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Travel Iternary Planner - A Unique Generative AI Application For Tourism

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ABSTRACT :

Generative AI—especially ChatGPT—has shown great promise in tourism, particularly as an itinerary planner. A recent study compared three-day itineraries created by ChatGPT for Vienna, Plovdiv, and Spetses against those designed by tourism While ChatGPT excelled in crafting clear and accessible plans that are ideal for initial travel inspiration, it often fell short in accuracy and specificity when weighed against expert-curated itineraries. Across 11 quality criteria, findings showed that ChatGPT-based itineraries consistently included only permanent attractions such as museums and landmarks, frequently neglecting critical logistical elements like time schedules, transport routes, meal suggestions, and local insights . Another drawback stems from the AI's static dataset cutoff; although ChatGPT may appear up-to-date, it can present outdated or incomplete information (e.g., closed attractions or changed schedules), which can mislead non-expert travelers

1 . INTRODUCTION:

The modern travel industry now offers a diverse toolkit for planning trips—from social media platforms like Instagram and TripAdvisor, where travelers build itineraries based on others' experiences, to smart tourism apps that tailor recommendations in real-time . Despite this, a significant amount of effort is still required to discover relevant itineraries, understand them, and customize them to personal preferences .Enter ChatGPT**.** As a conversational generative AI, it can produce full itineraries with simple prompts . A comparative study on ChatGPT's 3-day itineraries for destinations like Vienna, Plovdiv, and Spetses found them to be cohesive and easy to read—but they lacked accuracy, specificity, and practical detail compared to those crafted by experts Evaluated across 11 quality dimensions, ChatGPT-generated plans typically list only permanent landmarks (e.g., museums, monuments) and often omit logistical essentials such as timing, transportation, dining options, and local nuances Additionally, because its knowledge cutoff is around 2021, ChatGPT may present outdated information or unintentionally give a false impression of being up-to-date .

2. LITERATURE REVIEW

2.1 The Value of a Travel Itinerary

A travel itinerary—a carefully ordered sequence of points of interest (POIs)—is crucial for maximizing a tourist's experience within limited time . Tourists construct their visit through a series of distinct experiences tied to specific contexts, making the selection and sequencing of POIs essential for satisfaction Poorly designed itineraries—characterized by overcrowded attractions, insufficient time per site, and overlooked travel time—can lead to frustration, wasted resources, and reduced overall enjoyment . Research has consistently shown that a well-structured itinerary significantly improves satisfaction, positioning tour planning as a key determinant of positive travel experiences

2.2 The Quality of a Travel Itinerary

Effective itinerary planning balances the density of POIs with practical feasibility around time and expenses High-quality itineraries not only list destinations but also include practical logistics—addresses, opening hours, travel times, duration at each stop, and costs—presented

in a clear and accessible format . Equally important is personalization: itineraries must resonate with individual preferences in theme, pace, and travel style

According to Wang & Strong's conceptual framework, itinerary quality rests on three pillars:

- **Intrinsic Quality**: Information must be accurate, current, objective, and trustworthy
- **Representational Quality**: The itinerary should be well-structured and easy to understand .
- **Contextual Quality**: The itinerary should adapt to real-time factors—like time, weather, and user preferences—and provide comprehensive details

These standards align with optimization models—such as the Tourist Trip Design Problem—that aim to design itineraries maximizing overall utility under time, budget, and preference constraints .

2.3 ChatGPT for Travel Itinerary

As a generative pre-trained transformer, ChatGPT can rapidly produce natural-language itineraries from simple prompts, including daily agendas, attraction descriptions, and rationale for visits . This automation simplifies multi-stage planning, offering a one-stop solution for drafting travel plans.However, the reliability of ChatGPT-generated itineraries varies considerably. Its knowledge is static, often ending around 2021, which may cause the inclusion of outdated information . Moreover, generative AI is prone to hallucinations—presenting inaccurate or fabricated facts—which undermines factual accuracy . While ChatGPT has shown capability in domains such as exam performance and marketing copy, its efficacy in itinerary creation is underexplored and warrants rigorous evaluation .

3.METHODOLOGY

Client Necessities & Data COLLECTION

Input gathering: Capture traveler details—destination, length, accumulate gauge, interface, budget, and travel design (solo, family, venture). Data integrator: Interface to APIs for lodgings (e.g., Agoda, Accor), flights, attractions, eateries, events, climate, and social media/travel reviews. {cite}{cite}

Intellectuals Slant MODELING

Actualize a chat-style or form-based interface to insights refine slants (interface, pace, dietary needs). Utilize prompt planning for clarity and standardized responses.

Data Planning & Incorporate Planning

Normalize and channel API and study data (evaluations, travel time, costs).Highlight planning for each POI: region, sort, rating, gotten, opening hours, client conclusion.Develop embeddings through POIBERT or BTRec to talk to POIs and client histories semantically.

GENERATIVE AI Plan Orchestrating

Center engine: Utilize an LLM (e.g., GPT-4 or Claude) or heading illustrate (e.g., BTRec) to form day-by-day plans based on slants and objectives. Optimization module: Utilize innate or formative calculations to refine motivation for coherence, travel effort, and social course of action.

BACKEND Method of reasoning & REAL-TIME Alteration

Basic solver ensures sensible time/distance between stops.Lively changes for real-time overhauls (climate, delays), publicizing alt proposition on ask.

Abdicate Time & VISUALIZATION

LLM makes story plans with setting and tips. appear scholarly people components: maps, timelines, booking joins, brought gages.

4. **PROPOSED SYSTEM :**

The proposed system aims to revolutionize travel planning by leveraging artificial intelligence (AI) to create personalized, adaptable, and efficient itineraries. Unlike conventional methods that depend on static data and manual input, this system combines real-time information with user preferences to generate dynamic, customized travel plans. Its core features include personalized itinerary creation, live data integration, cross-platform accessibility, collaborative planning support, and budget optimization. Built on a microservices architecture, the system guarantees scalability and flexibility. The primary components include a user-friendly interface, backend services, a reliable database, and an AI

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engine. The design also considers technical, economic, operational, and legal aspects to ensure feasibility and compliance with data privacy standards. Overall, this AI-driven travel itinerary planner offers an innovative and intuitive solution to enhance the travel experience for today's travelers.

5. SYSTEM ARCHITECTURE

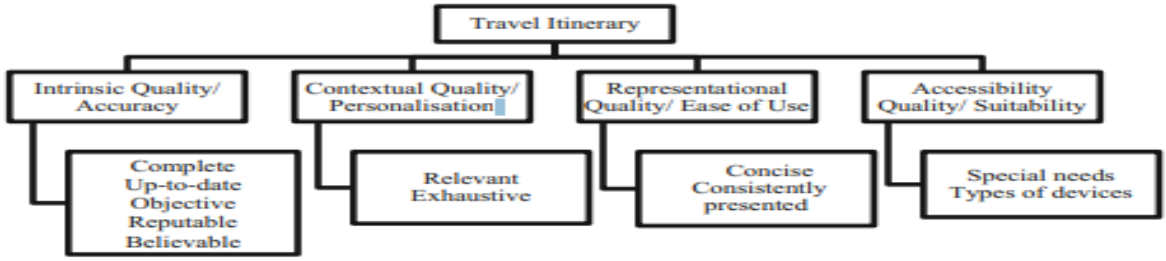
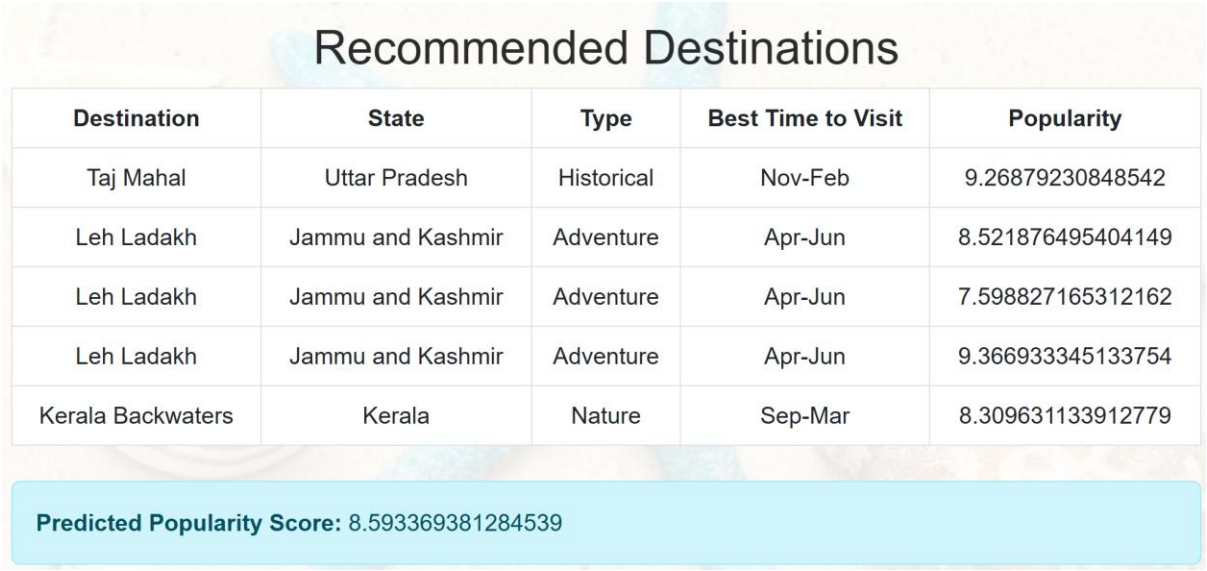


Fig. 1. Conceptual Framework for Travel Itinerary Quality

Figure 5.1 System architecture

Fig 5.1 Travel itinerary quality is evaluated across four dimensions—intrinsic (accuracy), contextual (personal relevance), representational (clarity & consistency), and accessibility (device compatibility & special needs)

6.RESULTS AND DISCUSSION



Recommended Destinations

Destination	State	Type	Best Time to Visit	Popularity
Taj Mahal	Uttar Pradesh	Historical	Nov-Feb	9.26879230848542
Leh Ladakh	Jammu and Kashmir	Adventure	Apr-Jun	8.521876495404149
Leh Ladakh	Jammu and Kashmir	Adventure	Apr-Jun	7.598827165312162
Leh Ladakh	Jammu and Kashmir	Adventure	Apr-Jun	9.366933345133754
Kerala Backwaters	Kerala	Nature	Sep-Mar	8.309631133912779

Predicted Popularity Score: 8.593369381284539

Figure 6.1 Travel Recommendations

The screenshot showcases the output of a Travel Recommendation System that suggests tourist destinations based on predicted popularity. Upon clicking the "Get Recommendations" button, a list of recommended destinations is displayed in a table format based on user inputs. At the bottom, the system also provides a Predicted Popularity Score of 8.59, likely

representing the user's overall interest match or average destination score.

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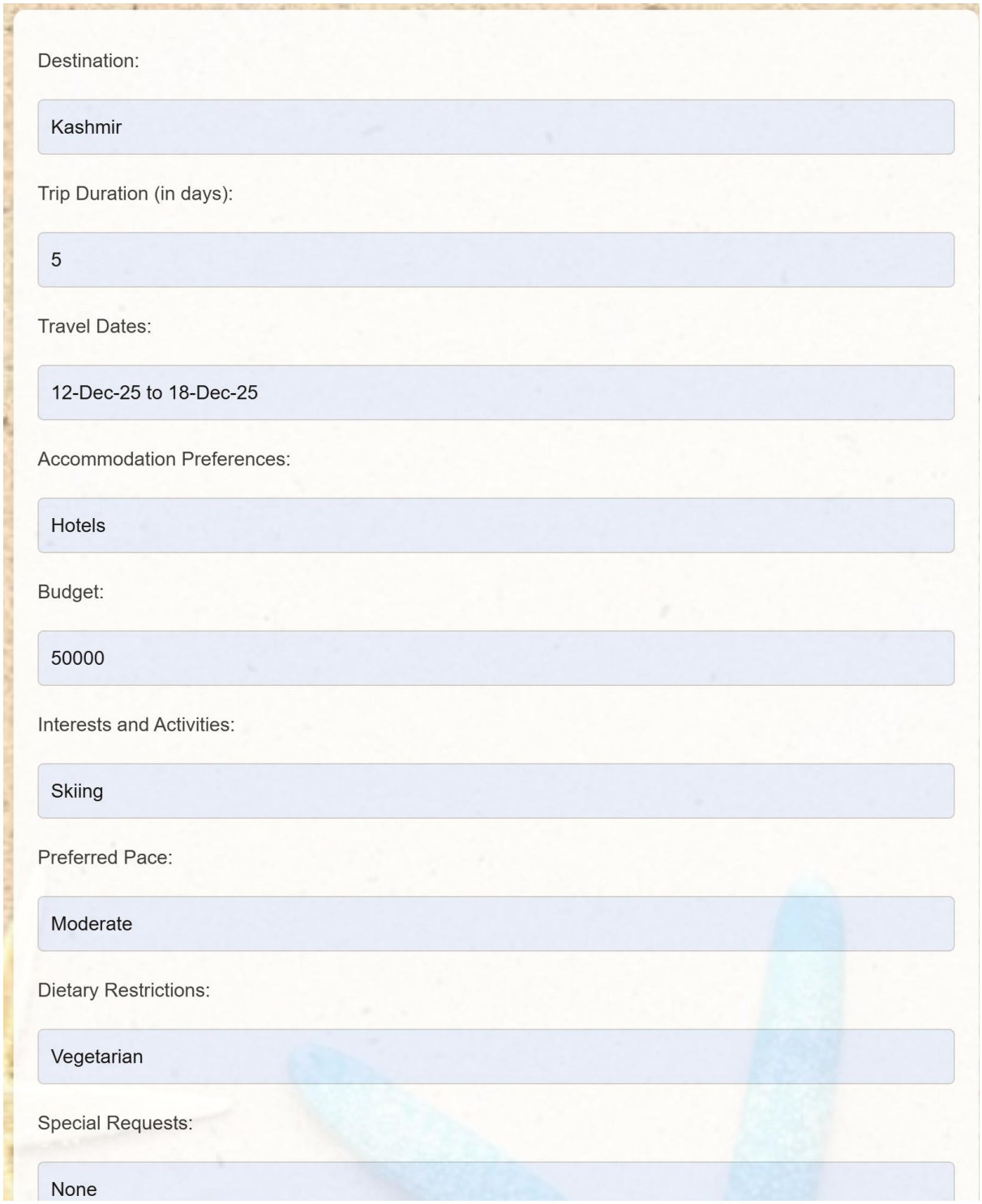

Fig 6.2 Generative AI Input

Day 1:

- Arrive in Srinagar, the capital of Jammu and Kashmir

- Check into a hotel overlooking Dal Lake

- Visit Mughal Gardens including Shalimar Bagh and Nishat Bagh

- Enjoy a shikara ride on Dal Lake

- Dinner at a local restaurant serving traditional Kashmiri cuisine

Day 2:

- Breakfast at the hotel

- Drive to Gulmarg, a popular ski resort

- Check into a hotel in Gulmarg

- Take a gondola ride to Kongdori for spectacular views of the Himalayas

- Skiing lessons at the Gulmarg Ski Resort

- Dinner at a cozy restaurant in Gulmarg

Day 3:

- Breakfast at the hotel

- Continue skiing or explore other winter activities in Gulmarg like snowboarding or snowshoeing

- Visit the Gulmarg Biosphere Reserve for a glimpse of the local flora and fauna

- Lunch at a local cafe

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- Relax at the hotel spa or enjoy a leisurely walk around Gulmarg

Day 4:

- Breakfast at the hotel

- Drive to Pahalgam, known for its scenic beauty and adventure sports

- Check into a hotel in Pahalgam

- Visit Betaab Valley and Aru Valley for breathtaking views

- Enjoy a pony ride or go trekking in the surrounding hills

- Dinner at a riverside restaurant in Pahalgam

Day 5:

- Breakfast at the hotel

- Explore the local market in Pahalgam for souvenirs

- Drive back to Srinagar

- Visit the ancient Shankaracharya Temple for panoramic views of Srinagar

- Shopping for traditional Kashmiri handicrafts at Lal Chowk

- Transfer to Srinagar Airport for departure

Tips:

- Make sure to book ski lessons and equipment rentals in advance in Gulmarg

- Dress warmly and in layers for the cold weather in Kashmir

- Try local delicacies like Rogan Josh, Yakhni, and Kashmiri Pulao for an authentic culinary experience

- Carry a valid ID proof at all times for security checkpoints in the region

- Respect local customs and traditions, especially when visiting religious sites

Fig 6.3 Generative AI Output

This Flask application leverages **OpenAI's language model** to generate personalized travel plans based on user inputs such as destination type, travel dates, preferred activities, and budget. When a user submits their preferences through a web form, the application sends the data to the OpenAI API, which responds with a well-structured, natural language itinerary. The generated travel plan may include:

- Suggested destinations and attractions
- Ideal travel dates and durations
- Daily activity breakdowns
- Travel tips and packing advice

This AI-powered system offers users a smart, interactive way to plan trips, eliminating the need for manual research while ensuring customized recommendations based on individual interests as shown above.

7. CONCLUSIONS AND FUTURE WORK.

Conclusion

Our evaluation shows that ChatGPT excels at generating relevant activity and attraction ideas, especially for well-known destinations. In these cases, it reliably avoids hallucinations when listing permanent landmarks and crafting coherent itinerary structures However, it consistently overlooks time-sensitive or non-landmark POIs such as seasonal events, restaurants, restroom stops, and other practical amenities—greatly limiting its real-world usefulness .The generated itineraries also lack essential logistical details, including specific timing, transportation planning, and cost estimates, which reduces their standalone

practicality . Moreover, a survey by SEO Travel found that 90% of ChatGPT-generated itineraries contained inaccuracies, such as recommending closed attractions or restaurants, suggesting visits outside opening hours, or presenting impossible travel routes Interestingly, ChatGPT performed better for lesser-known destinations; it sometimes produced itinerary suggestions where no expert-generated plan existed. This indicates its potential to fill content gaps in travel planning, although these AI-generated outputs still require human oversight to ensure accuracy and depth .

Future Scope:

Generative AI tools such as ChatGPT are poised to significantly reshape travel planning by increasing personalization, simplifying workflows, and making travel more accessible. Future AI systems are likely to move beyond creating fixed itineraries, offering real-time adjustments that consider travelers' specific preferences, restrictions, and evolving circumstances like weather changes or local events. This level of flexibility will allow for deeply customized travel experiences tailored to individual needs. Additionally, innovations like voice assistants and augmented reality could provide intuitive, hands-free planning and immersive interactions. Specialized AI agents focusing on distinct travel interests—whether cultural exploration, adventure, or cuisine—could deliver expert guidance within their areas. However, widespread adoption depends on overcoming challenges related to data privacy, fairness in algorithms, and the necessity of human supervision. Ensuring transparency and building trust will be crucial as AI becomes more integral to travel services. Ultimately, these advancements have the potential to make travel planning smarter, more inclusive, and better aligned with the diverse expectations of modern travelers.

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