RESEARCH ARTICLE   OPEN ACCESS

Classroom Monitoring System Using Artificial Intelligence and Machine Learning

[1*] Mahesh Marigeri,[1]Aditya Powar,[2] Bharat Naik,[3]Rupesh Chougule, [4]Yusuf Mujawar

[1*]Assistant Professor,[1]Student,[2]Student,[3]Student,[4]Student,
[1*] Department of Computer Science,[1*] VSM's Somashekhar R. Kothiwale Institute of Technology, Nipani, India
[1]Department of Computer Science,[1]VSM's Somashekhar R. Kothiwale Institute of Technology, Nipani, India
[2] Department of Computer Science,[2] VSM's Somashekhar R. Kothiwale Institute of Technology, Nipani, India
[3] Department of Computer Science,[3] VSM's Somashekhar R. Kothiwale Institute of Technology, Nipani, India
[4] Department of Computer Science,[4] VSM's Somashekhar R. Kothiwale Institute of Technology, Nipani, India

[1*] maheshmarigeri@gmail.com, [1]adityapowar8888@gmail.com, [2]bharatnaik5744@gmail.com, [3]rupeshchougule0306@gmail.com, [4]yusufmujawar516@gmail.com

----

Abstract -The Classroom monitoring system in project work focuses on the project work method and the teacher's leader role in collage. The main reason for focusing on this work method is that we must continuously learn and develop to keep up with societal developments. Real face technique is used in this work.   Due to its simplicity and accuracy, human beings have been using Face for recognition for a long time, as observed in literature.   It is possible to automatically estimate whether each student is present or absent and generate the percentage to determine eligibility for examination in a particular course using the developed system. The teacher must consider the student's attendance, performance in class, and internal exam marks when grading internally.

Keywords -Classroom Management, Teacher as Leader, Project Work, Qualitative Study.

I. INTRODUCTION

This work utilizes the real face technique. Human beings have been using Face for recognition for a long time, as observed in literature, due to its simplicity and accuracy. Using the developed system, the percentage of student attendance can be automatically estimated to determine their eligibility for examination in a particular course. When grading internally, the teacher should take into account the student's attendance, class performance, and internal exam scores. To eliminate the time and effort wasted in managing all class work manually, the Class monitoring system has been developed. The amount of paper resources is greatly reduced as well. This is a web-based application. It was built for college faculty to take student attendance and automatically calculate internal marks using an automatic grading system.

OVERVIEW OF SYSTEM Using AI, this is a Classroom Monitoring System project. We use linear regression for internal marks prediction and Python for face recognition in our attendance system, with machine learning code as a background. The teacher must consider the student's attendance, performance in class, and marks on internal exams to determine their internal marks. In this work, we proposed a student attendance system that utilizes real face technique.Due to its simplicity and accuracy, human beings have been using the face for recognition for a long time as observed in literature. It is possible to automatically estimate whether each student is present or absent and generate the percentage to determine eligibility for examination in a particular course using the developed system.

OBJECTIVES :

- Improve student engagement: The AI and ML-based class monitoring system can help teachers identify students who are disengaged or struggling with the material. The system can provide personalized feedback and recommendations to help students stay engaged and improve their learning outcomes.

- Enhance teaching effectiveness: The system can analyze the teacher's performance and provide feedback on areas that need improvement. This can help teachers adjust their teaching style and methods to better meet the needs of their students.

- Identify at-risk students: The system can analyze student behavior patterns and identify those who may be at risk of dropping out

or failing. Teachers can intervene early to provide extra support and prevent negative outcomes.

- Optimize classroom management: The system can monitor student behavior and provide real-time feedback to teachers, allowing them to address issues before they escalate. This can help create a more positive and productive learning environment.

- Improve student outcomes: By providing teachers with insights into student behavior and performance, the system can help identify areas where students need additional support or resources. This can lead to improved learning outcomes and better academic performance for all students.

II.Literature survey

1 Face Detection & Face Recognition Using Open Computer Vision Classifires Lahiru Dinalankara 2.1 Mamata S. Kalas

"REAL TIME FACE DETECTION AND TRACKING USING OPENCV", International Journal of Soft Computing and Artificial Intelligence, ISSN: 2321-404X, Volume-2, Issue-1, May2014 recognition tasks to be solved, and known as Haar like feature each call, a distribution of weights is updated that indicates the importance of examples in the data set for the classification. On each round, the weights of each incorrectly classified exampleThis paper aims to present a review of various methods and algorithms used for human recognition with a face mask. Different approaches i.e. Haar cascade, Adaboost, VGG-16 CNN Model, etc. are described in this paper. A comparative analysis is made on these methods to conclude which approach is feasible. With the advancement of technology and time more reliable methods for human recognition with a face mask can be implemented in the future. Finally, it includes some of the applications of face detection. This system has various applications at public places, schools, etc. where people need to be detected with the presence of a face mask and recognize them and help society. This paper introduces an algorithm.Haar-like feature: Haar-like wavelets are binary rectangular representations of 2D waves. A common visual representation is by black (for value minus one) and white (for value plus one) rectangles. The square above the 0-1- interval shows the corresponding Haar-like wavelet in common black-white representation. The rectangular masks used for visual object detection are rectangles tessellated by black and white smaller rectangles. Those masks are designed in correlation to visual are increased, and the weights of each correctly classified example are decreased, so the new classifier focuses on the examples which have so far eluded correct classification

2 A systematic literature review on student performance predictions Hasnah Nawang1*, Mokhairi Makhtar2 and Wan Mohd Amir Fazamin Wan Hamzah3

Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Terengganu, Malaysia1 School of Computer Science, Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Tembila Campus, Terengganu, Malaysia2 School of Information Technology, Faculty of Informatics and Computing, Universiti Sultan Zainal Abidin, Tembila Campus, Terengganu, Malaysia3 International Journal of Advanced Technology and Engineering Exploration, Vol 8(84)

3 Student Management System Dechen Wangmo (2015)et al.

Author has designed and built system software with features like course management, student semester registration, student bio data, disciplinary records and study information like course etc. Their system uses PHP framework named Laravel, html, java script, MySQL and Apache.2.5Web Based Student Information Management System (SIMS) S.R.Bharamagoudar, Geeta R.B and S.G.Totad Authors have built SIMS for maintenance of student information system solving the traditional way of managing the student records. The system was built using html, PHP and MySQL database.

4Web Based Student Information Management System (SIMS) S.R.Bharamagoudar, Geeta R.B and S.G.Totad

Authors have built SIMS for maintenance of student information system solving the traditional way of managing the student records. The system was built using html, PHP and MySQL database.

5 Mohammad Ausaf Anwar, Durgaprasad Gangodkar, "Design and Implementation of Mobile Phones based Attendance Marking System", Department of Computer Science Engineering, Graphic Era University, Dehradun, Uttarakhand, India, 2015.

In this paper, the architecture and design specifications of Student Attendance Marker Application on an Android platform are presented. The authors with their team have compared both iOS and Android OSs and they came up with a conclusion that although iOS is more robust in virus attacks and other security threats, but android is cheaper in terms of cost and being open source more enhanced. At the very first, Users/Lecturers on their device will fetch the list of students of the class for which attendance is to be recorded. They have used SQLite as a local database to store the data. For the purpose of demonstration of this application, they have used the WAMP (Windows Web Development) server using phpMyAdmin service.

SYSTEM ARCHITECTURE
Block diagram and Description :-

Block diagram of Class monitoring system
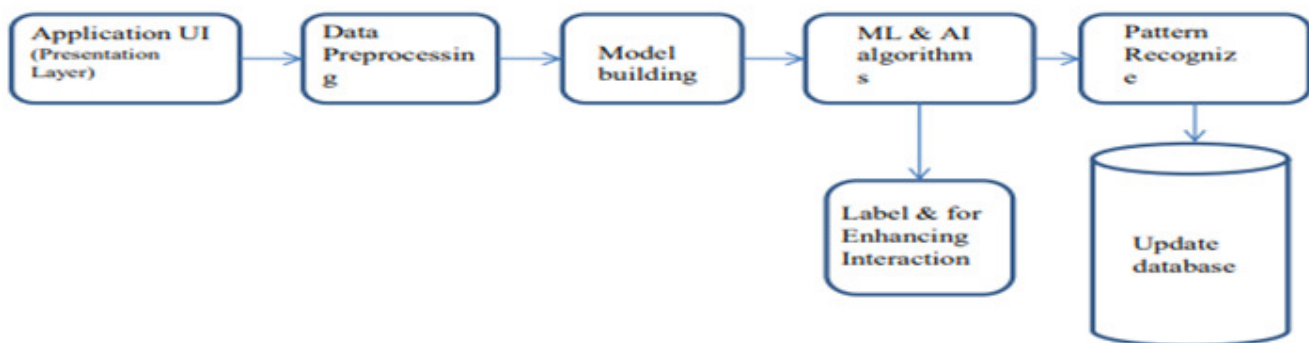
Presentation layer: The presentation layer contains both view elements (layouts, blocks, templates) and controllers, which process commands to and from the user interface. Presentation code controls web user interaction with the product and its appearance. You can extensively customize the user interface by using HTML, CSS, and PHTML files to modify elements of the presentation layer. Basically, the presentation layer represents the customization of HTML, CSS, JavaScript, Magento UI, PHTML files, and block files. Control and observation section (Microcontroller)

Data Preprocessing: Data preprocessing is a process of preparing the raw data and making it suitable for a machine learning model. It is the first and crucial step while creating a machine learning model. When creating a machine learning project, it is not always a case that we come across the clean and formatted data. And while doing any operation with data, it is mandatory to clean it and put in a formatted way. So for this, we use data preprocessing task

machine learning: A machine learning model is built by learning and generalizing from training data, then applying that acquired knowledge to new data it has never seen before to make predictions and fulfill its purpose. Lack of data will prevent you from building the model, and access to data isn't enough. Useful data needs to be clean and in a good shape. Machine learning is a class of methods for automatically creating models from data. Machine learning algorithms are the engines of machine learning, meaning it is the algorithms that turn a data set into a model. Which kind of algorithm works best (supervised, unsupervised, classification, regression, etc.) depends on the kind of problem you're solving, the computing resources available, and the nature of the data.

II. CONCLUSIONS

Using Artificial Intelligence, the class monitoring system was developed and deployed using the Django framework. All bugs have been eliminated and the system has reached a steady state. A high level of efficiency is maintained while operating the system.Using Artificial intelligence, the class monitoring system was developed and deployed using the Django framework.

All bugs have been eliminated and the system has reached a steady state. A high level of efficiency is maintained while operating the system..

III. REFERENCES

[1] Introducing Django2 web development cookbook, Author Jake Kronika

[2] Dargan, S.; Kumar, M. A comprehensive survey on the biometric recognition systems based on physiological and behavioral modalities. *Expert Syst. Appl.* **2020**, *143*, 113114.

[3] Asghar MZ, Khan A, Ahmad S, Kundi FM. Preprocessing in natural language processing.Editorial board.2013:152

[4] Jun Meng Tsauyoung Lin "Face Recognition based on Local Binary Patterns with Threshold" in 2010

[5] E. Parrish and T. Hickey, "A Temperature Monitoring System for Use on Normal Newborn Infants," Instrumentation and Measurement, IEEE Transactions on, vol. 21, pp. 59-60, 1972
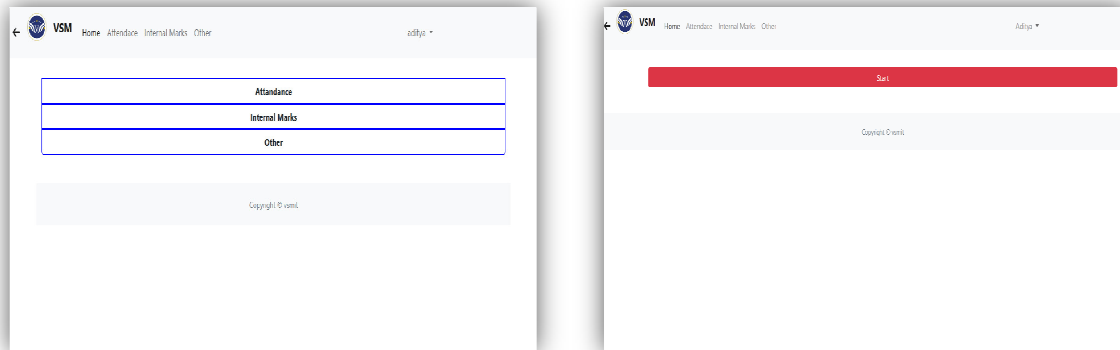
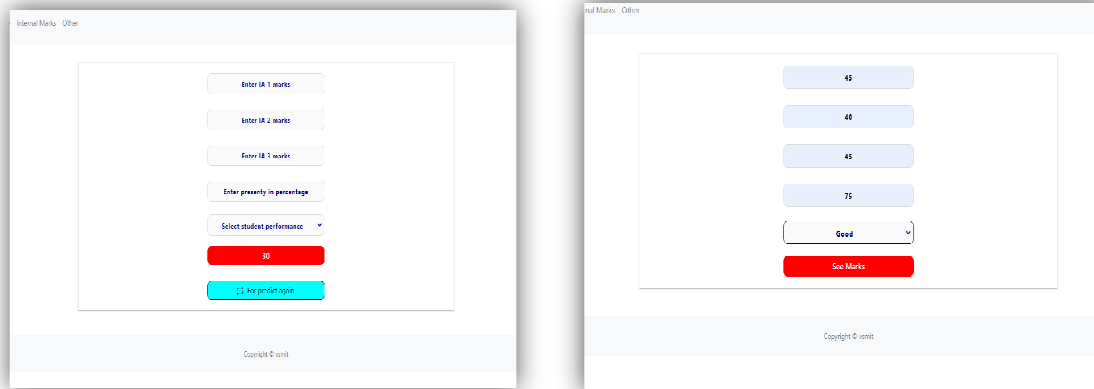## Same Results With Web App:

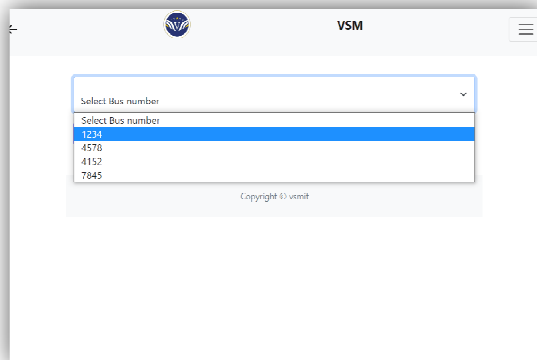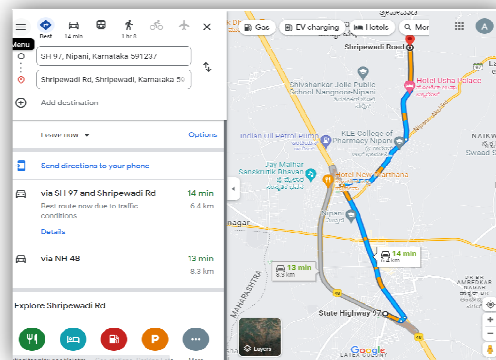Fig 1. Student Interface

Fig 2. Internal Marks Predicted

Fig 3. Select the bus Number and Submit

Fig. 4 Live Location of Bus