

Optimizing Educational Outcomes: A Deep Neural Network Approach to Predicting Student Success

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Abstract: *In recent years, Deep Learning and Educational Data Mining have attracted significant attention. This paper presents a Deep Neural Network (DNN) model aimed at predicting students' academic performance from an early stage. This prediction enables educational institutions to identify students at risk of failing, allowing them to implement targeted interventions. The proposed DNN model was evaluated against existing machine learning algorithms using a subset of the OULAD dataset. Additionally, the impact of various activation functions on the model's performance was thoroughly analyzed to refine the results. The results show that the DNN model achieved an accuracy of 88.00% with the ReLU activation function, surpassing the performance of other machine learning approaches.*

Keywords: *Deep Learning*