

## **ABSTRACT**

*Distance learning (DL) provides flexibility in the learning process, but it also requires students to have high self-motivation. Low motivation can affect learning engagement and the risk of dropping out. Therefore, identifying students' motivation levels is important to support early intervention. This study aims to identify and analyze students' self-motivation levels based on activity log data from a Moodle-based Learning Management System (LMS) platform. The method used is classification using the Decision Tree algorithm with a Learning Analytics approach. Data was analyzed from two different courses involving a total of 67 students, through the stages of pre-processing, feature engineering, clustering with K-Means, and classification of motivation levels.*

*The model was evaluated using the Stratified K-Fold Cross-Validation technique with 5 folds for the Advanced Calculus course and 3 folds for the Programming Algorithms course. The evaluation results showed that the average cross-validation accuracy increased from 72.86% to 84.29% after tuning on the Advanced Calculus dataset. Meanwhile, on the Programming Algorithms dataset, the cross-validation accuracy remained stable at 86.98%, both before and after tuning. In the test data evaluation, both models achieved perfect accuracy of 100%. Additionally, the use of the SHAP method provided insights into the important features influencing predictions, such as quiz completion duration and forum activity intensity. The results of this study indicate that a data-driven analytical approach using the Decision Tree algorithm can be effectively and accurately applied to identify issues related to student self-motivation in the context of distance learning.*

**Keywords:** *self-motivation, distance learning, learning analytics, decision tree, Moodle, LMS.*