

## ABSTRACT

The rapid development of Artificial Intelligence (AI) has had a significant impact on the education sector. One emerging challenge is when students utilize AI to complete their assignments, making it increasingly difficult to distinguish between student-generated answers and those produced by Generative AI. This raises concerns among educators and may reduce students' academic competence. Therefore, a method capable of accurately classifying Generative AI responses versus human responses in Indonesian text is required. To date, research on the classification of Generative AI responses versus human responses remains scarce, and existing studies are typically conducted on English-language text datasets. No research has yet applied the Term Frequency-Inverse Document Frequency (TF-IDF) and Support Vector Machine (SVM) methods to classify Generative AI and human responses in Indonesian texts. This study employs the TF-IDF method for feature extraction because it is effective in representing fundamental features that robustly differentiate important weighted words without requiring significant computational resources. Additionally, it uses SVM as the classification method due to its proven robustness and flexibility in handling both linear and non-linear data. Three SVM kernels were tested: Linear, Radial Basis Function (RBF), and Polynomial. The study results indicate that classifying Generative AI and human responses in Indonesian texts using the TF-IDF and SVM methods yielded the best performance with the linear kernel, achieving an average K-Fold accuracy of 0.9153 and a test data accuracy of 0.9125. Although the RBF and polynomial kernels achieved higher average K-Fold accuracies of 0.9347 and 0.936, respectively, both experienced a decline in test data accuracy to 0.8875. Thus, the SVM model with a linear kernel was selected as the best option due to the relatively small difference in accuracy between the K-Fold average and the test data. Accuracy was chosen as the primary metric in this study because the dataset used was balanced across classes.

**Keywords:** Artificial Intelligence, Text Classification, Support Vector Machine, TF-IDF, Kernel