

ABSTRACT

STUDENT PERFORMANCE CLASSIFICATION USING C4.5 AND SUPPORT VECTOR MACHINE (SVM) METHODS CASE STUDY: UNDERGRADUATE PROGRAM IN INFORMATICS ENGINEERING AT ITTP

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Timely graduation is a key indicator of students' academic performance. However, in the Information Technology Program at ITTP, there has been a decline in the graduation percentage and an imbalance between the number of incoming students and graduates from 2017 to 2018. Hence, this research aims to create a model for classifying the academic performance of undergraduate students in the Computer Science Program at Telkom University Purwokerto (ITTP). Employing data mining methods with classification functions, the study follows the CRISP-DM approach with six stages: Business Understanding, Data Understanding, Data Preparation, Modeling, Evaluation, and Deployment. Two algorithms, C4.5 and Support Vector Machine (SVM), are utilized in developing the data mining model for classification. The feature selection for classifying academic performance involves two main stages. The first stage encompasses entropy calculations for each feature, measuring how well the feature can reduce uncertainty in the data. The second stage involves Information Gain calculations to evaluate the contribution of features in predicting the target class. Attributes with Information Gain above 0.5, such as Credit Hours (SKS), Grade D, Grade E, IPS 1, IPS 2, GPA, and Target Variable, are selected post-selection. Modeling using SVM shows evaluation results, including a testing set classification accuracy of 0.8644, Precision of 0.7931, and Recall of 0.9200, indicating the model's precision in predicting categories of students' academic performance.

Keywords: *Classification, C4.5, CRISP-DM, Student performance, SVM*