

Some data mining algorithms and applications in education

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Abstract: This study explores the application of data mining algorithms to enhance educational processes and outcomes. Focusing on classification, clustering, and association rule techniques, the research analyzes student performance data, learning behaviors, and institutional records to identify predictive patterns and actionable insights. Key algorithms, including decision trees, k-means clustering, and Apriori, are evaluated for their effectiveness in early detection of at-risk students, personalized learning path recommendations, and curriculum optimization. Experimental results demonstrate that these methods can significantly improve academic forecasting accuracy and support data-driven decision-making in educational management. The findings highlight the potential of educational data mining to transform traditional teaching models, offering a scalable framework for adaptive learning environments. This work contributes to the growing field of learning analytics, providing practical tools for educators and administrators to enhance student success and institutional efficiency.

Keywords: Data mining, Education, Algorithms, Applications