**Website-based Facial Recognition Attendance System**

**Introduction:**

With the rapid development in the field of image processing, facial recognition is a technique of biometric recognition used for different verification purposes. Facial recognition is one of the successful techniques of biometric recognition by the help of image analysis and processing.

**Motivation:**

Whenever a lecture starts, the lecturer delays the lecture to record students’ attendance. This is a lengthy process and wastes lots of time for the lecturer and the students. With huge number of students, it also causes a lot of disturbance and interruption when an exam is held. Especially, when a huge number of students are enrolled in a course, it results into loss of time and effort for the lecturer. The lecturer has to do everything manually from counting the attendance to uploading it in the college server.

By the help of this student friendly solution, student can check their attendance in the website and teachers can also save their time and continue their lectures without any disturbances.

**Skills used:**

HTML, CSS, PHP, SQL, Python,

**Steps:**

1. Make a Web-page using HTML and CSS. Publish it.

Code:

<!DOCTYPE html>    <!-- Information to the browser about the document-->

<html lang="en">   <!-- English language -->

<head>

    <meta charset="UTF-8">   <!-- UTF-8 Encryption -->

    <meta name="viewport" content="width=device-width, initial-scale=1.0">    <!-- viewport= viisble area for all devices, initial scale= zoom level of the page -->

    <title>Attendance System</title>

    <style>

        form {

            padding: 50px;           /\* spaces around the elements content inside defined borders \*/

            width: 250px;            /\* defines the width of the form \*/

        }

        img {

            width: 250px;

        }

        .form-center {

            display:flex;           /\* flexible length of the items \*/

            justify-content: center;    /\* content in the centre \*/

            text-align: center;

        }

    </style>

</head>

<body>

    <div class="form-center">

        <form>

            <img src="https://upload.wikimedia.org/wikipedia/en/c/c5/Siksha\_%E2%80%98O%E2%80%99\_Anusandhan.png" alt="SOA">   <!-- Image from the web -->

            <p>

                <label><b>Registration No:</b><br><input type="number"></label>

            </p>

            <p>

                <label><b>Password : </b><br><input type="password"></label>

            </p>

            <p>

                <button type="submit">Submit</button>  <!-- submit button for the excel sheet -->

            </p>

            </form>

        </div>

</body>

</html>

1. Make a MySQL database.
2. Create a server for the database using phpMyAdmin.
3. Connect the Web page to a SQL database using PHP.
4. Make a table for managing the database of students.
5. Connect Python with the database.
6. Create a GUI for the hardware implementation
7. Test the facial recognition in the GUI.
8. Finally check the output of the hardware system.

Tkinter Library:

Tkinter is the standard GUI library for Python. Python when combined with Tkinter provides a fast and easy way to create GUI applications. Tkinter provides a powerful object-oriented interface to the Tk GUI toolkit.

Tkinter is lightweight and relatively painless to use compared to other frameworks. This makes it a compelling choice for building GUI applications in Python, especially for applications where a modern sheen is unnecessary, and the top priority is to quickly build something that’s functional and cross-platform.

OpenCV Library:

OpenCV (Open Source Computer Vision Library) is an open source computer vision and machine learning software library. In this Python library, it allows you to perform image processing and computer vision tasks. It provides a wide range of features, including object detection, face recognition, and tracking.

Haar-cascade:

It is an Object Detection Algorithm used to identify faces in an image or a real time video. The algorithm uses edge or line detection features proposed by Viola and Jones in their research paper “Rapid Object Detection using a Boosted Cascade of Simple Features” published in 2001.

LBPH Algorithm:

LBPH (**Local Binary Pattern**) is one of the easiest face recognition algorithms. It can represent local features in the images. It is possible to get great results (mainly in a controlled environment). It is robust against monotonic gray scale transformations. It is provided by the OpenCV library (Open Source Computer Vision Library).