IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 3, January 2026
Impact Factor: 7.67

Student Performances Prediction System

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Abstract: *A student performance prediction system uses Machine Learning (ML) and AI to analyse student data (grades, attendance, habits, demographics) to forecast academic success, identify at-risk students early, and enable personalized interventions for better outcomes, often leveraging models like Random Forest, SVM, or ANN to improve educational strategy and support. The system pre-processes historical student data, selects relevant features, and applies predictive models to estimate future performance. By analysing patterns and relationships within the data, the proposed system provides accurate predictions that can assist educators in making informed decisions, offering timely interventions, and personalizing learning strategies. This paper presents a student performance prediction system using machine learning algorithms to analyse academic, demographic, and behavioural data. The proposed system predicts student performance such as pass/fail status and final grades. Algorithms such as Decision Tree, Random Forest, and Logistic Regression are applied to the dataset to evaluate prediction accuracy. Experimental results show that Random Forest provides the highest accuracy among the implemented models*

Keywords: Student performance prediction, machine learning, predictive analytics, educational outcomes, personalized Learning, data-driven insights, academic success, intervention strategies

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DOI: 10.48175/568