ABSTRAK

Musik telah menjadi bagian penting dalam kehidupan sehari-hari dan didukung oleh perkembangan layanan musik digital yang menyediakan jutaan koleksi lagu. Banyaknya pilihan lagu yang tersedia sering kali menyebabkan pengguna kesulitan menemukan musik yang sesuai dengan preferensinya. Oleh karena itu, diperlukan sistem rekomendasi yang mampu membantu pengguna menemukan lagu yang relevan secara lebih efektif. Penelitian ini bertujuan untuk mengimplementasikan metode *Content Based Filtering* pada sistem rekomendasi musik berdasarkan fitur audio. Sistem dibangun berbasis web dan memanfaatkan atribut audio seperti *danceability, energy, loudness, speechiness, acousticness, valence,* dan *tempo,* untuk merepresentasikan karakteristik lagu. Tingkat kemiripan antar lagu dihitung menggunakan metode *Pearson Correlation*, kemudian lagu dengan nilai kemiripan tertinggi direkomendasikan kepada pengguna. Evaluasi sistem dilakukan menggunakan metrik *Precision@K*, *Recall@K*, dan *F1-Score@K* melalui pengujian variasi nilai K. Hasil pengujian menunjukkan bahwa K = 3 menghasilkan rata-rata *Precision@3* tertinggi sebesar 0,800, sedangkan K = 10 menghasilkan rata-rata *Recall@10* tertinggi sebesar 1,000 dan *F1-Score@10* tertinggi sebesar 0,763. Hasil tersebut menunjukkan bahwa semakin besar nilai K, cakupan lagu relevan yang berhasil direkomendasikan meningkat meskipun nilai *precision* mengalami penurunan. Berdasarkan hasil evaluasi, nilai K = 10 memberikan keseimbangan terbaik antara ketepatan rekomendasi dan kemampuan sistem dalam menemukan lagu yang relevan, sehingga dipilih sebagai nilai K yang optimal. Dengan demikian, metode *Content Based Filtering* menggunakan *Pearson Correlation* mampu menghasilkan rekomendasi musik yang relevan berdasarkan karakteristik audio lagu.

Kata Kunci: *Content Based Filtering*, *Pearson Correlation*, Sistem Rekomendasi Musik, Fitur Audio, *Precision*, *Recall*, *F1-Score*.

ABSTRACT

Music has become an essential part of daily life, supported by the rapid development of digital music streaming services that provide access to millions of songs. However, the vast number of available songs often makes it difficult for users to find music that matches their preferences. Therefore, a recommendation system is needed to help users discover relevant songs more effectively. This study aims to implement the *Content-Based Filtering* method in a music recommendation system based on audio features. The system was developed as a web-based application and utilizes audio attributes, including *danceability, energy, loudness, speechiness, acousticness, valence,* and *tempo*, to represent song characteristics. The similarity between songs is calculated using the *Pearson Correlation* method, and songs with the highest similarity scores are recommended to users. The system performance was evaluated using Precision@K, Recall@K, and F1-Score@K metrics through experiments with different values of K. The experimental results show that K = 3 achieved the highest average Precision@3 of 0.800, while K = 10 achieved the highest average Recall@10 of 1.000 and F1-Score@10 of 0.763. These results indicate that increasing the value of K improves the coverage of relevant recommended songs, although the precision decreases. Based on the evaluation results, K = 10 provides the best balance between recommendation accuracy and the system's ability to retrieve relevant songs, making it the optimal value of K in this study. Therefore, the Content-Based Filtering method combined with Pearson Correlation is capable of generating relevant music recommendations based on the audio characteristics of songs.

Keywords: Content-Based Filtering, Pearson Correlation, Music Recommendation System, Audio Features, Precision, Recall, F1-Score.