Student Performance Prediction

Abstract

Predicting student academic performance is an important application of machine learning in education. This project aims to develop a model that can predict students' final grades based on factors such as attendance, study hours, previous grades, and socioeconomic background.

The dataset consists of student records, including exam scores, homework submissions, and participation levels. Machine learning algorithms such as Support Vector Machines (SVM), Random Forest, and Neural Networks are used for prediction. The preprocessing stage includes handling missing data, feature scaling, and encoding categorical variables such as parental education level.

Evaluation metrics such as accuracy, precision, recall, and F1-score are used to measure the model's effectiveness. This predictive system will help educators identify at-risk students early and provide personalized interventions. Future improvements could include incorporating sentiment analysis from student feedback and using deep learning techniques for enhanced accuracy.