Project Title: AI Voyage – Smart Travel Assistant

VIT

Vellore Institute of Technology

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ARTIFICIAL INTELLIGENCE PROJECT REVIEW-1

by

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ABSTRACT

Travel planning is often a **time-consuming and complex process** that requires users to search across multiple platforms for **destinations, accommodation, transportation, and daily schedules**. Most existing travel applications provide only **static recommendations based on filters and user ratings**, with **limited personalization** and minimal **intelligent decision-making support**. This **fragmented approach reduces efficiency** and negatively impacts **user experience**.

The proposed system, **AI Trip Planner**, is an **intelligent mobile application** developed using **React Native**, **Google Maps API**, and **Gemini AI** to generate **personalized and dynamic travel itineraries**. The application gathers user inputs such as **destination, travel duration, budget, and personal interests**. Using **Gemini AI**, it automatically generates a **complete travel plan** that includes **day-wise schedules, recommended places, optimal visiting times, hotel suggestions, and suitable transportation options**. Integration with **Google Maps** enables **real-time location visualization, route navigation, and distance estimation**. Users are also **redirected to official booking platforms** for flights and hotels to ensure **security and authenticity**.

The proposed system **significantly reduces manual effort** in trip planning by **automating itinerary creation** and offering **AI-driven personalization**. Unlike traditional travel systems, this application serves as a **single integrated platform for end-to-end trip management**, combining **planning, navigation, and booking assistance**. The **user interface** is designed with **responsive layouts and modern animations** to enhance **usability**.

This project highlights the **effective use of Artificial Intelligence in the tourism domain** and demonstrates how **generative AI can replace conventional rule-based travel planning systems**. **Future enhancements** include **budget prediction, collaborative trip planning, user authentication, offline map support, and AI chatbot assistance**. The system is **scalable** and can be extended for use by **tourism agencies and business travelers**.

Keywords

Artificial Intelligence, Trip Planning, Gemini AI, Google Maps API, React Native, Smart Tourism

LITERATURE SURVEY

Paper 1

Title
Personalized Travel Recommendation System Using Machine Learning
(IEEE Access, 2021)

Domain Summary (Paper 1)
This paper presents a personalized travel recommendation system that applies machine learning algorithms to analyze user preferences, historical behavior, and demographic information. By combining collaborative filtering and content-based filtering techniques, the system predicts suitable destinations and attractions, improving recommendation accuracy and enhancing user satisfaction within smart tourism environments.

Research Gap Identified (Paper 1)

1. Focuses only on recommendations, not complete itinerary generation.

2. Lacks real-time data integration such as weather and traffic.

3. Does not include chatbot-based interaction.

Paper 2

Title
Smart Travel Planning Using Artificial Intelligence Techniques
(International Journal of Computer Applications, 2020)

Domain Summary (Paper 2)
This study proposes an AI-based travel planning system that generates basic travel plans using user-provided parameters such as destination, budget, and travel duration. The system mainly uses rule-based logic and traditional machine learning models to suggest attractions and accommodations for supporting automated travel planning.

Research Gap Identified (Paper 2)

1. Uses rule-based logic instead of generative AI.

2. No personalization based on evolving user behavior.

3. No navigation or map integration.

Paper 3

Title
Chatbot-Based Tourist Assistance System
(IEEE ICACCI, 2019)

Domain Summary (Paper 3)
This paper introduces a chatbot-based tourist assistance system that employs natural language processing techniques to answer user queries related to destinations, hotels, transportation, and local attractions. The system improves accessibility of tourism information by enabling conversational interaction between users and the travel application.

Research Gap Identified (Paper 3)

1. Only provides question–answer responses.

2. Does not generate itineraries.

3. No integration with maps or booking platforms.

Paper 4

Title
Location-Aware Travel Recommendation Using Big Data Analytics
(Springer, 2021)

Domain Summary (Paper 4)
This research presents a location-aware travel recommendation system that utilizes big data analytics to analyze user movement patterns and contextual information. Based on location history and nearby points of interest, the system provides personalized attraction and restaurant recommendations to enhance user travel experiences.

Research Gap Identified (Paper 4)

1. No day-wise itinerary generation.

2. Limited personalization.

3. No chatbot support.

Paper 5

Title
AI-Based Tourist Guide Mobile Application
(Elsevier, 2022)

Domain Summary (Paper 5)
This paper describes an AI-based mobile tourist guide application that provides recommendations for tourist places, hotels, and restaurants using classification and clustering algorithms. The system focuses on offering static suggestions based on user preferences without dynamic itinerary generation.

Research Gap Identified (Paper 5)

1. No dynamic itinerary creation.

2. No real-time updates.

3. No conversational interface.

4.

Paper 6

Title
Recommender Systems for Smart Tourism
(IEEE Access, 2020)

Domain Summary (Paper 6)
This paper reviews different recommender system techniques applied in smart tourism, including collaborative filtering, content-based filtering, and hybrid recommendation approaches. The study discusses how these techniques improve personalization, tourist satisfaction, and decision-making in modern travel applications by analyzing user preferences and behavior patterns.

Research Gap Identified (Paper 6)

1. Survey-based, no system implementation.

2. No itinerary generation.

3. No chatbot integration.

Paper 7

Title
Context-Aware Travel Recommendation System
(Springer, 2019)

Domain Summary (Paper 7)
This study proposes a context-aware travel recommendation system that considers user context such as time, location, season, and weather conditions. By adapting recommendations based on contextual information, the system improves relevance and user experience in tourism services.

Research Gap Identified (Paper 7)

1. No conversational interface.

2. No automated trip planning.

3. No booking integration.

Paper 8

Title
Mobile-Based Intelligent Tourist Guide
(IEEE ICCSP, 2021)

Domain Summary (Paper 8)
This paper presents a mobile-based intelligent tourist guide that uses GPS and mapping technologies to provide location-based information about nearby tourist attractions, hotels, and restaurants. The system focuses mainly on navigation support and location awareness.

Research Gap Identified (Paper 8)

1. No AI-based personalization.

2. No itinerary generation.

3. No chatbot support.

Paper 9

Title
Hybrid Recommendation System for Tourism
(Elsevier, 2020)

Domain Summary (Paper 9)
This research introduces a hybrid tourism recommendation system that combines collaborative filtering and content-based filtering to overcome limitations of single-method approaches. The system improves recommendation accuracy by analyzing both user preferences and destination features.

Research Gap Identified (Paper 9)

1. Only recommendation-focused.

2. No complete trip planning.

3. No real-time data usage.

Paper 10

Title
Smart Travel Assistant Using NLP
(IEEE, 2022)

Domain Summary (Paper 10)
This paper describes an NLP-based smart travel assistant that allows users to interact with the system using natural language. The assistant provides information related to destinations, hotels, and attractions through conversational queries.

Research Gap Identified (Paper 10)

1. No generative AI usage.

2. No itinerary creation.

3. No map integration.

Paper 11

Title
Tourism Recommendation Using Deep Learning
(IEEE Access, 2021)

Domain Summary (Paper 11)
This study explores the application of deep learning techniques to predict user interests in tourism. Neural network models learn complex patterns from historical user data to generate personalized destination recommendations.

Research Gap Identified (Paper 11)

1. High computational cost.

2. No real-time context usage.

3. No chatbot.

Paper 12

Title
Cloud-Based Smart Tourism System
(Springer, 2022)

Domain Summary (Paper 12)
This paper proposes a cloud-based smart tourism system that manages large-scale tourism data and supports service delivery using cloud infrastructure. The system enables scalable storage and processing of tourism information.

Research Gap Identified (Paper 12)

1. No AI itinerary generation.

2. No chatbot interface.

3. Limited personalization.

Paper 13

Title
Personal Travel Assistant Using Mobile Computing
(IEEE, 2019)

Domain Summary (Paper 13)
This paper presents a personal travel assistant developed for mobile platforms that suggests tourist places and hotels based on user inputs. The system focuses on providing basic assistance for travelers.

Research Gap Identified (Paper 13)

1. Static recommendations.

2. No navigation features.

3. No intelligent planning.

Paper 14

Title
AI-Driven Smart City Tourism Platform
(Elsevier, 2023)

Domain Summary (Paper 14)
This research proposes an AI-driven platform for delivering tourism services within smart cities. The system integrates urban data sources to support tourist information and recommendations.

Research Gap Identified (Paper 14)

1. City-centric rather than user-centric.

2. No personalized itineraries and ChatBot.

Paper 15

Title
Travel Recommendation Using Social Media Data
(IEEE, 2020)

Domain Summary (Paper 15)
This paper explores the use of social media data to identify trending destinations and tourist preferences. Machine learning models analyze posts and reviews to generate recommendations.

Research Gap Identified (Paper 15)

1. Privacy concerns.

2. No trip planning.

3. No real-time integration.

Paper 16

Title
Intelligent Transportation Recommendation for Tourists
(Springer, 2021)

Domain Summary (Paper 16)
This study proposes an intelligent system that recommends transportation options for tourists based on destination and travel context. The system focuses on improving mobility.

Research Gap Identified (Paper 16)

1. Transport-only focus.

2. No complete itinerary planning.

3. No chatbot.

Paper 17

Title
Chatbot for Smart Tourism
(IEEE, 2021)

Domain Summary (Paper 17)
This paper introduces a chatbot designed for smart tourism applications that answers user queries related to travel information and attractions using NLP techniques.

Research Gap Identified (Paper 17)

1. No personalization.

2. No itinerary generation.

3. No map support.

Paper 18

Title
AI-Based Hotel Recommendation System
(Elsevier, 2022)

Domain Summary (Paper 18)
This paper presents an AI-based system that recommends hotels using machine learning algorithms based on user preferences and past bookings.

Research Gap Identified (Paper 18)

1. Hotel-only focus.

2. No trip planning.

3. No chatbot.

Paper 19

Title
Smart Travel Planning Using Big Data
(Springer, 2021)

Domain Summary (Paper 19)
This study explores the use of big data analytics to support travel planning by analyzing large tourism datasets.

Research Gap Identified (Paper 19)

1. Complex infrastructure.

2. No chatbot.

3. No generative AI.

Paper 20

Title
Generative AI for Personalized Travel Planning
(IEEE, 2024)

Domain Summary (Paper 20)
This paper investigates the use of generative AI models for creating personalized travel itineraries based on user preferences and constraints.

Research Gap Identified (Paper 20)

1. No mobile implementation.

2. No maps integration.

3. No booking redirection.

PROJECT DESCRIPTION

AI **AI Voyage – Smart Travel Assistant** is an intelligent application that helps users plan and manage trips easily. The system collects user inputs such as **destination, budget, number of days, interests, and transport preference**, and uses AI techniques to generate a **personalized travel plan**.

The application includes a **chatbot interface** that allows users to interact using natural language queries such as trip suggestions and hotel searches. Based on user input and learned patterns, the system provides **relevant recommendations**.

Key Features:

- Personalized recommendations
- Automatic itinerary generation
- Hotel and transport suggestions
- Real-time alerts
- Chatbot interaction

The system consists of a **user interface, AI module, database, and external APIs**. The project aims to **reduce planning effort** and provide a **smart, seamless travel experience**.