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Word count:	1,868
Character count:	10,403
Submission date:	11-Jun-2022 06:12AM (UTC-0400)
Submission ID:	1854761810

Analyze Various Student Performance Prediction Methods And Plot The Rank Based On Performance

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***Abstract* –The amount of data generated these days is enormous. Analyzing and generating useful insights from large amounts of data is difficult. Student data analysis plays a crucial role in providing an overall view of what students know and should know, as well as what may be done to satisfy their academic needs. With this information, the school can make decisions to improve students' academic performance. The significance of this work is to investigate the dataset, which includes student-related characteristics, using various methods such as Logistic Regression, Naive Bayes, and Extreme Gradient Boosting. This article also includes a comparison of these methods with multiple linear regression algorithms.**

Keywords: Prediction, Machine Learning, Performance, Algorithm,

I. INTRODUCTION

Machine learning is an area of computer science that allows computers to learn without having to be programmed directly. Machine learning is one of the most fascinating technology that has ever been discovered. It gives the computer the ability to learn, making it more human-like, as the name implies.

Multiple statistical approaches have been employed to examine and predict students performance from various perspectives over the years. One of the most significant difficulties facing higher education is the lack of decisions. Today's task is to forecast students' progress through the educational system. Predicting successful students' results early in the course depends on a variety of factors. data mining techniques could be applied. In the educational industry, data mining techniques are commonly utilized to uncover new hidden patterns in student data. The underlying patterns that are uncovered can be used to comprehend the educational issues that develop.

Based on the same dataset available in the public domain, this study seeks to provide a comparative analysis on several features of Nave Bayes, XGBoost, and Logistic regression in predicting student performance. Machine learning classification algorithms are used to apply the classification technique to the dataset. These models are used to improve the classification technique's accuracy. This model is capable of both classification and prediction. The Python Programming Language is used to create these models. The Nave Bayes Classifier is based on the Bayes Theorem and the concept of probability. It frequently plays an important part in the decision-making process. The K-nearest neighbor The feature similarity principle is used by the classifier. It can be used to solve classification and regression difficulties. In this post, you learned about the XGBoost algorithm for applied machine learning. That XGBoost is a library for quickly constructing high-performance gradient boosting tree models. On a range of difficult machine learning problems, XGBoost surpasses the competition. The method of modelling the probability of a discrete result given an input variable is known as logistic regression. The most frequent logistic regression models have a binary outcome, which might be true or false, yes or no, and so forth.

II. LITERATURE SURVEY

Febrianti Widya ha stuti, VianyUtamiTjhin et al[1] in order to Prediction of Student Performance using Machine Learning The study and prediction of student performance is extremely important.

The analysis and prediction of student performance is extremely beneficial to both the student and the institution. It can assist the student in better understanding his current performance and planning his time accordingly in order to improve his performance in the next tests. Institutions can adjust their coursework or include any other methods to improve student performance from the standpoint of the institution. We need effective data analysis and prediction to attain these valuable findings. The analysis and prediction of student performance is extremely beneficial to both the student and the institution. It can assist the student in better understanding his current performance and planning his time accordingly in order to improve his performance in the next tests.

III. MOTIVATION

Predicting student performance has become a critical issue in most educational bodies and universities. This is vital to help at-risk students and assure their retention, as well as to provide great learning materials and experiences, and to improve the university's rating and reputation. Student performance is a major problem in educational institutions, as a range of factors can influence student progress. The following three components are necessary for prediction: student performance-related parameters, student performance-related parameters, and student performance-related parameters. The third option is to use a data mining tool. Every year, a large amount of student data is entered into