

Machine Learning Approach to Predict University Students' Not Completing Degree on the First Attempt based on Influential Factors

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There are various types of factors that influence the university students' not completing the degree on the first attempt such as financial, health or stress, academic/institutional, social and personal, economical, and disposition factors. This study's goal is to analyze the university students' decisions to complete the degree on the first attempt or not and to introduce a model-based approach to predict the university students' not completing the degree on the first attempt in terms of the identified most influential factors, which will be useful in the implementation of more effective individual, group-specific or institutional prevention measures. Machine learning is used for the analysis since it has shown tremendous potential for the interpretation of complex data sets. Five different models have been trained and the trained models provided a comparatively better performance in predicting the University students' not completing the degree on the first attempt in terms of influencing factors since all the built models gave more than 84 % accuracy. Among them, the Naïve Bayes classifier was identified as the model with the highest of 92.75 %. An Ensemble approach was introduced and this model demonstrated an accuracy of 93.65 % which provided the best performance in predicting the University students' completion of the degree on the first attempt in terms of influencing factors considered. Further correlation coefficients which are between $r = 0.03$ and $r = 0.7$ and β - coefficients which are between $r = 0.03$ and $r = 0.72$ were calculated among all the variables to determine the contribution of each variable towards the University students' not completion of the degree on the first attempt.

Keywords: *Not-Completing Degree, University Students, Machine Learning, Correlation Coefficients*