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Prediction of Students' Performance Based on Machine Learning

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ABSTRACT:

Performance evaluation of students is essential to check the feasibility of improvement. Regular evaluation does not just improve the student performance but also helps to understand where and what the student is lacking. It requires a great deal of manual exertion to finish the assessment cycle as even one school may contain a huge number of students. This paper proposed a computerized solution for the performance assessment of the students utilizing the machine learning Predicting performance exhibition of the students which can also be exceptionally helpful for instructive organizations for upgrading their educating quality. Student performance prediction is very important to understand a student progress rate.

KEYWORDS: performance, progress rate, evaluation, students, feasibility

I. INTRODUCTION

Each educational establishment now manages and processes a considerable amount of academic data, that can be useful for a variety of purposes. Predicting academic achievement is one of the most significant functions of such data [1-3]. This type of projection can be beneficial to both students and mentors or professors in terms of student improvement. Mentors can give unique help to the students who are very nearly falling flat. Such data can be very much helpful to understand to which category a student belongs to [4-8]. Active learning plays a significant part in enhancing educational systems by focusing on many perspectives, such as student, teacher, and administration perspectives. Learning analytics aims to provide accurate assessments of students, a clear knowledge of educational issues, and the selection and planning of appropriate interventions at the correct moment [9]. In this context, data analytics and related sectors such as information discovery in databases, impact on the overall analysis, text categorization and processing, neural network technology, and artificially intelligent approaches have now permeated into the education system's nerve [10-14]. The main objective is to make a technological shift away from traditional teaching and learning methods. The data on the pupils can be acquired via an internet learning system. We have a vast amount of data, but we are unable to obtain data from it. Data created from various sources contains important hidden information, which has piqued researchers' interest in the subject of databases information acquisition [15-19].

II. BACKGROUND STUDY(LITERATURE)

1. Machine Learning

Machine learning is a process of computers figuring out how to do things without needing specifically programmed to do just that. While AI concentrates around expectations, in light of realised characteristics gained from preparations data all around revelation of (previously) opaque qualities in the data (), machine learning techniques mining commonly use comparable methodologies and cover basically the same ground. Data mining employs a variety of machine learning methods, each with its own set of goals; however, machine learning also use data mining methods as "unsupervised classification" or as a pre-training phase to increase learner precision.

Machine learning entails creating a model based on certain preliminary data and then being able to handle other data to generate predictions. For Machine Learning frameworks, various types of models have been used and researched [20-23].

Predictive Modeling

Predictive modelling is an important part of the learning process, with the goal of estimating student performance in terms of intelligence, behavior, grade, or scoring. State-based information and event-driven information can both be employed in the predictive model. Communicating with kids about educational institutions and resources can provide the later. Throughout this framework, our goal is to forecast student success online through social media footprints. In a development learning situation, the Web Applications Design course gathers information on how students use wiki, blog, and microblogging technologies for coordination and teamwork. Novel regression approach [24-29] was employed in this study.

III. PROPOSED SYSTEM

The initial stage is to gather information from various data sources. In our situation, the information was gathered through a survey study and the kids' mark book. Pre-processing the information to construct a normalised dataset but instead labelling the information rows seems to be the second phase [30-32]. The second step's output, the testing and training data, is input into the Machine Learning algorithm in the third piece. Using the training samples, the Machine Learning Model builds a scenario, which is then tested using the testing data. Ultimately, the Machine Learning Model generates a classification classifier or prepared classifier that may be used to forecast the label of a new information row given as input. In this project firstly the user has to register with all the details like First name, Last name, phone number, email etc. after submitting this then it directs to the login page where the user has to enter username and password after this the student/user will be eligible to take test quiz on c, java, python, then the analysis of the test will be done based on the performance and credit students as expert, intermediate and beginner. Based on this result the users will be able to access the notes, ppts and the videos provided. The algorithm used for this prediction is Naïve Bayes Algorithm. NB is a Bayesian algorithm which is based on the Bayes theorem. This model is simple to construct and is best suited for very big datasets. The goal of Nave Bayes should be to determine the procedure for each tool's conditional distribution. Because of its assumption of independence requirements, this method is dubbed "naive." It is assumed that all input data are independently of each other. An Classifier can convergence quicker than other methods, like Logistic Regression [33-39], unless the contingent assumption of independence applies.

1. SYSTEM ARCHITECTURE

The initial stage is to gather information from various data sources. In our situation, the information was gathered through a student survey and the kids' grade book. Pre - processing stage the information to produce a normalised data but instead labelling the information rows is the second stage. The supervised learning dataset from the second step is provided to the Machine Learning algorithm in the fourth part. The Machine Learning Model builds a scenario from training examples and then evaluates it with testing dataset. Finally, the Machine Learning Algorithm generates a classification classifier or educated classifiers that may be used to forecast the label of a new information row given as input.



FIGURE 1: DESIGN SYSTEM ARCHITECTURE

IV. RESULTS

Till now we have completed 70% of our project, we are working on the remaining part which we'll be completed shortly. The below figures shows the partial output. The First figure shows the result of the register page where we can see the name of the user, first name, last name, email I'd and password. Then the next figures shows the quiz pages where the students can take test on languages c, java and python [40-43]. After this the user/student should login into login page to check their results.

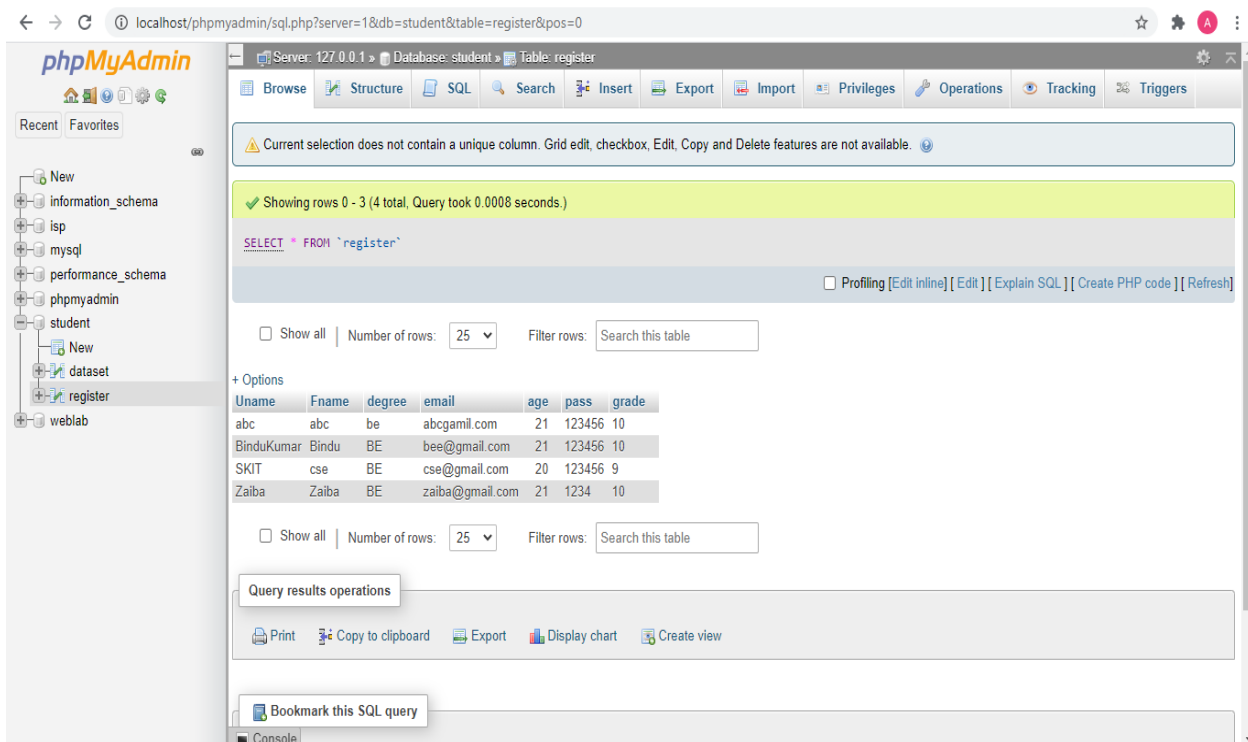


Figure 2: Test result

V. CONCLUSION

Predicting student’s academic performance is exceptionally useful to help the instructors and learners to improve their learning and teaching process schematically. This paper analyzed the student’s academic performance with various machine learning algorithms. The classification algorithms are used frequently in educational data mining. In this paper, Naïve Bayes algorithm is

used to predict student's academic performance. When it comes to forecasting a student's academic success, the Nave Bayes algorithm is better. Finally, the assessment of children's learning datasets for forecasting academic achievement has prompted us to conduct additional study in our domain. It will assist the school system in keeping an organised record of a student's academic success.

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