**ATTENDANCE SYSTEM**

**1.Introduction:**

**1.1 Background:**

All businesses or college or school have to track attendance in some way, so they can recognize which workers or students are arriving late and which are always sharp on time and determine how much to pay them. The traditional method involved old-fashioned punch clocks, signatures on paper sheets, or some other kind of manual system that requires human oversight. Digital time and attendance systems have also been used in Canada for a couple of decades, typically with excellent results. Still, there is an ongoing debate whether it is justified to invest in hardware and software necessary for automated accounting of work hours. To be honest, the answer may depend on the size and business model of the enterprise in question, but the following facts are true regardless of the context.

**1.2 Problem Statement:**

A Traditional attendance System is where Educators(Teachers) will call students name and students will give their attendance when their names are called out. And those who give attendance their names are marked as present rest are marked as absent.

**1.3 Problem with the above system is:**

* It is very difficult to handle huge students. For example a student’s batch of more than 500 students.
* It is very time consuming to call all the students name and mark their attendance.
* There will be a chances of giving proxy (Fake) attendance, where it is difficult to handle the proxy.
* Now what if we want to submit or send the attendance record to university where exam ticket is issued based on certain percentage of attendance, again from manual to data entry job need to be done which is again time consuming.
* Inaccurate and subject to manipulation (‘time theft’)
* High possibility of human error

**1.4 Solution to the above problem.**

As we all know how the technology is improved, everyone will have a at least a basic smartphone or students pursing degree will have a basic laptop.

A College or university website will be there where students need to sign up to the website by providing all their information like USN,ID,NAME etc. Here student image is compulsory where it is mapped into their ID or USN. Once student is done with the sign up process they can login to give their attendance by just giving their face identity (just like face unlock in the smart phone)

**1.5 Interest**

Colleges / University who don’t want follow old traditional attendance system may interested in adapting the new technology.

**2. How it Works??**

In the college website there will be two login options

1. Student login
2. professor login

The subject professor need to login and host the attendance system where students can login and give their attendance. Once the subject professor host the system, professors current location will be taken using API like foursquare. When students give their attendance by giving their face identity, if he/she is present in the current location then automatically image mapped to USN or ID will be marked as present in the database. If student is not present in the current location of the professor then the student will be marked as absent in the database. Image recognition is done using Neural networks.

**3. Gathering the Data:**

While Signing into the website students are asked to give their face identity atleast 5-10. Using these data the machine is trained with neural network specifically CNN and ANN. Every time when students give their identity machine is trained again now and then to achieve best accuracy. By this student cannot give a proxy attendance.

**4. Methodology:**

Image recognition is done using Tensorflow (Keras)

Techniques used:

1. ANN(Artificial Neural Network)
2. CNN(Convolution Neural Network)

Steps involed are:

1. Initilizing the model using Sequental class.
2. Adding Input layer that is images and applying Convolution 2D method.
3. Adding Hidden layer and applying activation function.
4. Max pooling method is applied then.
5. Flattening the image using Flatten method.
6. Adding output layer and applying suitable activation function. This is called full connection method.
7. Compiling the model.
8. Predicting the model.
9. Evaluating the accuracy.
10. Deploying the model using frameworks like Django web Frameworks or Flask.

Web Developing steps:

1. Frontend is done using Html, css and javascripts.
2. Backend is done using Django or Flask.
3. Database used like Postgesql, Sql etc.

**5. Observations:**

Every time student data is trained again and again. If the student image is recognised and if his/ her location is same as professor current location then that student is marked as present in the database.

**6. Conclusion:**

By using this project we can overcome the current manual attendance system. 100% proxy attendance can be reduced. Easy to maintain and evaluate student attendance for each and every subject.