

Evaluation of Machine Learning Algorithms and Ensemble Methods for Prediction of Students' Graduation

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Abstract : Graduation rates at six-year colleges are becoming a more essential indicator for incoming fresh students and for university rankings. Predicting student graduation is extremely beneficial to schools and has a huge potential for targeted intervention. It is important for educational institutions since it enables the development of strategic plans that will assist or improve students' performance in achieving their degrees on time (GOT). A first step and a helping hand in extracting useful information from these data and gaining insights into the prediction of students' progress and performance is offered by machine learning techniques. Data analysis and visualization techniques are applied to understand and interpret the data. The data used for the analysis contains students who have graduated in 6 years in the academic year 2017-2018 for science majors. This analysis can be used to predict the graduation of students in the next academic year. Different Predictive modelings such as logistic regression, decision trees, support vector machines, Random Forest, Naïve Bayes, and KNeighborsClassifier are applied to predict whether a student will graduate. These classifiers were evaluated with k folds of 5. The performance of these classifiers was compared based on accuracy measurement. The results indicated that Ensemble Classifier achieves better accuracy, about 91.12%. This GOT prediction model would hopefully be useful to university administration and academics in developing measures for assisting and boosting students' academic performance and ensuring they graduate on time.

Keywords : prediction, decision trees, machine learning, support vector machine, ensemble model, student graduation, GOT graduate on time

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