

ABSTRAK

Penelitian ini bertujuan untuk menganalisis dan membandingkan performa dua algoritma *machine learning*, yaitu *K-Nearest Neighbors* (KNN) dan *Naïve Bayes*, dalam mengklasifikasikan sentimen ulasan film berbahasa Inggris. Dataset yang digunakan berasal dari IMDb dengan total 50.000 ulasan, terbagi rata antara ulasan positif dan negatif. Proses penelitian diawali dengan tahap *preprocessing* berupa tokenisasi, *case folding*, *stemming*, dan *stopword removal* untuk mengolah data teks mentah. Selanjutnya, dilakukan pembobotan teks menggunakan TF-IDF (*Term Frequency-Inverse Document Frequency*) guna mengubah teks menjadi vektor numerik. Pelatihan dan pengujian dilakukan pada kedua algoritma dengan pendekatan *K-Fold Cross Validation* sebanyak 10 lipatan. Model KNN diuji menggunakan nilai K yang bervariasi (3, 5, 7, 9, 11, 13, dan 15), sedangkan model *Naïve Bayes Bernoulli* diuji dengan berbagai nilai α (0.0001, 0.001, 0.01, 0.1, 1.0, dan 10). Hasil evaluasi menunjukkan bahwa model *Naïve Bayes* dengan $\alpha=1.0$ memberikan performa terbaik dengan akurasi 0,8476, presisi 0,8487, *recall* 0,8476, dan *F1-score* 0,8475. Adapun model KNN dengan nilai $K=15$ memberikan akurasi terbaik sebesar 0,7896, presisi 0,7895, *recall* 0,7896, dan *F1-score* 0,7896. Dari hasil tersebut, disimpulkan bahwa algoritma *Naïve Bayes* lebih unggul dibandingkan KNN dalam klasifikasi sentimen teks ulasan film. Penelitian ini menyarankan penggunaan *Naïve Bayes* sebagai pendekatan yang lebih efektif untuk analisis sentimen berbasis teks.

Kata kunci : Analisis Sentimen, Ulasan Film, *K-Nearest Neighbors*, *Naïve Bayes*

ABSTRACT

This research aims to analyze and compare the performance of two machine learning algorithms, K-Nearest Neighbors (KNN) and Naïve Bayes, in classifying the sentiment of English-language film reviews. The dataset used is from IMDb, comprising a total of 50,000 reviews, equally divided between positive and negative sentiments. The research process commenced with a preprocessing stage that included tokenization, case folding, stemming, and stopword removal to process the raw text data. Subsequently, text weighting was performed using Term Frequency-Inverse Document Frequency (TF-IDF) to convert the text into numerical vectors. Both algorithms were trained and tested using a 10-fold K-Fold Cross Validation approach. The KNN model was tested with varying K values (3, 5, 7, 9, 11, 13, and 15), while the Bernoulli Naïve Bayes model was evaluated with various alpha values (0.0001, 0.001, 0.01, 0.1, 1.0, and 10). The evaluation results indicate that the Naïve Bayes model with an alpha of 1.0 yielded the best performance, achieving an accuracy of 0.8476, precision of 0.8487, recall of 0.8476, and an F1-score of 0.8475. Meanwhile, the KNN model with a K value of 15 produced its best accuracy at 0.7896, with a precision of 0.7895, recall of 0.7896, and an F1-score of 0.7896. From these results, it is concluded that the Naïve Bayes algorithm outperforms KNN in the sentiment classification of film review texts. This study suggests the use of Naïve Bayes as a more effective approach for text-based sentiment analysis.

Keywords : Sentiment Analysis, Film Reviews, K-Nearest Neighbors, Naïve Bayes