

Exploring Student Dropout Prediction: Factors, Current Methods, Limitations, and Future Directions

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Abstract

Student dropout is a critical issue with various consequences for student success, universities, and society at large. Understanding the factors that contribute to student dropout and identifying possible prediction techniques can help universities and policymakers to develop effective interventions based on scientific findings in order to reduce dropout rates. Despite efforts to address this challenge, there is a lack of research that discusses the various dropout factors and advanced prediction models in the field. Therefore, this paper thoroughly explores the factors influencing student dropout, provides a comparative analysis of the application of machine learning and deep learning in predicting dropout, and examines the emerging field of eXplainable Artificial Intelligence (XAI) in the context of student dropout prediction. The study concludes by suggesting additional dropout factors to consider and highlighting limitations in current research, including limited scope, focus on traditional academic factors, outdated datasets, and a lack of utilization of XAI. In addition, the study provides suggestions for future research directions, such as incorporating advanced technologies, expanding the scope of the sample population to a national level, including the perspectives of dropout students, and translating research findings into actionable solutions.

Keywords: Student Dropout, Machine Learning, Deep Learning, Explainable AI