

ABSTRAK

Anggara, Reza Dwi. 2026. Penerapan Algoritma *Random Forest Classifier* pada Sistem Rekomendasi Lagu Berbasis *Content-Based Filtering*. Tugas Akhir. Program Sarjana. Program Studi Teknik Informatika. Universitas Muhammadiyah Jember.

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Banyaknya pilihan lagu pada platform lagu digital memberikan kemudahan dalam memperoleh pilihan lagu, tetapi di sisi lain dapat menyulitkan pendengar dalam menemukan lagu yang sesuai dengan minat dan kebutuhan. Banyaknya pilihan yang tersedia dapat menyebabkan *information overload*, yaitu kondisi ketika informasi yang tersedia terlalu banyak sehingga sulit menentukan informasi yang paling relevan. Oleh karena itu, diperlukan sistem rekomendasi yang dapat membantu menemukan lagu berdasarkan karakteristik yang sesuai. Penelitian ini bertujuan menerapkan algoritma *Random Forest Classifier* pada sistem rekomendasi lagu berbasis *Content-Based Filtering*. *Random Forest Classifier* digunakan untuk mengklasifikasikan genre lagu berdasarkan sembilan fitur audio, yaitu *danceability*, *energy*, *loudness*, *speechiness*, *acousticness*, *instrumentalness*, *liveness*, *valence*, dan *tempo*. Hasil klasifikasi genre selanjutnya digunakan dalam proses *Content-Based Filtering* untuk mencari lagu yang memiliki karakteristik serupa dengan lagu yang dipilih. Hasil pengujian menunjukkan bahwa model *Random Forest Classifier* pada skenario *Genre Selection* memperoleh *accuracy* sebesar 0,66. Sistem rekomendasi menghasilkan *Precision@10* sebesar 0,9915, *Precision@30* sebesar 0,9866, dan *Precision@50* sebesar 0,9832, sedangkan *Recall@10*, *Recall@30*, dan *Recall@50* masing-masing sebesar 0,1015, 0,3030, dan 0,5033. Hasil tersebut menunjukkan bahwa penerapan *Random Forest Classifier* dan *Content-Based Filtering* dapat menghasilkan rekomendasi lagu yang relevan berdasarkan karakteristik audio.

Kata Kunci: sistem rekomendasi, *Random Forest Classifier*, *Content-Based Filtering*, *Cosine Similarity*, klasifikasi genre lagu

ABSTRACT

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The large number of song choices available on digital music platforms provides easy access to a wide variety of songs, but it can also make it difficult for listeners to find songs that match their interests and needs. The abundance of available choices can lead to information overload, a condition in which the amount of available information makes it difficult to determine the most relevant information. Therefore, a recommendation system is needed to help users find songs based on relevant characteristics. This study aims to apply the Random Forest Classifier algorithm to a song recommendation system based on Content-Based Filtering. The Random Forest Classifier is used to classify song genres based on nine audio features, namely danceability, energy, loudness, speechiness, acousticness, instrumentalness, liveness, valence, and tempo. The resulting genre classification is then used in the Content-Based Filtering process to find songs with characteristics similar to the selected song. The evaluation results show that the Random Forest Classifier model in the Genre Selection scenario achieved an accuracy of 0.66. The recommendation system achieved a Precision@10 of 0.9915, Precision@30 of 0.9866, and Precision@50 of 0.9832, while Recall@10, Recall@30, and Recall@50 were 0.1015, 0.3030, and 0.5033, respectively. These results indicate that the application of the Random Forest Classifier and Content-Based Filtering can produce relevant song recommendations based on audio characteristics.

Keywords: recommendation system, Random Forest Classifier, Content-Based Filtering, Cosine Similarity, song genre classification.