STUDENT ATTENDANCE SYSTEM AND ACADEMIC PERFORMANCE PREDICTION

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Abstract-

In traditional approaches, attendance is being recorded by using pen and paper that is manually or by image processing, bio-metrics. But most of these systems require hardware installation and the probability of marking proxy attendance is also high. To avoid this, the current system will mark the attendance on the basis of OTP generation and it is possible to save the attendance in the phone as well as in the server and can check the attendance anytime and from anywhere and also can print as a hard copy. Along with it, the system will predict each student's academic performance and will generate a report of it and their attendance report will be sent to their parents via Email and SMS every month. These will be helpful for students as well as their parents to know the academic progress and also the attendance on a prior basis.

Keywords- Machine Learning, Naive Bayes Algorithm, Attendance Calculation, Academic Performance Prediction, MySQL Database

INTRODUCTION

Calculating student's attendance is important as well as critical for the staff of school/college/university students. The traditional scenario of tracking student attendance in the classroom is done by physically marking the attendance sheet that goes around the classroom while a course teacher is delivering the speech. Also in some institutions/universities they use hardware such as fingerprint scanner, biometrics, face detection for calculating the attendance but it can lead to mark proxy attendance. To avoid this drawback our system is calculating the attendance using OTP which will be generated everytime by the staff member once they login to their respective subject. The OTP will

be announced by the teachers to the students for avoiding proxy as students will be having a time limit of 20 secs to enter the OTP and mark their attendance for that particular lecture. This system is also used for predicting every student's performance that includes their assessment, term marks, and other curricular activities. The whole generated report which includes their predicted performance and their attendance will be sent to their respective guardian with the help of SMS or Email.

LITERATURE SURVEY

Attendance management is significant to all organizations such as educational institutions. It can manage and control the success of any organization by keeping track of people within the organization such as students to maximize their performance. The proposed system offers the process of monitoring and attending students, it aims to help the teacher in the classroom or laboratories to manage and record students' presence electronically and directly without the need to list on paper so it will save time and effort[1][2]. The system can analyze the data and display statistics about the student's absences, printing reports about absence percentages and students' warnings for the specified period. The developed system is easy to use and friendly and has an attractive and simple GUI design so that insertions, deletions, and changes of data can be done easily without interacting with the tables, so it was designed with the MVC architecture and implemented with the powerful Laravel Framework. In order to increase use of the application and make it easy to use and attractive, JavaScript, jQuery and AJAX have been used. MySQL use for the application

Database which stores the data for a long period[7][9].

The traditional scenario of tracking student attendance in the classroom is done by obligating the students to physically mark the attendance sheet that goes around the classroom while a course teacher is delivering the speech[4][5]. Smartphone are very common to all the teachers so that they can easily take attendance and process the attendance where it needs to be. The main benefits of this system is that the teacher can get a computed percentage, can print hard copy with detailed attendance information, can save data in phone databases as well as save data to remote server databases which ensures that the information will never lose and can use the data where it needs[6].

The data mining technique called Naïve Bayesian algorithm in enhancing the quality of students performances.The aim of this study is to examine the Naive Bayes algorithm which is one of the classification methods in data mining, to identify the hidden information between subjects that affected the performance of students[10].The main task of data mining is to analyze large quantities of data in order to extract previously unknown information and patterns. Naive Bayes classifier assumes that the effect of the attributes value on a given class is independent on the value of other features . Naïve Bayes is also well known for text categorization. This article introduces a Naïve Bayes classifier for classifying students' performance and the existence of the relationship between subjects that contribute to the certain classes[14][15].

The Online Attendance System that is developed meets the design objectives of the system design for which it has been developed. The users associated with the system understand its advantage and easily navigate with the user interface. It was intended to solve the requirement specification. The current system can be a good reference when implementing a similar system in other institutions as the system is proved to be workable and effective[11].

DESIGN, DESCRIPTION AND IMPLEMENTATION

A. SYSTEM OVERVIEW

This system works on the following four stages:

- OTP generation and attendance marking
- Attendance calculation and Defaulter List generation
- Academic Performance Prediction
- Sending overall reports to students and parents via SMS and Email.

B. IMPLEMENTATION

The experimental platform is built on using JAVA8 and MYSQL. Experiments are performed on computers with 2.4GHz CPU and 2GB RAM.
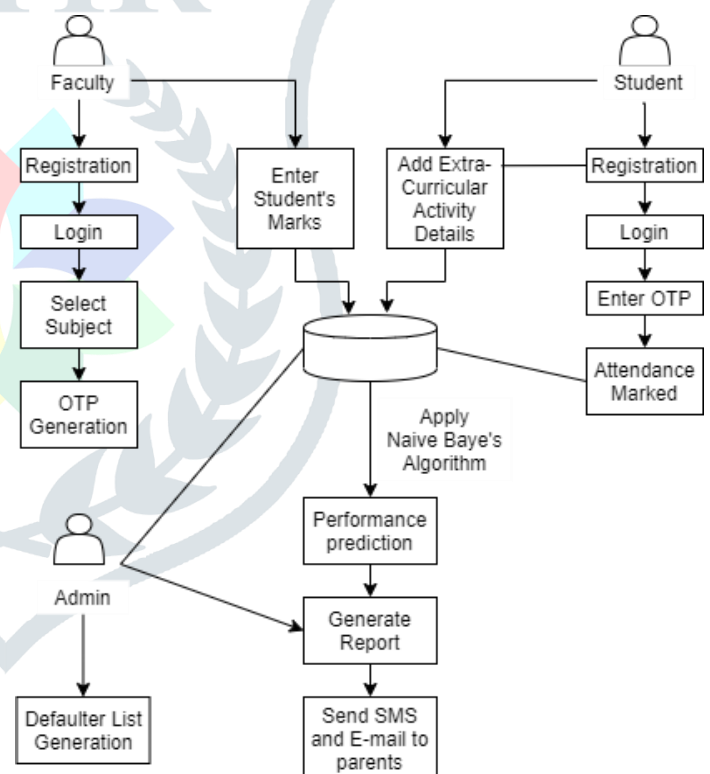
C. SYSTEM ARCHITECTURE

Fig (1): System Architecture

D. WORKING OF NAIVE BAYES ALGORITHM

It's a classification technique based on Bayes theorem.
It is easy to build and useful for very large datasets.

Bayes theorem :

$P(a|b) = P(b|a) \, P(a) \, / \, P(b)$
Where,
$P(a|b)$ is posterior probability
$P(b|a)$ is probability of event b given that event a is true.
$P(a)$ is prior probability
$P(b)$ is probability of evidence

RESULTS

The system successfully records the attendance of students using OTP and calculates the attendance along with that system is able to predict each student's academic performance. This overall report is sent to students and as well as to their parents via EMAIL.
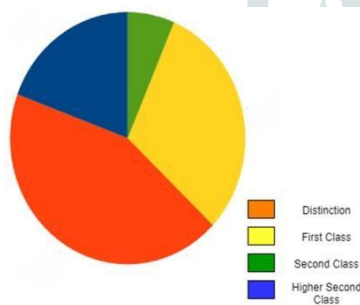

Fig.(3): Generated Result

Fig(3) is a representation of an overall class's students academic performance in an examination.i.e for example how many students will get in First class and likewise.

APPLICATIONS

Helpful to the staff for recording and calculating the student's attendance
Predicts a student's academic performance and analyzes their attendance .The overall brief report is sent to students and their parents via EMAIL.

Students as well as Parents will get to know about their ward's attendance and academic progress

FUTURE SCOPE

Generation of defaulter list and generation of final report and sending it to respective students and to their parents is handled by admin, in current scenario. The overload of admin can be reduced in future.

CONCLUSION

In this system the overall result of every student will be sent to their respective guardian by sms or email which will include their attendance as well as their predicted performance. The attendance will be calculated by OTP system and performance prediction is done by using the naive bayes algorithm.

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