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IT4010 – Research Project - 2024

Topic Assessment Form

Project ID: 24-25J-289

1. Topic (12 words max)

Travel Discovery - Redefining Travel Planning and Exploration with Advanced Technology.

2. Research group the project belongs to

Software Systems & Technologies (SST)

3. Research area the project belongs to

Smart Systems (SS)

4. If a continuation of a previous project:

Project ID	
Year	

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

Travelers in the new world are all in a hurry, looking to use technology to plan for more convenience, personalization, and the best end-to-end experience. Even with a variety of travel apps out there, there are still not enough that cover the entire travel planning to create a seamless and personalized travel planning experience. Many existing solutions are unable to predict what users will prefer and are also not fast enough to integrate real-time data, too slow with respect to the screen rendering, and lack immersivity and interactivity.

Users often struggle to find travel recommendations that align precisely with their individual preferences and plans. This system solves the problem by analyzing users' travel details, such as destinations, duration, and preferences, through machine learning algorithms. It generates highly personalized recommendations for destinations, activities, hotels, and attractions, ensuring that each suggestion is tailored to the user's specific needs for a customized travel experience. [1].

Even more important, existing travel planning solutions are not exploiting the capabilities of cutting-edge technologies. The possibilities surrounding machine learning and artificial intelligence, each of which could provide recommendations that are both far more specific and yet more predictive. [2]. But most of these apps make recommendations that are not personalized to users' interests and behavior reflective of consumers.

One more shortage in the existing solutions is socialization and sharing experience. Vacation-goers trust reviews and personal recommendations and predictions for the most part. Despite that, most travel review apps also have traditional reviews, and they do not use this chance to further empower those reviews by connecting them socially. As much as 85% of travelers depend on the recommendations of people they know, and as The TripAdvisor said in their study that it holds a likely more importance in convincing the travelers to book their trip [3].

Users often struggle to find engaging and informative ways to explore local attractions and make travel decisions. This system solves the problem by offering an immersive experience through interactive maps with 3D models of attractions. It further enhances personalized recommendations using collaborative filtering and sentiment analysis, displaying top community reviews alongside the 3D models.

Travelers often face unexpected changes in their plans and need flexible adjustments to optimize their itinerary. Simultaneously, effective emergency response is crucial for safety. This system addresses these challenges by recommending alternative destinations when travel plans change, based on user preferences and time constraints. It also provides context-aware emergency services, using real-time location data [4].

References:

[1] Amadeus, "Travel planning causes anxiety for 50% of travelers," 2019. [Online]. Available: https://amadeus.com/en/insights/blog/travel-planning-anxiety.

[2] McKinsey & Company, "How personalization in travel boosts customer loyalty," 2018. [Online]. Available: https://www.mckinsey.com/industries/travel-transport-and-logistics/our-insights/how-personalization-in-travel-boosts-customer-loyalty.

[3] TripAdvisor, "Importance of personal recommendations in travel," 2020. [Online]. Available: https://www.tripadvisor.com/PressCenter-c4-Fact_Sheet.html.

[4] Gartner, "Experiential technologies to enhance travel planning," 2018. [Online]. Available: https://www.gartner.com/en/newsroom/press-releases/2018-02-15-gartner-says-experiential-technologies-will-enhance-travel-planning.

[5] Chen, C., Wang, D., & Wu, C. (2015). Context-Aware Mobile Travel Guide: Integrating Real-Time Traffic Information and User Preferences. Journal of Advanced Transportation, 49(7), 939-954.

[6] Kapur, A. (2019). Enhancing Emergency Response through Mobile Technology. International Journal of Emergency Services, 8(3), 217-229.

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

The main objective of our travel app project is to revolutionize travel planning by offering a personalized and engaging experience. Our platform leverages advanced features like machine learning algorithms, social connectivity with predict travel groups and places with challenges, interactive 3D models, and Travel Managing and Emergency services

- **Comprehensive Personalized Travel Planning**

Users input their travel details, such as destinations, duration and preferences. These inputs are analyzed using machine learning algorithms to provide tailored recommendations for destinations, activities, hotels, and local attractions, ensuring a highly personalized experience.

- **Travel Experience Sharing and Social Connectivity**

Users can share their travel itineraries and experiences on the platform. The app facilitates connections between travelers with similar interests, predict and suggest travel groups and plan travel places by analyzing user profiles to connect with similar interests travel people. Introduce travel challenges to complete and earn points and badges. Integration with social media channels like Facebook, Instagram, and Twitter enhances this feature.

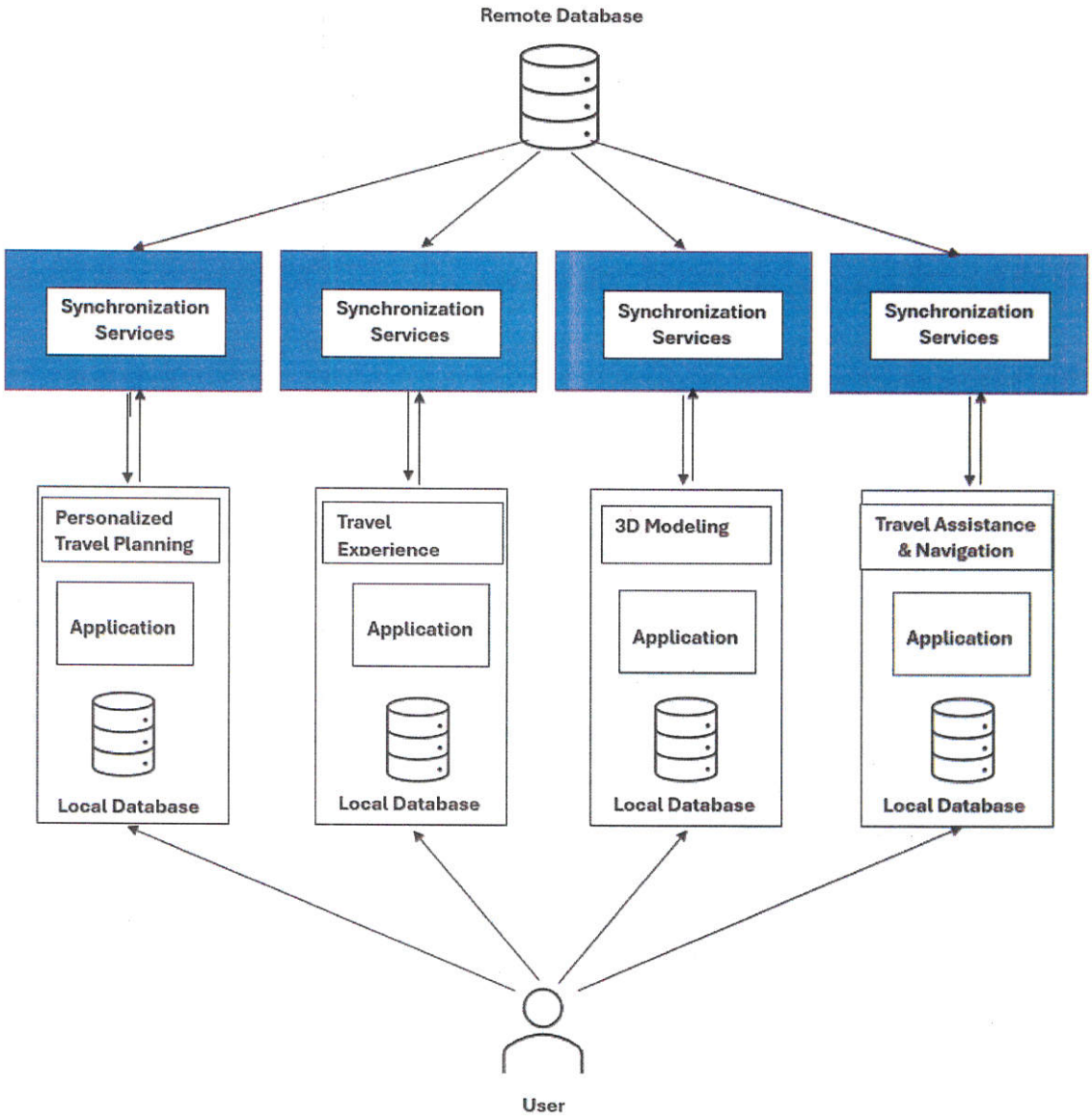
- **3D Models and Interactive Maps**

Local attractions are displayed on interactive maps through 3D models, offering an immersive experience. Personalized recommendations are enhanced by collaborative filtering and sentiment analysis, displaying top community reviews alongside the 3D models.

- **Travel Managing and Emergency Services**

Users adapt to changing travel plans. For example, if a user has planned to visit four places within a day but only has time to visit three, the app will suggest the best places user can visit within the remaining time by analyzing user profile or new plans they can achieve. This ensures that users can make the most out of their travel time, even if their original plans change. Context-Aware Emergency Services provide proactive emergency assistance with customizable descriptions, use real-time location data for precise help dispatch.

Conceptual diagram:



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

Developing travel planning, sharing, and 3D exploration systems requires expertise in machine learning, social networking, 3D modeling, and AR. It also demands substantial user data, travel information, real-time updates, and high-quality 3D models to ensure comprehensive, real-time, and immersive travel experiences.

- Machine Learning and AI - Essential for personalized recommendations, interpreting user reviews, and analyzing social media content. This involves predictive analytics, collaborative filtering, and sentiment analysis.

- Social Networking and Integration: Experience with social media APIs and networking principles is necessary for enabling users to share travel experiences and connect through trusted reviews from friends, fostering a community-driven platform. Predicting and suggest travel groups and places & including rewarding system.

- 3D Modeling and Visualization: Proficiency in interactive map development and creating or integrating high-quality 3D models is key to enhancing user engagement through immersive visualizations, providing a more interactive travel experience.

- Travel Managing and Emergency services: a system that suggests the best places a user could visit within the remaining time if their original plans changed by analyzing the current location and time. Provide new achievable plans based on the remaining time and user's interests. Emergency response protocols and integration of emergency services in mobile applications.

To provide relevant travel suggestions, application requires personal user data, including preferences and, along with behavioral data to enhance predictive analytics and machine learning models. It needs comprehensive travel data on destinations, hotels, activities, and attractions, as well as real-time feeds like local events and travel advisories. Integration with social platforms and access to social data enables users to connect and share experiences and predict travel groups places and get rewarding complete the challenges. High-quality 3D models of landmarks and geospatial data support accurate mapping and immersive visualization. The system combines machine learning, social networking, and 3D visualization, integrating APIs for maps points of interest. Changing travel plans with machine learning algorithms and emergency services to provide real updates and detailed information on emergency services locations and response times.

8. Objectives and Novelty

Main Objective

Our mobile application aims to provide a highly personalized and predictive travel planning solution that enhances the overall user experience. It enables users to plan and foresee tours, book hotels and activities, discover local attractions through 3-D models, and share travel experiences within its community by predicting and suggest travel groups and places Users can earn points with reward system. By integrating real-time data and analyzing user behavior suggest the best places a user could visit within the remaining time if their original plans changed by analyzing the current location and time & provide emergency assistance.

Member Name	Sub Objective	Tasks	Novelty
Bandara U.M.W	To develop a solution for tour planning and prediction, including destination search, booking hotels and activities, and obtaining local attractions and recommendations.	1) According to the user input plan the tour (inputs: destination, number of days, etc.) 2) Predicting tours by analyzing the user behavior	The ability to provide a highly personalized, predictive, and comprehensive travel planning solution that leverages advanced technologies to enhance the overall user experience. This system not only plans and predicts tours based on user input and behavior but also integrates real-time data, reviews and recommendations to offer the most relevant recommendations.

Pathirana A.P.C.E	To develop an innovative platform that enables users to share travel itineraries and experiences, connect with fellow travelers, and provide reviews and recommendations. Predict travel groups with similar interest people by analyzing user profiles. Encouraging travelers by giving challenges to earn points.	1) Sharing the travel plans and experiences 2) Predict travel groups and plan travel places by analyzing user profiles to connect with similar interests travel people 3) Enhance the traditional review system by highlighting the reviews and recommendations influenced by the user's social network and trusted connections. 4) Introduce travel challenges to complete and earn points and badges (Most points appear in the leaderboard) 5) Social media integration (Facebook, Instagram, Twitter)	This component aims to transform how travelers share and discover travel experiences and travel groups, analyze travel user profiles to predict travel groups and places. Creating a comprehensive social platform for the travel community. Creating challenges to complete and earn points to appear in the leaderboard. The integration of experience sharing, social connectivity, personalized reviews, and social media interaction sets this system apart from existing travel apps.
Madhuwantha W.A.S.P	To develop an innovative system that utilizes 3D models to enhance the exploration of	1) Viewing 3D models of attractions directly within map areas.	Users can experience immersive visualizations of landmarks directly on their mobile devices, enhancing

	local attractions on interactive maps.	2) Find the best 3 personalized recommendations based on collaborative filtering and sentiment analysis, incorporating user profiles and community reviews. 3) Displaying above selected top 3 reviews along with the 3D model.	engagement and understanding. The system utilizes advanced algorithms for personalized recommendations based on collaborative filtering and sentiment analysis, presenting the top three community reviews alongside the corresponding 3D models.
Heshan J.A.C.I	To develop a system that suggests the best places a user could visit within the remaining time if their original plans changed by analyzing the current location and time. Provide new achievable plans based on the remaining time and user's interests. Provide emergency services assistance.	1) Users receive timely and relevant suggestions for alternative places to visit when their original plans change. 2) Provides proactive emergency assistance with real-time location to dispatch precise help quickly. 3) Provides detailed maps and route planning.	Continuously tracking user progress and providing proactive suggestions based on real-time data ensures that users can make the most out of their travel time, even if their plans change unexpectedly. This feature reduces the stress of planning and re-planning during travel. Users can get the emergency support quickly.

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9. Supervisor checklist

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

Yes	✓	No	

b) Does the proposed topic exhibit novelty?

Yes	✓	No	

c) Do you believe they have the capability to successfully execute the proposed project?

Yes	✓	No	

d) Do the proposed sub-objectives reflect the students' areas of specialization?

Yes	✓	No	

e) Supervisor's Evaluation and Recommendation for the Research topic:

10. Supervisor details

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

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Topic Assessment Form

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

Acceptable: Mark/Select as necessary

Topic Assessment Accepted	
Topic Assessment Accepted with minor changes (should be followed up by the supervisor)*	✓
Topic Assessment to be Resubmitted with major changes*	
Topic Assessment Rejected. Topic must be changed	

* Detailed comments given below

Comments

3D model component needs changes.
↳ Suggested to show personalized 3D models of suggestions instead of most visited, because most visited remains same
↳ It does not add any value to this personalized application

The Review Panel Details

Member's Name	Signature
~~Sooo~~ Dr. Nathali Silva	~~Nalma~~ 25/07/24
Sanjeevi Chandrasiri	~~Sanjeevi~~

*Important:

1. According to the comments given by the panel, make the necessary modifications and get the approval by the **Supervisor** or the **Same Panel**.
2. If the project topic is rejected, identify a new topic, and follow the same procedure until the topic is approved by the assessment panel.