

## INTISARI

### MODEL PERSONALISASI REKOMENDASI KONTEKSTUAL RENCANA PERJALANAN WISATA DENGAN METODE CASE BASED REASONING

Oleh

Edi Faizal

21/483830/SPA/00795

Ketersediaan informasi yang berlimpah dalam ekosistem digital pariwisata menghadirkan tantangan *information overload*, yang dapat mempersulit wisatawan dalam menyusun rencana perjalanan yang selaras dengan preferensi individu dan mempertimbangkan faktor-faktor kontekstual seperti kondisi cuaca, lokasi destinasi, dan waktu kunjungan. Dalam konteks ini, personalisasi rekomendasi menjadi kebutuhan penting. Model rekomendasi konvensional masih menghadapi keterbatasan dalam menanggapi dinamika konteks secara adaptif, serta rentan terhadap permasalahan *cold-start* dan rendahnya tingkat kemiripan antar kasus.

Penelitian ini mengusulkan model rekomendasi *itinerary* berbasis *Case-Based Reasoning* (CBR) yang diperkaya dengan mekanisme *autorevise* dan struktur pengetahuan melalui pendekatan *multiclustering* menggunakan algoritma DBSCAN. Model ini dirancang dengan memanfaatkan *multidataset* yang terdiri atas data historis, statistik kunjungan, ulasan media sosial, dan informasi kontekstual (seperti cuaca dan musim) untuk menghasilkan rekomendasi yang terpersonalisasi. Ketika tingkat kemiripan kasus kurang dari 0,95, model secara otomatis mengaktifkan mekanisme *autorevise* untuk menyesuaikan solusi berdasarkan enam subset fitur utama: spasial, kategorikal, atraksi, tipe destinasi, popularitas, dan segmentasi pengunjung.

Evaluasi model melalui validasi silang (476 kasus) dan pengujian kasus baru (96 kasus) menunjukkan performa akurasi yang konsisten dengan *F1-score* 92,60% (validasi silang) dan 90,29% (kasus baru), serta *mAP* 99,76% (validasi silang) dan 93,75% (kasus baru). Pada kasus baru dengan *CBR-Autorevise*, model mencapai *precision* 96,88%, *recall* 100%, *F1-score* 98,41%, *mAP* 100%, *novelty* 0,99846, *serendipity* 0,95821, meskipun dengan *trade-off diversity* 0,45833. *Latency* 22,62 ms membuktikan kelayakan implementasi *real-time*. Temuan mengonfirmasi model menghasilkan generalisasi kuat, performa stabil, dan kemampuan menangani dinamika preferensi serta kondisi lingkungan yang kompleks.

**Kata kunci:** model rekomendasi, *itinerary* wisata, personalisasi, *case-based reasoning*, *autorevise*, *multiclustering*

## ABSTRACT

### PERSONALIZED MODEL OF CONTEXTUAL RECOMMENDATIONS FOR TOURIST TRAVEL PLANNING USING THE CASE BASED REASONING METHOD

By

Edi Faizal

21/483830/SPA/00795

The abundance of information within the digital tourism ecosystem presents the challenge of information overload, which can hinder travelers in planning itineraries that align with individual preferences while accounting for contextual factors such as weather conditions, destination location, and time of visit. In this context, recommendation personalization becomes an essential need. Conventional recommendation models still face limitations in adaptively responding to contextual dynamics and are susceptible to cold-start problems and low case similarity.

This study proposes a Case-Based Reasoning (CBR)-based *itinerary* recommendation model enhanced with an autorevision mechanism and a knowledge structure developed through a multiclustering approach using the DBSCAN algorithm. The model leverages a multidataset comprising historical data, visit statistics, social media reviews, and contextual information (e.g., weather and season) to generate personalized recommendations. When the similarity level between cases falls below 0.95, the model automatically activates the autorevision mechanism to adapt the solution based on six key feature subsets: spatial, categorical, attraction, destination type, popularity, and visitor segmentation.

The model evaluation employed dual scenarios: 5-fold cross-validation (476 cases) and new case testing (96 cases). Results demonstrated consistent accuracy with F1-scores of 92.60% (cross-validation) and 90.29% (new cases), complemented by mAP values of 99.76% (cross-validation) and 93.75% (new cases). The CBR-Autorevision mechanism achieved exceptional performance in new cases, attaining precision of 96.88%, recall of 100%, F1-score of 98.41%, and mAP of 100%. Recommendation quality metrics revealed outstanding novelty (0.99846) and serendipity (0.95821), though with a diversity trade-off (0.45833). The system maintained operational efficiency with 22.62 ms latency, confirming real-time implementation viability. These collective findings substantiate that the integrated CBR-Autorevision framework with contextual data support and multi-clustering architecture produces a recommendation model exhibiting robust generalization capacity, sustained accuracy stability, effective context adaptation, and practical deployment capability.

**Keywords:** recommender system; travel *itinerary*; personalization; case-based reasoning; autorevision; multiclustering