

# Student Performance Prediction using Machine Learning

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greeting to everyone myself sayat for khan mehdi of information technology branch in isl engineering college here is my final year major project that is on student performance prediction based on machine learning let's start with our powerpoint presentation introduction performance analysis of outcome based on learning is a system which will strive for excellence at different levels and diverse dimension in the field of student interest we analyze the prediction of student performance based on a few parameters that are social engagement health issues parent supports social relationship and all we use some of the modern technologies of ai that is machine learning and we use three algorithms svm neural networks and logistic regression abstract this is the system developed to analyze and predict the student performance only in the purpose the purpose the framework analyze the student demographic data study related to psychological characteristic to extract all possible knowledge from students teachers and parents seeking the highest possible accuracy in academic performance prediction using a set of powerful data mining techniques existing system the previous prediction predictive models only focused on using the student demographic data like gender age family status and all these are a few basic that is used in previous existing system these previous work were only limited to provide the prediction of academic success or failure without illustrating the reasons of these predictions there are other parameters that affect that are not mentioned in existing system the disadvantages of this are apart from the previously mentioned work there are previous statical statistical analysis model from the perspective of educational psychology that conducted a couple of studies to examine the correlation between the mental health and the academic performance the type of the recommendation was to brief them is illustrating the methodologies of apply proposed system the proposed system framework firstly focus on merging the demographic and study related attribute with the educational psychology fields use some of the interesting parameters in the data set like the student is belong to rural or urban whether they're traveling more or not taking tuitions extra tuitions or not whether they have health problems

or not these are mentioned in data advantage of proposed system this recommendation are based on extreme experienced studies for enhancing the students academic performance in addition to the mentioned above functionalities the system will also alert all parties with the possible upcoming mental illness that the student might suffer from that helps this proposed system help in examining examining the student behavior both on personal and social engagement here is our architecture first the collection of data set then data preprocessing where we select a few parameters and remove other unwanted unrelated parameters that that will make a problem in future so feature extraction in selecting a important parameter to improve the accuracy of the model then applying machine learning algorithm here we are trying with three algorithms that is a sequence vector machine logistic regression and neural networks then we classify and train and test a few data 70 percent of data is trained and 30 is remaining for testing then data classification where we get three type of classes high low medium then the result of accuracy of model uml diagrams unified modeling language is general purpose and development modeling language in the field of software engineering it is standard way to visualize the design of the system here here we in the diagram we can see that system is uh help to do generate data set refinement of input data set applying data mining techniques select best technique calculating results report generation whether data set gif keep record of attendance keep record of class test grid here your other uml property that is class diagram in software engineering type of static structure diagram that they describe the structure of a system using its type of classes here we have three classes module for class diagram did first is data set where we have student details all personal uh details of student then performance previous performance of the student and a few other labels like health issues travelling time whether they belong to rural or urban area or they hang out more or not they are in a relationship or not this all data is present in data set then this module where we do first data analysis on data analysis on a few data to understand the data to understand the data more price precisely and do further uh further machine learning algorithm feature extraction here we in future extraction next thing is a feature extraction is an attribute reduction a reduction process unlike feature selection which ranks the existing uh attribute according to their predictive significance of feature extraction actually transform the attribute the transformed attribute of feature or feature are a linear combination of original attribute finally our modulus trend using classifier algorithm we use clarity classify module on neural natural language toolkit library on python then in results we result there are exploratory data analysis model selection and accuracy result

accuracy of model our machine learning model here we have um 78 percent of accuracy in neural networks and logistic regression model sequence diagram our sequence diagram are typically associated with use cases realization in the logical view of system under development it is also called as event diagram first a user uh give data then data set collection part here we do pre-processing of the data like selecting uh important attributes then feature extraction means selecting only using selecting only important important attribute to for applying in algorithm then applying algorithm or machine learning algorithm classified data set into train and test then accuracy of the our result activity diagram activity diagram is a graphical representation of workflow and that is to help you to understand the work work of the system first data set collection then pre-processing then training and testing of the data then feature extraction then applying a machine learning algorithm and prediction then getting the accuracy and result of the student performance here are modules we have four modules let's see what are the data collection data used in this paper this step is concerned with selecting the subset of all variable data that you will be working with the machine learning problem start with data preferably lots of data for which you already know the target answer data for which you are already known the target answer is called label data data pre-processing data processing data processing organize your selected data by formatting cleaning and sampling from it formatting and the data you here formatting and the data you have selected may not be in format that is suitable for you to work with the data may be in a relational database and you would like to do in flat file cleaning of data cleaning of data means removing the remaining removing the unwanted values or null values or filling with null values mean filling with a mean of that attribute then sampling there will be far more selected data available then you need to work with more data can result in much long longer running times for algorithm and larger computational and memory requirement you can take a smaller representative sample of selected data that may be much faster than exploring and prototyping solution before considering the whole data set feature extraction next thing is feature extraction is an attribute reduction process unlike feature selection which ranks the existing attribute according to their predictive significance we use the label dataset gathered the rest of our label dataset will be used to evaluate the model some machine learning algorithm were used to classify pre-processed data the chosen classifier uses the random forest this algorithm are very popular in text classification tasks evaluation of model model evolution is an integral part of model development process it helps to find the best model that represent our data and how well the chosen model will be working future evaluating model

performance with with the data used for training is not acceptable in data science because it is it can easily generate over optimistic results requirements here we use a jupyter notebook python anaconda navigator python built-in modules here is our output our output is classified into three classes it is low medium and high on x-axis there are roll numbers of the student and left side of the y-axis we have score of 60 count of 60 selection id selection id shows the percentage of percentage of classes is divided into the given data set for data given data set here here the accuracy result of our three machine learning algorithms logistic for logistic regression it is only 58 where svm sequence vector machine it has 70 percent and for neural network it is 70 conclusion finally performance analysis for student are major problem it is important that they are counted the work reported in this thesis indicates the machine learning techniques with supervised learning algorithm supervised learning algorithm with respect to student record in the future we provide some we can build a prediction model using neural network and improvise further for getting good results here our references thank you for your time

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