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# Student Performance Classification and Job Prediction using ML

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**ABSTARCT:** There are many challenges associated with today's e-learning systems, the most significant of which is the lack of student motivation in various course activities and for various course materials. In this application, we are using KNN machine learning (ML) algorithm to identify Weak and Strong students in their course as well as we are identifying Topic wise Weak and Strong Students This will keep track on student performance. The input variables of the study included students qualification, academic results, score on the assessment, and the number of clicks on e-learning Application activities, which included PPT learning, Course information pages, assessments given, watched tutorials and videos, visited pages, etc. The output variable will be the student level of engagement in the various activities. To predict student's strong and weak areas we are applying several ML algorithms to the data obtained.

## I. INTRODUCTION

This application will help students to evaluate their topic and point wise knowledge. This system will help in various education or job portal applications to recommend students for specific job requirements. This system will help candidate to recommend job calls based on evaluation by candidates study and given assessments.

Machine Learning (ML) is a technology that is fast becoming popular due to its distinct features and applicability to different domains. ML has the potentials to play a critical role in the future of education. It can assist the teacher to predict student learning patterns and outcomes, and to generate feedbacks on student learning progress. However, research has shown that different machine learning algorithms exist some of which can predict outcomes with high missed Classification error. Consequently, the present study evaluates the performance of K-Nearest Neighbour (K-NN) supervised algorithm

In determining students' learning styles. K-NN algorithm is used in the domain of students' learning styles to predict the possible outcomes using various numbers of records in the dataset, ratio of test dataset to training dataset and value of K; in order to minimize the missed classification in other ML algorithms.

Machine learning is a sub-domain of computer science which evolved from the study of pattern recognition in data, and also from the computational learning theory in artificial intelligence. As data sources along with the computing power to process them, going straight to the data is one of the most straight forward ways to quickly gain insights and make predictions. Machine Learning can be thought of as the study of a list of sub- problems, via: decision making, clustering, classification, forecasting, deep-learning, inductive logic programming, support vector machines, reinforcement learning, similarity and metric learning, genetic algorithms, sparse dictionary learning, etc. Supervised learning or classification is the machine learning task of inferring a function from a label data. In Supervised learning, we have a training set and a test set. The training and test set consists of a set of examples consisting of input and output vectors, and the goal of the supervised learning algorithm is to infer a function that maps the input vector to the output vector with minimal error. In an optimal scenario, a model trained on a set of examples will classify an unseen example in a correct fashion, which requires the model to generalize from the training. set in a reasonable way. In this paper we have made an attempt to predict results of a batch of students based on the previous performance using supervised machine learning algorithm i.e. "KNN

## II. THEORY

Application Modules:

Our application content to modules

1. Admin module
2. Student module

### Admin Module:

In admin module we will add all master table details we also added all the courses, topics and content of each topic. Admin module also contain questions on each topic content we are also storing ppts and lecture videos of each topic content, admin can also provide student registration form where new student get added and it also shows all existing students. This admin panel will show student evaluation, performance and predictions.

### Student Module:

After student login student can get his/her profile with all details such as basic details, enrolled course details. Student can give exam for selective topics as much as he wants.

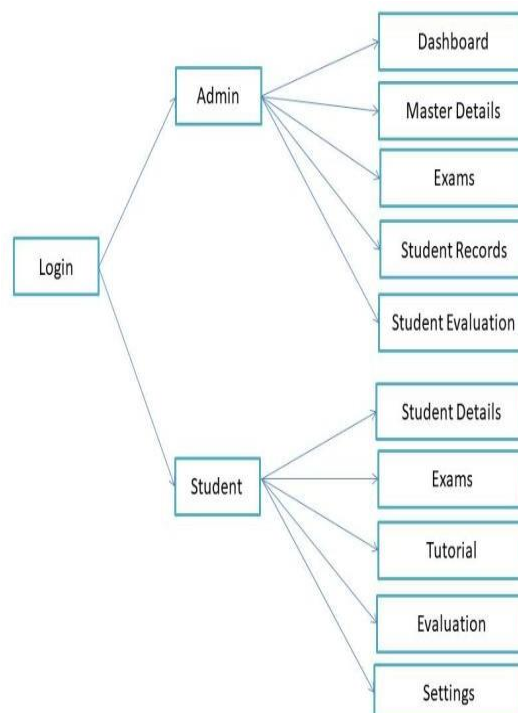
Student can be evaluate bases on the exams given and result obtained.

In student panel student can learn or study by given ppts as well as by given videos.

## DATA COLLECTION

We are collecting data from MySql Server Database. In MySql server where we can get each and every characteristics of the student (collecting the data) ex: Student information, learning Details, Searched History, assessment details, how many hours a student has been studied, and a student should be regular to eLearning Portal or not and what about his interaction in the after login, how student maintained his time management during application access.

By applying these relational attributes of every student to the predict whether a student is excellent or good or bad based on applying classification algorithms like KNN algorithm.



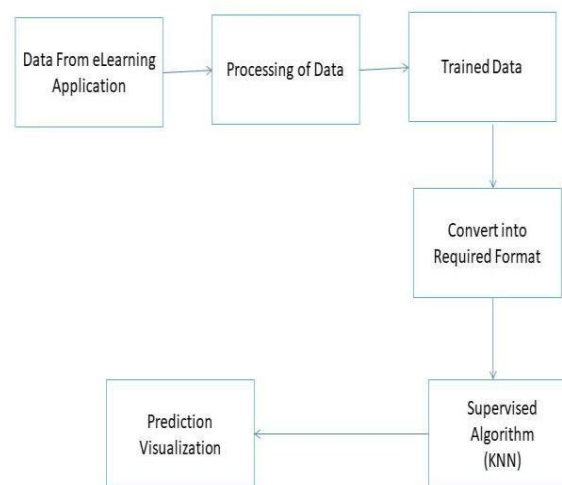
#### KNN classifier

Basis of K nearest neighbour is categorization of unknown record or data point in which its class is already known. Nearest neighbour is calculated according to k-value that determines the number of nearest neighbours to be considered. Euclidean distance is considered as a measure to calculate the distance of the test label with the centres and assign the class label to the test sample by majority nearest neighbour. The test data sample will be assigned the class label by determining which centre is the nearest one.

KNN Algorithm can be expressed as:

1. Determine value of k, which is positive integer typically small with best choice value depending on dataset used in study.
2. Calculate Euclidean distance.
3. Determine k-min distance neighbours of testing data from trained data on a distance neighbours metrics.
4. Gather category Y values of nearest neighbours.

#### Model Architecture



Use simple majority of nearest neighbours to predict value of query value given. KNN is simplest of all machine learning algorithms. It is easy to implement and understand and also works fine in a sample of many class labels. It is memory inefficient in some cases and can be improved according to their distance from new sample record. This limitation of memory can be overcome by reducing the size of dataset which can be done by eliminating repeated patterns and removing some records which doesn't affect the result.

### III. LITERATURE SURVEY

#### ➤ Lack of teaching and learning resources

The unavailability of resources that facilitate online teaching and learning was a major concern to academics and students. According to Kerres (2020), some universities did not have properly running online communication tools; for example, a university has limited student access licenses to online library materials. Such issues would definitely affect the delivery of online learning material. Additionally, the lack of access to high-speed broadband or digital devices was also reported as undermining the online learning (Azorín, 2020).



➤ Mental health related issues

The mental health issues associated Covid-19 and the sudden shift from class- based to online learning are also demonstrable in the literature. Such issues includes stress, anxiety and depression which occurs due to a sudden change in one's lifestyle and uncertainty about the future (Rajkumar, 2020; Ronnie et al., 2020; Rossi et al., 2020; Tandon, 2020; Xiong et al., 2020). Learning loss and dropout rates, other harder to quantify factors due to covid-19 cause social and emotional disruption for general public and worse for students (Dorn, 2020).

➤ Covid-19 and academic outcomes There is limited research evidence on the impact of Covid-19 on students' academic performance. This is probably due to lack of data that measures academic outcomes during the Covid-19 period. However, it is expected that as academic results become available, more research will be conducted on this area. Gonzalez et al.(2020) studied the academic performance of students before and after the Covid-19 confinement. Their study results shows that students achieved significant improvements in their scores even in tests that were performed in the on-line format in previous years (Gonzalez et al., 2020). Moreover, this improvement is only significant when comparing data after the Covid-19 confinement (i.e. there are no significant differences in on-line tests that were performed before the confinement) (Gonzalez et al., 2020). Therefore, these findings reveal that the new assessment process cannot be the reason for the improvement in students' performance because the learners also achieved better scores when the format of the assessment did not change (Gonzalez et al., 2020).

➤ Lack of basic needs

Lack of access to basic needs such as food, shelter, clean water, electricity, health care and security has effect on student's ability to fully participate in online learning while at home (Ronnie et al., 2020). For example, food which is provided to residence students may not be available at home as funders may not have adequate time to prepare food vouchers for funded students (Sahu, 2020). Some students do not have proper shelter during the lockdown which affect their learning.

#### IV. CONCLUSION

The academic achievement of every student is very important in India and it is a turning point of the life. But there are determinants like demographic, academic and socio-economic factors of students that restrict the student's performance. This necessitates the need for some forecasting systems to predict the academic performance of students. Student academic performance pre- dominantly by means of different feature selection of data mining. Proposition of suitable performance prediction model with reasonable predictive accuracy have been framed as the main objectives for the present investigation. As the present investigation to the model prediction of the performance of students in higher education, it will be useful to parents, educators, academics, and policy makers for taking appropriate decisions for the development of student community in the highly competitive world to-day. But also, on the prediction of the academic performance of the students using different classification algorithm in data mining

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