Problem Statement category

Student Management System for the College

Modern solution to the traditional attendance process.

Problem Statement

Manual attendance is tedious and time consuming, inherent to proxies and manual errors, late updation of the student's attendance on ERP site.

Solution

We will be using facial recognition on pupils for taking attendance at schools and universities. The cameras will be installed on both entry and exit sides of the main entry gate or classrooms. During their registration specific number of photos will be taken of pupil to be added to the dataset, which later on be used to train our deep learning face recognition model which will be done every year to retrain the model to prevent faulty system due to evolving faces. Students can view their daily attendance on an ERP based website which will contain two options a login page for the students who will have view access only and an Admin login with full access. We will also provide a report option to students and quick response to sort out any issues regarding any faults in attendance marking.

Attendance will be marked according to the difference in entry and exit time of the students which will also tackle the problem for consecutive classes.

Technologies Used:

For Face Recognition

1. **Siamese neural network:** built **upon KERAS using TensorFlow backend**

2.OpenCv library: which will capture real time images using the camera and detect the faces of the students using **haar cascade filter(frontal face haar cascade etc)** to crop face part which will be fed into the **Siamese network** for predictions and attendance will be marked based on predictions.

For Web Development

1. FLASK to deploy the facial recognition model and will also be used for creating servers for our application

2. REACT and JAVASCRIPT in frontend.

3. NODE.JS, EXPRESS, MongoDB ,Docker and AWS for backend

Cloud computing:

The face recognition model would be hosted in AWS /digital ocean for mass scale deployment. The data will be stored in AWS SQL database/MongoDB database.

Work Flow –

Photos of registered students -> model training on all photos (**Siamese network)->Face recognition in real time -> ERP updates**