Performance Analysis on Student Feedback using ML

Abstract:

Performance analysis of outcome based on learning is a system which will strive for excellence at different levels and diverse dimensions in the field of student's interests. This system developed to analyse and predict the student's performance only. The proposed framework analyses the students' demographic data, study related and psychological characteristics 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. The framework succeeds to highlight the student's weak points. The realistic case study that has been conducted on 200 students proves the outstanding performance of the proposed framework in comparison with the existing ones.

Existing System:

The previous predictive models only focused on using the student's demographic data like gender, age, family status, family income and qualifications. In addition to the study related attributes including the homework and study hours as well as the previous achievements and grades. These previous works were only limited to provide the prediction of the academic success or failure, without illustrating the reasons of this prediction. Most of the previous researches have focused to gather more than 40 attributes in their data set to predict the student's academic performance. These attributes were from the same type of data category whether demographic, study related attributes or both, that lead to lack of diversity of predicting rules.

Proposed System:

The proposed framework firstly focuses on merging the demographic and study related attributes with the educational psychology fields, by adding the student's psychological characteristics to the previously used data set (i.e., the students' demographic data and study related ones). After surveying the previously used factors for predicting the student's academic performance, we picked the most relevant attributes based on their rationale and correlation with the academic performance.

The advent of information technology in various fields has led the large volumes of data storage in various formats like records, files, documents, images, sound, videos, scientific data and many new data formats. The data collected from different applications require proper method of extracting knowledge from large repositories for better decision making. Knowledge discovery in databases (KDD), often called data mining, aims at the discovery of useful information from large collections of data. The main functions of data mining are applying various methods and algorithms in order to discover and extract patterns of stored data. Data mining and knowledge discovery applications have got a rich focus due to its significance in decision making and it has become an essential component in various organizations. Data

mining techniques have been introduced into new fields of Statistics, Databases, Machine Learning, Pattern Reorganization, Artificial Intelligence and Computation capabilities etc.

Software Tools:

1. VS Code
2. Jupyter Notebook
3. Colab
4. Scikit-Learn
5. Matplotlib
6. Python3
7. Pandas
8. NumPy

Hardware Tools:

1. Laptop
2. Operating System: Windows 11
3. RAM: 8GB
4. ROM: 4GB
5. Fast Internet Connectivity