

ABSTRAK

Pariwisata merupakan sektor penting dalam mendorong pertumbuhan ekonomi, termasuk di Kabupaten Tuban yang memiliki beragam destinasi wisata alam, religi, dan budaya. Namun, informasi mengenai destinasi wisata di Tuban belum terintegrasi secara digital, sehingga menyulitkan wisatawan dalam menemukan destinasi yang sesuai dengan preferensi mereka. Untuk mengatasi permasalahan tersebut, penelitian ini mengembangkan sistem rekomendasi wisata berbasis *Hybrid Filtering* yang menggabungkan *Content-Based Filtering* (CBF) dan *Item-Based Collaborative Filtering* (CF). Metode CBF menggunakan TF-IDF dan *Cosine Similarity* untuk menghitung kemiripan antara preferensi pengguna dan atribut destinasi, sedangkan CF menggunakan *Pearson Correlation* dan *Weighted Average of Deviation* untuk memprediksi rating pengguna. Sistem diimplementasikan menggunakan framework Laravel dan Flask, dengan data 100 responden, 1.750 data rating, dan 28 destinasi wisata di Kabupaten Tuban. Hasil evaluasi menunjukkan bahwa *Item-Based Collaborative Filtering* memperoleh MAE sebesar 0.3167 dan RMSE sebesar 0.4534. Sementara itu, *Content-Based Filtering* menghasilkan *Precision@5* sebesar 0.6110, *Recall@5* sebesar 0.1997, dan *F1-Score@5* sebesar 0.2752. Pada metode *Hybrid Filtering*, kombinasi terbaik diperoleh pada *threshold* 7 rating dengan bobot 60% CF dan 40% CBF, menghasilkan *Precision@5* sebesar 0.5390, *Recall@5* sebesar 0.7643, dan *F1-Score@5* sebesar 0.6322. Hasil tersebut menunjukkan bahwa pendekatan *Hybrid Filtering* mampu menghasilkan rekomendasi yang lebih seimbang serta membantu mengurangi permasalahan *cold-start* dan data *sparsity* pada sistem rekomendasi wisata Kabupaten Tuban.

Kata kunci : Sistem Rekomendasi, *Hybrid Filtering*, *Collaborative Filtering*, *Content Based*, *TF-IDF*, *Pearson Correlation*

ABSTRACT

Tourism constitutes a pivotal sector in stimulating economic growth, particularly in Tuban Regency, which encompasses a diverse array of natural, religious, and cultural attractions. Nevertheless, the absence of digitally integrated tourism information has posed considerable challenges for prospective visitors in identifying destinations aligned with their individual preferences. To address this limitation, the present study proposes a tourism recommendation system based on a Hybrid Filtering approach, integrating Content-Based Filtering (CBF) and Item-Based Collaborative Filtering (CF). The CBF component employs Term Frequency-Inverse Document Frequency (TF-IDF) and Cosine Similarity to quantify the degree of correspondence between user preferences and destination attributes, whereas the CF component applies Pearson Correlation and Weighted Average of Deviation to generate predictive user ratings. The system was developed and implemented using the Laravel and Flask frameworks, drawing upon a dataset comprising 100 respondents, 1,750 rating entries, and 28 registered tourist destinations within Tuban Regency. Experimental evaluation reveals that the Item-Based Collaborative Filtering method attains a Mean Absolute Error (MAE) of 0.3167 and a Root Mean Square Error (RMSE) of 0.4534. The Content-Based Filtering method yields a Precision@5 of 0.6110, Recall@5 of 0.1997, and F1-Score@5 of 0.2752. With respect to the Hybrid Filtering configuration, the optimal performance is achieved at a rating threshold of 7, with a weighting proportion of 60% CF and 40% CBF, producing a Precision@5 of 0.5390, Recall@5 of 0.7643, and F1-Score@5 of 0.6322. These findings substantiate that the Hybrid Filtering approach yields more balanced and comprehensive recommendations, while effectively alleviating the cold-start problem and data sparsity challenges inherent in tourism recommendation systems within the context of Tuban Regency.

Keywords: *Recommender System, Hybrid Filtering, Item-Based Collaborative Filtering, Content-Based Filtering, TF-IDF, Pearson Correlation*