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Predicting Educational Performance of Students using Machine Learning

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Abstract: *The prediction of student performance through automated means is an essential task, particularly given the extensive data present in academic databases. This challenge is being tackled by the field of educational data mining , which focuses on developing techniques for extracting valuable insights from educational data. These techniques aim to enhance the understanding of students and their learning contexts. Educational institutions often seek to ascertain the number of students likely to pass or fail in order to make necessary preparations. Previous research has indicated that many scholars concentrate on selecting suitable algorithms for classification, often overlooking the challenges encountered during the data mining process, such as high dimensionality, class imbalance, and classification errors. These issues can significantly diminish the model's accuracy. While several established classification algorithms have been utilized in this area, this paper introduces a student performance prediction model that employs a supervised learning decision tree classifier. Furthermore, an ensemble method is incorporated to enhance the classifier's performance, as ensemble approaches are specifically designed to address classification and prediction challenges.*

Keywords: Educational Data Mining, Predicting Student Performance, Decision Tree

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