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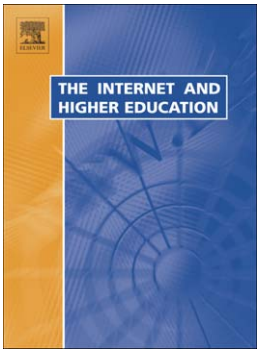

Centralized student performance prediction in large courses based on low-cost variables in an institutional context

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Centralized student performance prediction in large courses based on low cost variables in an institutional context

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Abstract

An increasing number of higher education institutions have deployed learning management systems (LMSs) to support learning and teaching processes. Accordingly, data-driven research has been conducted to understand the impact of student participation within these systems on student outcomes. However, most research has focused on small samples or has used variables that are expensive to measure, which limits its generalizability. This article presents a prediction model based on low-cost variables and a sophisticated algorithm, to predict early which students attending large classes (with more than 50 enrollments) who are at risk of failing a course. Therefore, it will enable instructors and educational managers to carry out early interventions to prevent course failure. The results overperform other approaches in terms of accuracy, cost, and generalization. Moreover, LMS usage information improved the model by up to 12.28% in terms of root-mean-square error, enabling better early identification of at-risk students.

Keywords: Learning Management Systems, Prediction of academic performance, Educational Data Mining, Postsecondary Education

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