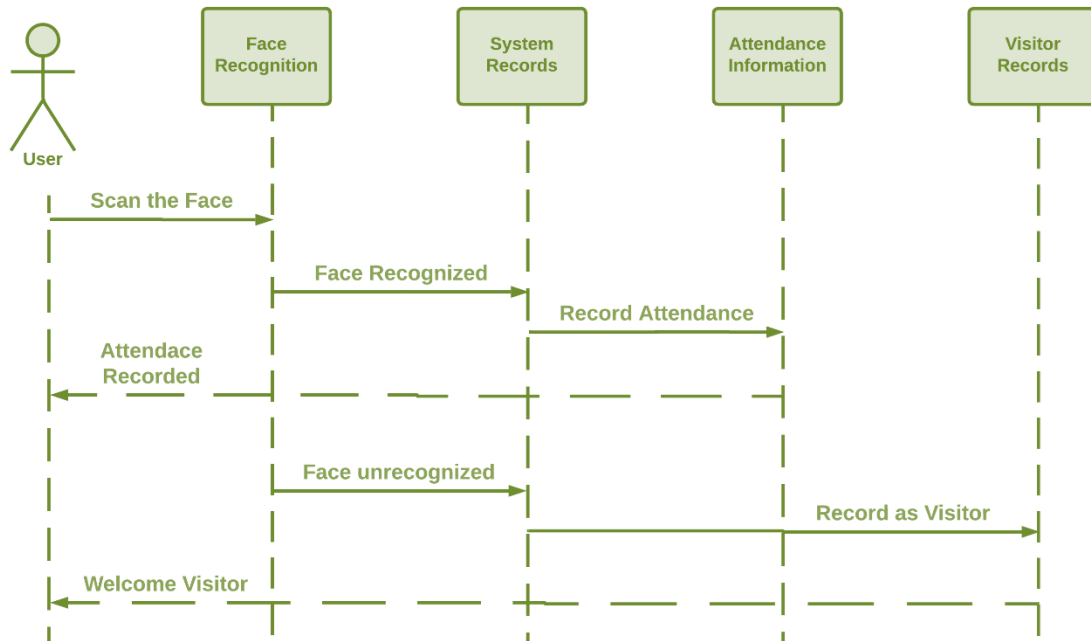
Output: mark the attendance and provide in csv file

Interface: connected with rest api

3.2.3.2 Static models



3.2.3.3 Dynamic models



3.3 External Interface Description

The interface(s) of the software to the outside world (other software or hardware systems) are described.

4.0 User interface design

A description of the user interface design is presented

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4.1 Description of the user interface

The user interface (UI) of an application is the point of human-computer interaction and communication. Display screens, keyboards, mouse, and the appearance of a desktop are included in this. It is also the method by which a user interacts with a website or an application.

4.2 Interface design rules

Conventions and standards used for designing/implementing the user interface are stated.

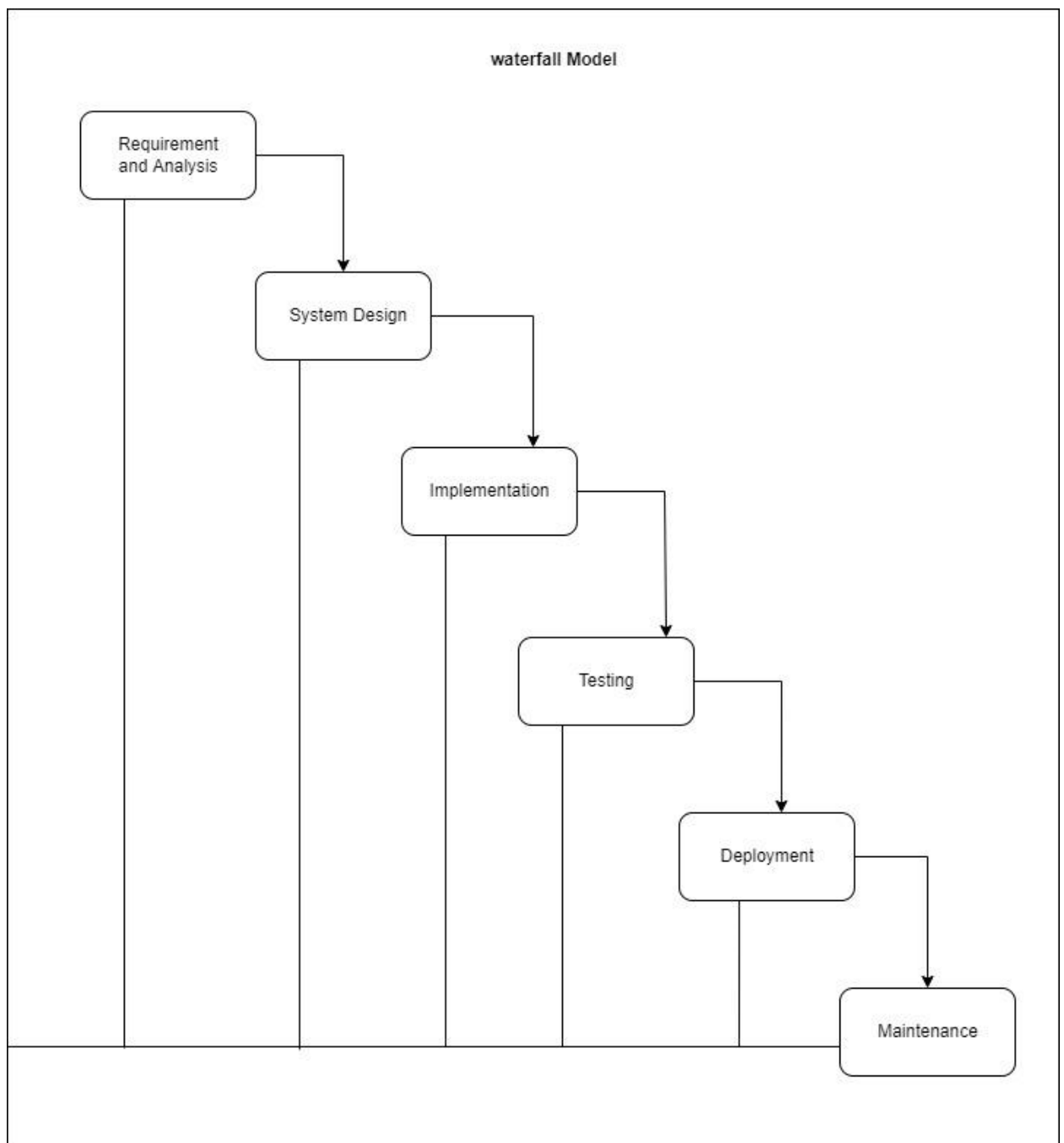
5.0 Restrictions, limitations, and constraints

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.

6.0 Appendices

Presents information that supplements the design specification.

6.1 Requirements traceability matrix



6.2 Implementation issues

Implementation barriers are difficulties with implementation. They may stem from several factors, including as background light that cause to reduce the detection possibility. Even makes problem in marking the attendance when to many faces if shown in the camera.