

IT4010 – Research Project - 2024

Topic Assessment Form

Project ID :

R25-006

1. Topic (12 words max)

AI-Driven Smart Tourism Platform for Personalized, Safe, and Sustainable Travel Planning

2. Research group the project belongs to

CEAI - Centre of Excellence in AI

3. Specialization of the project belongs to

Software Engineering (SE)

4. If a continuation of a previous project:

| | |
|------------|-----|
| Project ID | N/A |
| Year | N/A |

5. Brief description of the research problem including references (200 – 500 words max) – references not included in word count.

The tourism industry is currently grappling with significant challenges in meeting the modern traveler's demands for personalization, adaptability, and sustainability. Existing platforms like Google Maps and TripAdvisor often provide generic recommendations and fixed itineraries, which leaves important gaps in personalization and safety. These services do not adjust to users' emotions and preferences, and they lack proactive safety features, such as risk detection, alternative suggestions, and emergency guidance. Furthermore, the limited support for local guides and businesses hampers efforts to promote sustainable tourism. Budgeting tools are also lacking, as they do not dynamically align with user preferences or integrate smoothly into the planning process.

This research introduces a smart, AI-driven travel platform designed to fill these gaps. The platform features an AI-Powered Personalized Recommendation System that adjusts activity suggestions in real-time based on user preferences. The Itinerary Planner optimizes travel schedules, incorporates. To streamline cost management, the Budget and Expense Planner forecasts expenses across different budget tiers and updates dynamically as users adjust their plans. These features create a cohesive and adaptable travel planning experience. Collaborative Travel Companion Platform with Intelligent Group Matching and Event-Based Planning match users with similar preferences, recommend trip plans created by other users, and analyze feedback to improve future group suggestions.

To prioritize safety, the platform includes a Real-Time Safety Assistant that tracks user location and analyzes real-time data, such as weather, traffic, and social media, to identify potential risks and send alerts. This feature also anticipates possible scams and provides actionable instructions, even in areas with limited connectivity. By merging personalization, safety, budgeting, and sustainability, this platform addresses the current shortcomings in travel planning, enhancing user satisfaction while promoting sustainable tourism and community support.

References:

1. [Conceptual Integration of AI for Enhanced Travel Experience | IEEE Conference Publication | IEEE Xplore](#)
2. [Top AI Travel App Ideas for 2025 to Scale Your Travel Business. – kodytechnolab.com](#)
3. [How AI And A Strong Need For Sustainability Is Affecting The Travel Industry's Evolution: A Discussion With Jason Fong - Forbes](#)

6. Brief description of the nature of the solution including a conceptual diagram (250 words max)

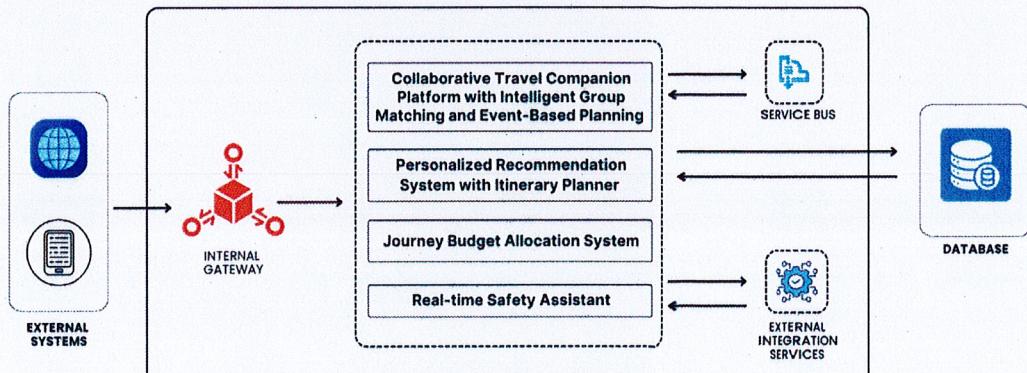
The main objective of the project is to develop a dynamic and intelligent tourism platform that enhances the travel experience by offering personalized recommendations, optimized itinerary planning, and real-time safety features. By leveraging AI, the platform will provide tailored travel suggestions based on individual preferences, such as hiking, beaches, and historic sites. It will allow users to generate customized travel plans by matching their preferences with relevant locations, optimizing itineraries, and suggesting flexible alternatives. Users will also be able to refine their plans dynamically.

Additionally, the platform will feature a Collaborative Travel Companion Platform with Intelligent Group Matching and Event-Based Planning, enabling travelers to connect with others who share similar interests and plan events collaboratively. This will enhance the social aspect of travel and provide a more engaging experience.

A Journey Budget Allocation System will be included to help users manage their travel costs effectively. The system will provide cost prediction and dynamic adjustment features, calculating estimated expenses for transport, activities, and accommodation. Three budget tiers (Basic, Moderate, Premium) will offer recommendations tailored to each budget, and the system will update costs dynamically as users adjust their itineraries.

The platform will also ensure traveler safety through a Real-Time Safety Assistant. This feature will provide regionally specific safety and travel information based on the user's location, including real-time monitoring of data sources such as social media and weather to detect potential risks like protests, crime, or health hazards. Geo-fenced safety alerts will notify users of nearby essential services like hospitals or police stations, ensuring a secure travel experience.

By integrating these features, the platform aims to offer a more personalized, efficient, and secure travel experience, empowering travelers to plan and enjoy their journeys with greater ease and safety.



7. Brief description of specialized domain expertise, knowledge, and data requirements (300 words max)

The project requires expertise in several key domains, requires a deep understanding of artificial intelligence (AI) and machine learning (ML) to develop sophisticated recommendation systems that can analyze user preferences, and behaviors. Natural language processing (NLP) plays a crucial role in interpreting user feedback and gathering real-time data from social media and news for safety alerts. Furthermore, familiarity with geolocation technologies, especially the Google Maps API, is vital for crafting optimized itineraries with precise routes and schedules.

The platform depends on a diverse range of datasets to operate effectively. User data, which includes preferences, and past behaviors, is key to delivering personalized recommendations. Travel data, encompassing activity details (tags, costs, reviews, availability) and local guide profiles, ensures that the itinerary planner resonates with user interests. Real-time data sources such as weather updates, traffic conditions, and news are essential for monitoring risks and safeguarding users during their travels. Access to global travel databases and collaborations with local tourism boards can significantly enhance the data repository.

Finally, having expertise in financial modeling is critical for developing a Budget and Expense Planner that forecasts costs across different budget tiers and adjusts dynamically as users change their plans. Prioritizing data privacy and security is crucial, given that the platform handles sensitive user information. By integrating AI-driven insights, specialized knowledge, and extensive datasets, the platform effectively addresses the personalization, adaptability, and sustainability challenges present in current travel planning solutions.

8. Objectives and Novelty

Main Objective

The main objective of the project is to develop a dynamic and intelligent tourism platform that enhances the travel experience by offering personalized recommendations and optimized itinerary planning. The platform will leverage AI to tailor travel suggestions based on user preferences and provide real-time safety features. Additionally, it will include a Collaborative Travel Companion Platform for group matching and event-based planning, a Journey Budget Allocation System for cost management, and a Real-Time Safety Assistant for ensuring traveler safety. This will empower users to plan and experience their journeys in a more personalized, efficient, and secure manner.

| Member Name | Sub Objective | Tasks | Novelty |
|--------------|--|--|---|
| Srikanthan.S | Collaborative Travel Companion Platform with Intelligent Group Matching and Event-Based Planning | <p>Match users with travel groups based on shared preferences, such as travel interests, budget, and travel style. Provide top group recommendations to users.</p> <p>Allow users to join these groups, create new plans, and communicate with others to organize their trips. Enable users to share their travel experiences within these groups to foster community interaction.</p> | <p>This component focuses exclusively on dynamic group matching and real-time collaboration,</p> <p>The platform dynamically recommends trip plans created by other users with similar preferences.</p> <p>Users can collaborate in real-time to finalize activities, transportation, and cost-sharing, which adds a social and interactive layer to travel planning.</p> |

Topic Assessment Form

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| | | <p>Suggest trip plans created by other users with similar preferences and allow collaboration. Enable real-time group chats for participants to coordinate activities, transportation, and cost-sharing.</p> <p>Gather and analyze user feedback on group trips including ratings and reviews to identify satisfaction and areas for future group recommendations and enhance the user experience.</p> | <p>Sentiment analysis on trip feedback improves the quality of group matching and recommendations, ensuring user satisfaction and platform growth.</p> |
| Senevirathne.S.D.C.D | Personalized Recommendation system with Itinerary Planner | <p>Gather user activity preferences (e.g., hiking, beaches, historic) through an interactive form and extract relevant keywords.</p> <p>Develop a hybrid recommendation system using collaborative filtering and content-based techniques to suggest places based on preferences.</p> <p>Generate 2–3 optimized travel plans based on user-selected</p> | <p>Combine collaborative filtering with content-based methods, leveraging NLP-driven keyword extraction to enhance recommendation accuracy.</p> <p>Optimize day-wise travel plans using user activity preferences and alternative activity suggestions.</p> <p>Introduce an interactive feedback-driven system to</p> |

Topic Assessment Form

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| | | places, with alternative activities for flexibility. | iteratively customize plans based on user preferences. |
| Thuwakaran. R | Travel Budget Allocation System | <p>Develop real-time cost prediction and adjustment features by retrieving details from the Prepared Plan to ensure accurate budgeting as itineraries are customized.</p> <p>Offer tiered budget options—Basic, Moderate, and Premium—with tailored accommodations, travel, activities, and pricing.</p> <p>Enable dynamic package updates, providing multiple options for accommodations, travel, and activities based on real-time availability and user edits, while offering tailored suggestions aligned with their budget preferences.</p> | <p>Integrate dynamic package updates with itinerary changes to help users manage costs efficiently.</p> <p>Offer comprehensive travel packages with options for accommodations, transportation, activities, and ticketing, ensuring flexibility.</p> <p>Integrate safety-driven recommendations, customer reviews, and highly recommended matters to ensure user comfort, secure, and cost-effective journeys without disappointment.</p> |
| Kumara L. L. M. N | Real-Time Safety Assistant and tourism related trends and opportunities analytics. | <p>Providing regionally specific safety and travel information based on user location.</p> <p>Monitors real-time data sources (e.g., social media, weather) to</p> | <p>Predicts risks based on patterns and trends, enabling early warnings.</p> <p>Combines weather, traffic, news, and social media data</p> |

IT4010 – Research Project - 2024

Topic Assessment Form

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| | | <p>detect risks like protests, crime, environmental and health, civil unrest etc.</p> <p>Sends geo-fenced safety focused alerts (e.g., nearest hospital, police station).</p> <p>Identification of any potential scamming threat.</p> <p>Suggest opportunities for growth based on data.</p> | <p>for a 360-degree view of potential threats.</p> <p>Scam prevention with early identification and instructions with multi-model AI.</p> <p>Social media data analysis for early trends detection for tourism opportunities.</p> |
|--|--|--|---|

9. Supervisor details

| | Title | First Name | Last Name | Signature |
|--|-------|------------|------------|-----------------|
| Supervisor | Ms. | Thilini | Jayalath | Thilini |
| Co-Supervisor | Ms | Karthiga | Rajendran. | (for) Rajendran |
| External Supervisor | | | | |
| Summary of external supervisor's (if any) experience and expertise | | | | |

This part is to be filled by the Topic Screening Staff members.

- a) Does the chosen research topic possess a comprehensive scope suitable for a final-year project?

| | | | |
|-----|-------------------------------------|----|--------------------------|
| Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> |
|-----|-------------------------------------|----|--------------------------|

- b) Does the proposed topic exhibit novelty?

| | | | |
|-----|-------------------------------------|----|--------------------------|
| Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> |
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- c) Do you believe they have the capability to successfully execute the proposed project?

| | | | |
|-----|-------------------------------------|----|--------------------------|
| Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> |
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- d) Do the proposed sub-objectives reflect the students' areas of specialization?

| | | | |
|-----|-------------------------------------|----|--------------------------|
| Yes | <input checked="" type="checkbox"/> | No | <input type="checkbox"/> |
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- e) Supervisor's Evaluation and Recommendation for the Research topic:

Recommended

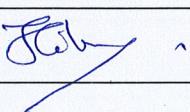
Acceptable: Mark>Select as necessary

| | |
|--|-------------------------------------|
| Topic Assessment Accepted | <input checked="" type="checkbox"/> |
| Topic Assessment Accepted with minor changes* | <input type="checkbox"/> |
| Topic Assessment to be Resubmitted with major changes* | <input type="checkbox"/> |
| Topic Assessment Rejected. Topic must be changed | <input type="checkbox"/> |

* Detailed comments given below

Comments

The given changes are addressed.

| Staff Member's Name | Signature |
|---------------------|---|
| Thilini Jayalath |  |

***Important:**

1. According to the comments given by the evaluator, make the necessary modifications and get the approval by the **Evaluator**.
2. If the project topic is rejected, identify a new topic, and request the RP Team for a new topic assessment.