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ANALYSING STUDENT DROPOUT THROUGH MACHINE LEARNING AND FEATURE GROUP CONTRIBUTION ANALYSIS

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Dropout of students in higher education institutions remains a persistent academic and socio-economic problem in current higher education systems. This study analyses student dropout using interpretable machine learning. Using a real-world dataset from the UCI Machine Learning Repository, a Random Forest baseline model achieves an accuracy of 0.87 and a macro F1 score of 0.85, followed by a group-wise ablation analysis. Removing academic history features reduces test accuracy and test F1 significantly by 11.71% and 16.56%, respectively, while removing socio-economic features results in smaller declines of 3.08% and 4.13%. The removal of demographic and institutional features causes comparatively negligible declines of 1.15% to 1.28% and 1.42% to 1.68%. The findings clearly highlight the relative feature group contributions.