Weekly Report 3

Date:

## Problem Statement

Existing System:

In traditional travel planning systems, users typically rely on search engines, static websites, or generic top-10 destination lists to decide where to go. These systems provide limited personalization and often fail to consider a user’s past travel behavior, preferences, or the contextual relevance of destinations (season, type, or location). Additionally, platforms like MakeMyTrip or TripAdvisor mostly sort results by popularity or reviews but don’t adapt to individual user interests. There is no intelligent matching between user profile and destination traits, making the experience generic and inefficient.

Problem Statement:

Travelers today are overwhelmed by the vast amount of information available on destinations. However, this data is not presented in a way that is tailored to each user's interests, location, seasonality, or travel history. Current systems lack the ability to learn from user interactions and do not dynamically adapt to provide smart suggestions. As a result, users either make suboptimal choices or waste excessive time researching. Furthermore, new users face a cold-start problem, as the system has no prior knowledge of their interests. There is also a lack of intelligent filtering — such as suggesting mountain destinations in summer or beach trips in winter — based on context. Our project aims to fill this gap by using AI to create a personalized travel recommendation engine.

Advantages of the Proposed System:

1. Personalization: Our system recommends destinations based on user history and preferences, making results more relevant and satisfying.  
2. Hybrid Recommendation Logic: It combines user-based filtering, content similarity, and popularity-based scoring for better accuracy.  
3. Cold Start Handling: Popularity-based recommendations ensure that new users still receive useful suggestions.  
4. Context Awareness: By incorporating features like destination type and best time to visit, the system ensures recommendations are seasonally and geographically appropriate.  
5. Interactive Visualization: Charts and recommendation cards provide an intuitive, user-friendly experience through Streamlit.  
6. Modular and Scalable: The system is designed to allow future enhancements like NLP query support, real-time weather integration, and review-based sentiment analysis.

Resolution to Existing System Limitations:

We tackled the lack of personalization by introducing collaborative filtering using cosine similarity between users. To address the problem of generic recommendations, we used content-based filtering that evaluates destinations by shared features. For cold-start users, we implemented a fallback popularity-based model. The integration of all three methods ensures that the system works reliably for both new and returning users under various contexts.

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