Attendance using Artificial Intelligence

Mrs. Parimal Girl, Mr. Prasanna Kumar Mishra

Department of Master in Computer Application, College Of Engineering Bhubaneswar, Odisha, INDIA.

ABSTRACT

Debate has always surrounded attendance. While students prefer to be treated like adults and do not want their professors to take attendance, professors require attendance since it is crucial to the students' overall development. A lecturer may occasionally utilize a student's attendance as a factor in determining their grade. The majority of colleges in developing or underdeveloped nations, such as India, still use registers to record attendance from their students. Additionally, using registers and manually recording each student's attendance using roll-on takes a lot of time in a class of 60 students on average. Takes 5 min (approx). This paper shows a methodology based on facial recognition technique to take attendance which automates the complete process and the attendance is marked as well as stored in the database, when required professor can check the attendance by calling the values from the database. Takes about five minutes. This study presents an approach to taking attendance that uses facial recognition technology to automate the entire process. The attendance is also noted and saved in a database, so the professor can access the data whenever necessary to verify attendance.

Key Words: Artificial Intelligence, AIML, Neural Network

1. INTRODUCTION

A. Importance of attendance

Regular attendance at college is crucial for a successful college experience, as it has been noticed that students with low attendance typically struggle academically. In addition to helping students form healthy lifestyle habits, it frequently improves exam scores. Additionally, it facilitates their ability to maintain social connections and acquire new friends.Additionally, consistent attendance at college is crucial for a student's entire development.Keeping an accurate record of each and every student is made easier for teachers and professors when they take attendance every day to ascertain a student's attendance status on a certain day. In addition, they can examine the data to determine which students have poor attendance rates and may not require much outside encouragement to begin attending classes regularly.Law enforcement agencies also frequently get in touch with the school to request the attendance of a certain student. Consequently, maintaining a precise log of each person's attendance and one of the most crucial roles in the school is each and every student.

B. Methodology used

In the majority of Indian universities, the lecturer still manually enters each student's attendance in an attendance register. Not just India, but every developing or less developed nation. Pakistan, Bangladesh, and Nepal are among the nations that still take attendance using the outdated technique. Some Indian colleges, such as Indian Institute of Technology Kanpur and Indian Institute of Technology Bombay, have begun collecting attendance with biometric attendance machines, which are devices that indicate attendance through biometric finger scanning. In comparison to the traditional way, biometric finger scan is a quicker process that requires 1 to 5 seconds from the student and does not involve the professor in recording attendance. An more contemporary method of recording attendance is through the use of an online system.

C. Issues with current methods

When using the traditional technique, which uses an attendance register, collecting attendance takes time from the lecturer and the students. Regarding the current biometric system methodology, the professor plays no part in it; nonetheless, student time is still utilized to record attendance. A system that requires no action from the students and marks attendance automatically is required to address this problem.

2. FACIAL RECOGNITION TECHNIQUE

Real-time face identification using a trained model is known as facial recognition approach. This technology powers the facial unlock capabilities found on contemporary smartphones. This paper will discuss the use of the "open source computer vision library," or opencv, in the development of an artificial intelligence (AI)-based attendance system. Regarding facial recognition, the entire process of creating a system that can identify faces can be broken down into three stages.

i. Data collection and face detection

ii. Educating the identifying

iii. Face identification

A. Face detection and data gathering

We find the face during this process and get all the necessary information. In this step, the camera records a large number of pictures from every angle. Next, the pictures are pictures that have been reduced in size by processing speed up training.

Following image processing, labels are also applied to the pictures. To train our model, we will utilize the student's name as a label along with their photograph in the following system.

B. Training the recognizer

In this procedure, we give the recognizer the dataset with labels and photos, and it processes the information to produce a.yml file.

C. Face recognition

The machine running opencv now receives the.yml file produced by the recognizer, and it may use this data to build a model that will allow it to recognize images either in real time or from pictures.

3. USING FACIAL RECOGNITION SYSTEM FOR TAKING ATTENDANCE

A facial recognition system is used to record student attendance. The attendance is independently marked and entered into the system. When necessary, the professor can access any student's attendance data via the system.

A prerequisite for the system is:

A. images of student with labels

Since the quantity of photographs used directly correlates with the accuracy of the system, we require a large number of student images. Additionally, each student's share of the dataset's photos should be equal. Additionally, in order for the system to be extremely precise, the photos need be captured from several angles. Additionally, the pictures need to be appropriately labeled with the names of the students, or each student can have a unique ID.

Occasionally, more than one student in the same class may share the same name.

B. server running recognizer

The recognizer must be run on a server, though we can also run it locally on our computer. The recognizer will receive the dataset containing labeled photos from us, and we will receive the.yml file back. (Precaution) We should make sure that the total number of photographs supplied to the machine equals the product of the class size and the total number of images submitted by each student, or, to put it another way, the total number of images submitted by each student should equal.

C. Server RunningOopencv & Trained Model

Here, we make use of opencv, an open library for computer vision. We connect a camera to the server and feed our.yml file to the opencv code that is running on the server. This camera will be mounted in the classroom at an angle that will allow it to cover the entire class, should the need arise. Multiple cameras can be employed. additionally, with the server's camera attached. We will be able to identify each pupil who is in the room. And in order to record attendance, we can

impose restrictions based on guidelines and requirements. For instance, the mark present if student X attends class for thirty minutes. The computer will essentially assign a unique ID to each and every student in the class during the recognition and testing process. After a student is identified by our system, it will continue to check on their presence in class for 30 minutes. If the student remains in class for 30 minutes or longer, the system will mark them as present, or vice versa. Additionally, the system will transmit a value of 1 to the database, assign it to the student's unique ID, and add it to the total attendance if the student is present. If the student is missing, the system will pass a value of 0 to the student's unique ID, add it to their total attendance.

4. CONCLUSION

Compared to other systems, ours is much more accurate since it prevents students from trying to report their classmates' fraudulent attendance, which is something that sometimes happens with other systems. Only when a student shows up for class will the system record them as present. Furthermore, neither the instructor nor the student must devote specific time to recording attendance under this arrangement. If indicated, the student will only receive an attendance certificate if they stay for the entire lecture period. As it was in the example above, thirty minutes. In addition, this system has the ability to determine other variables like the overall percentage and identify pupils with low attendance. The system is also capable of maintaining all records with extreme accuracy, something that is not feasible when a professor creates and maintains records because people make mistakes most of the time. Artificial intelligence, however, greatly reduces the possibility of error.

5. REFERENCES

1. G. Eason, B. Noble, and I. N. Sneddon, “On certain integrals of Lipschitz-Hankel type involving products of Bessel functions,” Phil. Trans. Roy. Soc. London, vol. A247, pp. 529–551, April 1955. (references)

2. J. Clerk Maxwell, A Treatise on Electricity and Magnetism, 3rd ed., vol. 2. Oxford: Clarendon, 1892, pp.68–73.

3. I. S. Jacobs and C. P. Bean, “Fine particles, thin films and exchange anisotropy,” in Magnetism, vol. III, G. T. Rado and H. Suhl, Eds. New York: Academic, 1963, pp. 271–350.

4.K. Elissa, “Title of paper if known,” unpublished.

5. R. Nicole, “Title of paper with only first word capitalized,” J. Name Stand. Abbrev., in press.

6.Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, “Electron spectroscopy studies on magneto-optical media and plastic substrate interface,” IEEE Transl. J. Magn. Japan, vol. 2, pp. 740–741, August 1987 [Digests 9th Annual Conf. Magnetics Japan, p. 301, 1982].7.M. Young, The Technical Writer’s Handbook. Mill Valley, CA: University Science, 1989.