

Literature survey

Title : University admit eligibility predictor

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Researchers are working towards the modernization of the education system using education data mining technology. There is a survey [7] paper that depicts the most relevant studies using educational data mining. The researchers concentrate on the field of educational data mining as recent studies show that it is used for analyzing students' performance [8, 9, 10]. There are a number of past studies that focused on predicting admission in colleges or universities. A brief literature review of those studies is presented as follows.

Binu et al. [11] proposed a cloud-based data analysis and prediction system for predicting university admission. There were two modules in the proposed framework, i.e. A Hadoop MapReduce data storage module and an Artificial Neural Network to predict the chances. The data collected had attributes such as status, rank, board, quota, etc. The system did not use academic qualifications in the

forecasting process. The neural network had two input nodes, one hidden layer with two nodes, and one output layer with two nodes.

Acharya et al. [12] proposed a comparative approach to predicting graduate admissions by developing four models of machine learning regression: linear regression, vector support, decision tree, and random forest. Roa et al. [13] built a College Admission Predictor in the form of a web application, taking as input the scores obtained by the applicant and his/her personal information and predicting potential college admissions as output.

Ghai [14] developed an American Graduate Admission Prediction model that allows students to choose an apt university by predicting whether or not they will be admitted to the university. Gupta et al. [15] developed a machine learning decision support system for the prediction of graduate admissions in the USA by taking account of certain parameters, including standardized tests, GPA, and Institute Reputation.

Mane and Ghorpade [16] designed a framework for predicting student admission to a particular college using a hybrid combination of Association Rule Mining and Pattern Growth Approach. Data source attributes included student details such as name, gender, caste, address, 10th mark, 12th mark, the score of Common Entry Test, name of pre-college, name of admitted college, and branch. Once valid association rules have been established, the prediction shall be made by the constraint of consequence during the generation of association rules.

Raut and Nichat [17] worked to predict students' performance based on a standard classification methodology, the Decision Tree. This method proposed a model where students take an online test and get an immediate answer (Pass / Fail) coupled with poor principles. The generalization of the sequential pattern mining algorithm was used for the evaluation of output. The decision tree developed by C4.5 is used to assess the success of students and to identify them based on their marks. The author noted that this data mining research could

help administrators find poor students and offer extra guidance before the final exam.

Arsad and Buniyamin [18] used the ANN model to forecast the academic success of Bachelor of Technology graduates. The research considered Grade Point (GP) of main subjects that students rate as inputs without taking into consideration their socioeconomic context, thus considering Grade Point Average (GPA) as production. Neural Network (NN) trained engineering graduate students GP to achieve targeted performance. This work showed that core themes have a significant impact on the final CGPA graduation.

Erdogan and Timor [19] used cluster analysis and k-means algorithm techniques to uncover the connection between student entrance test outcomes and their performance. Ktona et al. [20] used the mining association rule as one of the mining partnership tools to classify variables that influence the information acquired by high school students in the ITC course.

Devasia et al. [21] introduced an analysis to predict the success of students in the upcoming academic history test. Build a Web-based program. Nineteen of 700 student characteristics are used as input. When the marks of the pupil were entered, it was contrasted with the scores of the current student, and the ranking of the Naïve Bayes was used to determine the final score. It is noted that the qualification of mother and family income is strongly associated with student success. The collection of data sources, the detection of performance-influencing variables, the construction of a predictive model, and the testing of the model were proposed in the creation of an academic prediction model. The authors noted that this model should help minimize the ratio of loss and help to take appropriate steps against poor performance.

Ruby and David [22] developed a prediction model focused on the Multi-Layer Perceptron algorithm. Datasets were composed of 165 scientific, personal, and economic documents. The overall

performance reached for all attributes was 52% and the chosen attributes were 33%.

Aziz et al. [23] created a prediction model that predicts the performance of the first-year computer science students. They used the Naïve Bayes classifier to build their prediction model. By using Naïve Bayes Classifier, it would predict the students' performance level as a categorical value; Poor, Average, and Good. The authors showed that the students' family income, gender, and hometown parameter were the important factors for students' academic performance.

Anuradha and Velmurugan [24] built a new method for predicting the students' final exam results. They applied statistical classification techniques. The experiment shows classifier Naïve Bayes performs better than the other classifiers. The author noted that data mining would improve student status and success at the educational institution.

Kaur et al. [25] used a classification algorithm to classify and viewed slow learners among students using predictive data mining models. From comprehensive literature reviews, variables that affect student success are identified. Both parameters were used as input variables. Five classification algorithms MLP, Naïve Bayes, SMO, J48, and Reptree were applied to the datasets of high school students. MLP was found to have outperformed other classifiers at 75% accuracy. The authors showed that the students who had a computer and internet at home did better during the tests.

In this article, the authors want to determine the chance of a student gets admitted to a university: case study BSMRSTU, Bangladesh. For this, they are using three different machine learning methods that are most effective than others are described. This investigation is different from all the works mentioned above because this study investigates the examinees' possibility of getting a chance in a university before the admission test and after the admission test