A Review on Prediction of Students Academic Performance

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Abstract:

Predicting the performance of the student is a great concern to higher education management. The purpose of the Training and placement management system is to automate the existing manual system with the help of computerized equipment and Computer software. The purpose of higher education organizations is to offer superior opportunities to their students. The proposed student prediction system is the most vital approach which may be used to differentiate the student data based on student performance. Managing placement and training records in any larger organization is quite difficult as the student number is high in such condition differentiation and classification on different categories becomes tedious. The proposed system will classify the student data with ease and will be helpful to many educational organizations. There are lots of classification algorithms and statistical base technique which may be taken as good assets for classifying the student data set in the education field. In this paper, Naive Bayes, SVM, KNN algorithm have been applied to predict student performance which will help to identify the performance of the students and also provides an opportunity to improve the performance. Based on the result, higher education organizations can offer superior training to the students. In this system, information related to student's performance measures is analysed in different perspectives to learn the achievements of the students through their activities

Keywords **—**Machine Learning, Placement prediction, Data analysis, Data Mining, SVM, Classification.

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I. INTRODUCTION

The placement activity within the college is one among the foremost necessary activities within the lifetime of any student. Thus it's important to form the method trouble free so that the scholars would be ready to get needed the specified the desired information as and once required additionally with the assistance of system it would be simple for employees of the college and placement cell to update the scholars simply and also the workload would be less. The "college placement prediction using machine learning" has been developed to override the issues prevailing within the active manual system. Machine learning is nothing but the scientific study of algorithms and statistical models that computer systems use to perform a specific task without using explicit instructions. Machine learning depends on patterns and inference. For the prediction of data classification techniques are used in machine learning.Classification is a technique where we categorize data into a given number of classes.

In an existing system, an educational institution contains student records which are a prosperity of information but is too large for one person to

understand in its entirety. Finding the necessary characteristics from this data is an important task in educational research. Finding the placement status of each student in the institution is a tedious task. Hence, the limitation of this system includes time consumption, less efficient and less user satisfaction. Also, this system is a manual process which adds to the limitation.

The proposed system makes the work of prediction of placement of students easy. We are developing a system in which the students will register/login into the system and enter their bio-data and skillsets, according to students academic details the system will identify whether the student is eligible for the placement and recommend the courses to the students.admin creates the courses and registers students to the respective courses. Admin can view the courses and the students along with their attributes. Admin predicts the placement status of the current students. If the student is eligible for placement mail will be sent to the student from admin and students names will be displayed on the dashboard in their colleges.

II.   Basic Definitions/Concepts:

Machine learning is a branch of Artificial Intelligent based on the idea that the system can learn from data, identify a pattern and make a decision with minimum human interaction.

Classification predicts categorical labels classes, prediction models continuous-valued function. Classification is considered as supervised learning. Classifies data based on the training set and the values in a classifying attribute. Use this data for the classification of new data. Prediction means models continuous-valued functions that are predicted unknown or missing value.
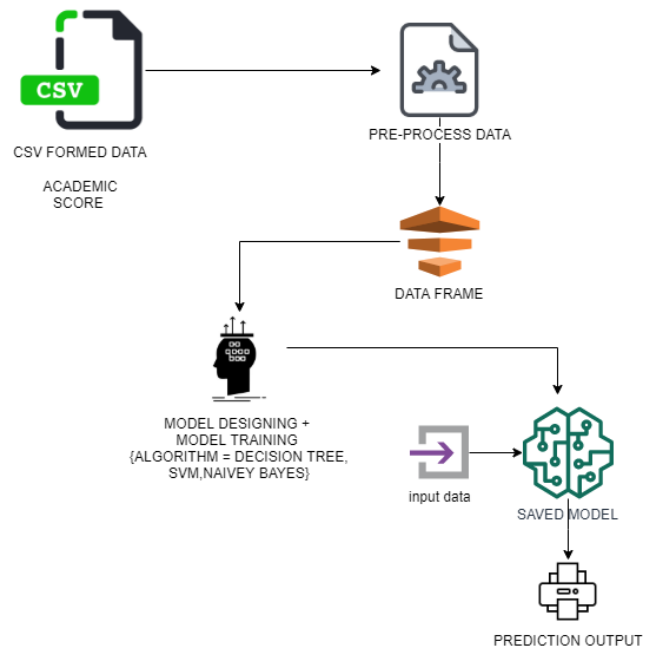
A support vector machine is a machine learning algorithm that is used to analyse data for classification and regression analysis. SVM is a supervised learning method that sorts the data into one of two categories. An SVM results in a map of the sorted data with the margins between the two as

far apart as possible. SVMs are used in text categorization, image classification, handwriting recognition and in the sciences.

A k-nearest-neighbour(KNN) is a data classification algorithm that is used to determine what group a data point is in by looking at the data points around it.

Naive Bayes classifier is an algorithm based on Bayes Theorem. It is not a unique algorithm but a family of algorithms where all the algorithms share a common principle that is every pair of features being classified is independent of each other.

Data analysis is defined as a process of cleaning, transforming, and modelling of data to discover useful information for decision making. Data Analysis aims to extract useful information from data and taking the decision based upon the data analysis.

This Diagram Covers our existing system workflow by registering or by login after which the user enters the bio data details as well as academic details , interests as well as skill set after which drive status is displayed on the dashboard.

III.   Literature Survey:

This section of Literature Survey eventually reveals some facts of Predication of students performance based on the analysis of many authors work as follows:

1. In this paper M. F. Lee, N.F. Mat Nawi& C.S. Lai [1] proposed a Job Performance Prediction Model based on Adversity Quotient & Career Interest. Job performance in this study refer to the abilities of students in completing the task given by lecturer. The findings show that the majority of respondents are in high level of AQ, the dominant of career interest of students is the Social personality. This model is expected to be applied to Bachelor's students of UTHM to predict future job performance based on scores of AQ, Social, and Entrepreneur.

2. S. IndhuPriya , Dr. P. Devaki [2] the author's goal is to Evaluate Students Performance in Placements . The aim of evaluating student's performance is to help them to develop individual student's professionalism, to encourage self-improvement, to maintain achievements and also to give them prior idea about their level of skills in placements. It also plays a vital role in increasing placements. In this paper some of the existing methodologies and their drawback for the student analysis have been discussed.

3. Animesh Giri , M Vignesh V Bhagavath, Bysani Pruthvi, Naini Dubey [3] designed a Placement Prediction System Using K-Nearest Neighbors Classifier. Author's proposed a Placement Prediction System which predicts the probability of a undergraduate student getting placed in an IT company by applying the machine learning model of k-nearest neighbors's classification. The data that is used for this purpose is the Placement Statistics of PES Institute of Technology, Bangalore South Campus for the previous two academic batches.

4.Pushpa S, K,Manjunath T N, Mrunal T V, Amartya Singh, C Suhas [4] author's aim is to develop a Class Result Prediction using Machine Learning. To extract meaningful value from big data one needs optimal processing power analytics capabilities and skills. Using the concept of machine learning, a number of algorithms are explored in order to predict the result of class students. Based on the performance of students in previous semester, whether the student passes or fails the current semester is computed before the final examinations actually takes place.

5.Apoorva Rao , Deeksha K , Vishal Prajwal , Vrushak , Nandini [5] author's developed a Student Placement Analyzer: A Recommendation System Using Machine Learning. Author's make use of the historical data of the past students. This data is considered as the training data set and is used to train the model. The system then predicts the placement status of the student to one of the five categories or statuses, viz., Dream Company, Core Company, Mass Recruiters, Not Eligible and Not Interested in Placements. By using this system students can put in the necessary efforts to achieve their goals and to get placed in better companies.

IV.   Conclusion:

In this paper, we have proposed the placement system to analyse student's performance in their field of interest through academic scores with the help of machine learning techniques like SVM and the Naïve Bayes algorithm.

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