Identifying Data Mining Techniques and Tools for Improving Student's Academic Performance

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Abstract

Data mining is the evolving process of identifying and extracting the hidden information from a data warehouse. Data Mining is widely used in business, medical, engineering and educational areas for analyzing existing data, identifying measures for improvement and also forecasting the future prospects. This study covers the application of data mining in education for predicting the academic performance of the students. Educational Data Mining(EDM) plays a dominant role in the data mining era. There is an essential need to identify effective algorithms for predicting the student's performance. With the help of EDM we can predict the academic performance of the students using different data mining techniques like Decision tree, Random Forest, Gradient Boosted tree, Naive Bayesian and Multilayer Perceptron. Each technique has its own advantages and disadvantages. This paper discusses about the different types of EDM techniques and what are the different tools used for implementation. The use of effective EDM techniques and tools would enable educators to improve the process by identifying any existing lacunae. EDM helps in developing a warning system for identifying weak student's prior and give adequate training to improve the academic performance of the students.

Keywords:
Student Performance Prediction, Educational Data Mining, Data Mining Technique, Academic Performance, Decision tree, Random Forest, Gradient Boosted tree, WEKA.