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A Review on Machine Learning Techniques used for Students' Performance Prediction

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Abstract

Research on predictive models has been widely used in higher educational institutions, especially in predicting students' performance. Results that were obtained through predictive models can help lecturers in ensuring students' achievement so that students' failure rates can be reduced. Higher failure rates have a negative impact not only on students but also on institutions and shareholders. In this paper, thirty journals and case studies have been reviewed where the most important part highlighted is machine learning techniques that have been used in developing predictive models to predict students' performance from the previous six years. Although the main objective of this paper is to provide an overview of machine learning techniques in predicting students' performance, it is also important for researchers to identify the target variable used in those techniques as these two objectives are related to each other. In conclusion, a student's final grade is the most widely used as a target variable, and the Decision Tree method is the most frequently used machine learning technique by the authors in the previous studies.

Keywords: Higher education; Machine learning; Predictive models; Students' performance.