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Developing Early Intervention Tools: Predicting Academic Dishonesty in University Students Using Psychological Traits and Machine Learning

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Abstract : This study focuses on predicting university students' cheating tendencies using psychological traits and machine learning techniques. Academic dishonesty is a significant issue that compromises the integrity and fairness of educational institutions. While much research has been dedicated to detecting cheating behaviors after they have occurred, there is limited work on predicting such tendencies before they manifest. The aim of this research is to develop a model that can identify students who are at higher risk of engaging in academic misconduct, allowing for earlier interventions to prevent such behavior. Psychological factors are known to influence students' likelihood of cheating. Research shows that traits such as test anxiety, moral reasoning, self-efficacy, and achievement motivation are strongly linked to academic dishonesty. High levels of anxiety may lead students to cheat as a way to cope with pressure. Those with lower self-efficacy are less confident in their academic abilities, which can push them toward dishonest behaviors to secure better outcomes. Students with weaker moral judgment may also justify cheating more easily, believing it to be less wrong under certain conditions. Achievement motivation also plays a role, as students driven primarily by external rewards, such as grades, are more likely to cheat compared to those motivated by intrinsic learning goals. In this study, data on students' psychological traits is collected through validated assessments, including scales for anxiety, moral reasoning, self-efficacy, and motivation. Additional data on academic performance, attendance, and engagement in class are also gathered to create a more comprehensive profile. Using machine learning algorithms such as Random Forest, Support Vector Machines (SVM), and Long Short-Term Memory (LSTM) networks, the research builds models that can predict students' cheating tendencies. These models are trained and evaluated using metrics like accuracy, precision, recall, and F1 scores to ensure they provide reliable predictions. The findings demonstrate that combining psychological traits with machine learning provides a powerful method for identifying students at risk of cheating. This approach allows for early detection and intervention, enabling educational institutions to take proactive steps in promoting academic integrity. The predictive model can be used to inform targeted interventions, such as counseling for students with high test anxiety or workshops aimed at strengthening moral reasoning. By addressing the underlying factors that contribute to cheating behavior, educational institutions can reduce the occurrence of academic dishonesty and foster a culture of integrity. In conclusion, this research contributes to the growing body of literature on predictive analytics in education. It offers a approach by integrating psychological assessments with machine learning to predict cheating tendencies. This method has the potential to significantly improve how academic institutions address academic dishonesty, shifting the focus from punishment after the fact to prevention before it occurs. By identifying high-risk students and providing them with the necessary support, educators can help maintain the fairness and integrity of the academic environment.

Keywords : academic dishonesty, cheating prediction, intervention strategies, machine learning, psychological traits, academic integrity
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