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Tourzee:Interactive Tour Guide Web Application

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Abstract: -Tourism is one of Sri Lanka's oldest industries. It offers tourists an opportunity to discover the cultural heritage, natural beauty, and historical significance of the country. Tour guidance plays a major role in improving the travel experience by offering travelers insightful information, historical context, and navigational assistance. However, the tour guidance sector of the country continues to rely on traditional methods such as paper-based materials, while self-guided tours are becoming more popular around the world. Therefore, the focus of this research is on developing Tourzee, an interactive web tour guide application. The main features of the application are a virtual tour of important places, social sharing and community engagement, personalized recommendations for tourists, and safety and emergency assistance based on the concept of personalized tour planning while ensuring peace of mind through real-time safety and emergency assistance.

Keywords*: Virtual tour, Emergency,Recommendation, Safety, MERN Stack*

1. Introduction

Tourism can be considered as a major source of income in the Sri Lankan economy. Moreover, it reportedly provided employment opportunities for over 347,000 jobs, [1] directly and indirectly including different sectors such as National Tourists Organization, airlines and hotels and restaurants. Furthermore, it accelerates the development of infrastructure. According to the World Travel and Tourism Council (WTTC), travel and tourism generated 3.1% [2] portion of the country's Gross domestic product (GDP). Both locals and visitors will profit from the improvements made to services like transportation, lodging, and amenities because of this expansion.

The expansion of Sri Lanka's tourism industry depends on tour guidance but due to the complexity of its culture and geography, Sri Lanka continues to rely on tour guides and printed guides in the age of self-planned travel. Even though autonomous travel is becoming more popular, problems including restricted digital integration, language obstacles, and safety worries still exist. While the solutions for these issues should improve tour experiences, the authenticity must be preserved.

To address the issues and improve the tour guidance experience in Sri Lanka, Tourzee is suggested, which is a creation of a comprehensive web application that incorporates four vital aspects include virtual tour of important places, social sharing and community engagement, personalized recommendation for tourists and safety and emergency assistance.

Virtual tours provide a novel experience for visitors to explore a location without being there. It is a tool for travelers to plan their trips easily because it allows them to research destinations in detail before deciding on whether to visit there. Social sharing and community engagement features of the system make opportunity for travelers to share their travel experiences and knowledge on attractions they visited with each other. Personalized recommendation simplifies accommodation as well as assuring comfort and convenience, while safety and emergency assistance features help to maintain peace of mind through real-time support and emergency services.

2. Objectives

The aim is to modernize and optimize the tour guidance experience, or in other words, bridge the gap between traditional tour guiding methods and modern tourist preferences in Sri Lanka by combining these four functions into a single application. The solution uses technology to improve satisfaction, communication, personalization, and safety while adjusting to the desires of modern travelers. It is expected to reach this target while keeping the authenticity and cultural significance of Sri Lanka's tourism landscape.

3. Methods

The MERN stack (MongoDB, Express JS, React JS, and Node JS) is the foundation of the technique used in the creation of Tourzee, a web-based tour guide application. This stack takes advantage of the characteristics of each technology to provide a scalable and smoothly connected system. This part provides further detail on the methods, resources, and strategies employed, making the content understandable to a broad readership.

MERN Stack Architecture: Tourzee's development is built on the MERN stack architecture. For data storage, MongoDB, a versatile NoSQL database, is used. It supports a variety of information kinds, including user profiles, virtual tour data, and safety resource locations . The backend server, Express JS, handles routing, middleware, and API development. The frontend and database are effectively communicated thanks to its connection with MongoDB.

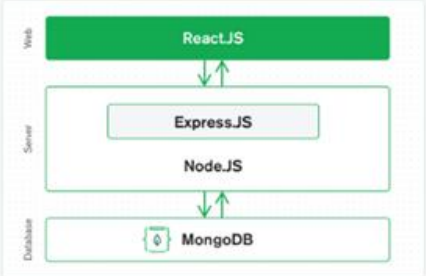

Fig.1.MERN stack Architecture

Frontend development is supported by React JS, a dynamic JavaScript toolkit for creating user interfaces. Its component-based architecture promotes modularity and reuse, both of which are essential for building an engaging user experience . The Tourzee backend is powered by Node JS, a flexible back-end runtime environment that makes it easier to get and analyze data from MongoDB . The components are synchronized by this design, encouraging effective and quick responses.JWT (Json Web Token) authentication is integrated into the system for user authentication and security, protecting user data and interactions. According to the user's position (administrator, tourist, etc.), a session token is created on the front end and kept in the local browser storage after user login [9]. Password hashing uses Bcrypt, which improves data security and privacy [10].State Management and HTTP Requests: Redux is a trusted state container that is used to provide effective communication between client, server, and native environments while also streamlining testing Regarding GET, POST, PUT/PATCH, and DELETE requests, Axios is a flexible tool that assists in handling HTTP requests and answers [12].The Google Maps API is used to deliver geolocation-based services, enabling users to identify their precise location and contact nearby safety resources like hospitals, pharmacies, or fire services in an emergency [13]. Geolocation services and safety assistance.For a user interface that is aesthetically pleasing, Tourzee uses Material-UI (MUI), a React UI framework that follows Google's Material Design guidelines. By providing a variety of pre-designed components and keeping a unified design, MUI speeds development.[14]. Case studies involving actual users were done to validate the system's efficacy. The app was used by the participants, who explored virtual tours, used safety features, engaged with community elements, and assessed the customized recommendation system. To gauge user happiness and the usefulness of the features, user comments and interactions were examined.In conclusion, the technique used to construct Tourzee takes advantage of the MERN stack's advantages to produce a scalable and integrated web-based tour guide application. A comprehensive and user-focused trip companion for seeing Sri Lanka's beauties is created by combining techniques like JWT authentication, geolocation services, Redux state management, Axios for HTTP queries, and Material-UI for UI design.

A.Virtual Tours with 360-Degree Views

360-degree virtual tours are available on Tourzee, a virtual tour platform which utilizes the Google Maps API to include street view. With the support of this function, users may conveniently visit famous destinations while enjoying enthralling 360-degree views of them. Tourzee is an extensive database of virtual tours that let customers virtually see famous destinations, important historical locations, and breathtaking natural marvels. This capability helps visitors plan their upcoming trips by providing information as well as serving as a source of inspiration.

B.Social Sharing and Community engagement

Social sharing and community interaction are important features in the web application which provide a sense of community among travelers. Social sharing feature is created for travelers to share their travel experiences including text and photos on the platform. Also, it enables travelers to recommend places, and inspire others to explore similar destinations.

Community interaction feature allows travelers to engage with each other through comments, likes, and reactions on shared posts. Furthermore, travelers can recommend attractions they visited and rate their experiences to help others make informed decisions. By incorporating this feature, the system not only becomes a resourceful tool for travel planning but also a platform for travelers to connect & share knowledge while inspire others to explore new places.

Fig 2. Virtual Tour of Polonnaruwa

C.Personalized Recommendation & Trip Planning

Tourzee provides passengers with customized itinerary planning that considers their specific tastes and aspirations. Tourzee combines personalized travel plans created by administrators with the freedom for users to customize their own routes, in contrast to other trip planning apps that depend on machine learning algorithms. Users get access to a variety of pre-made vacation itineraries, guaranteeing they have complete schedules for various tourist sites. Additionally, the site makes it easy to create personalized itineraries, giving visitors the chance to design their vacations around their individual interests in things like art, food, adventure, or leisure. For visitors looking for life-changing experiences, the personalized trip planning option is an invaluable tool.

D.Safety and Emergency Assistance

Tourzee emphasizes the security and well-being of tourists by providing comprehensive safety and emergency support services. An emergency assistance portal is a feature of the app that shows neighboring medical facilities, police stations, and fire stations on an interactive map. Through the app, users may quickly call on emergency services and get detailed instructions to the desired institution. Each facility type is represented by a unique symbol to improve accessibility, allowing for speedy and effective navigation in urgent situations. Additionally, Tourzee offers a thorough list of crucial emergency contact numbers. Additionally, a variety of safety advice is available to travelers, including subjects like weather safety, traffic regulations, and health guidance.

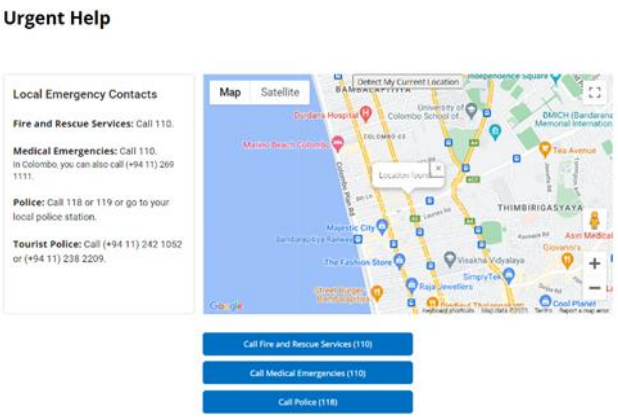

Fig. 3.Urgent Help in Emergency Assistance

Whenever needed, the information contained in these sources may be enhanced and quickly organized. Tourzee also provides real-time location sharing with reliable contacts so users can keep in touch and secure while traveling. Push messages are used to give safety alerts and notifications, such as traffic and weather updates, and they are also stored for future reference. Users can use the Emergency Reporting tool to send reports in events of emergencies or unsafe conditions. Tourzee also incorporates real-time weather updates depending on users' locations, offering the latest predictions, weather conditions, temperature for each destination, as well as warning regarding advice levels. Tourzee is a trustworthy travel companion for anyone looking for both adventure and peace of mind due to these safety and emergency help features.

4. Results

This research project aimed to develop a virtual tour guide application including virtual tours, customized trip planning, safety and emergency assistance, and social engagement. The primary driving force behind this research was to provide visitors with real-time local services to enhance their trips.

The product consists of cutting-edge technology because of creative research and development, which led to the accomplishment of a challenging objective. Through thorough investigation, a comprehensive virtual tour guide application was developed by fusing these elements with authentic information sources.The travel-related application combines creativity and efficiency. Tourists may get all they need in one place, including local contacts, immediate safety, customized trip planning, and immersive exploration. The company demonstrates its innovation through cutting-edge services to satisfy modern tourists with more demanding demands.

5. Conclusion

Tourzee is a personalized tour planning web application that enables travelers to plan their trips based on their preferences. It allows travelers to get a realistic preview of destinations before visiting them through virtual tours. Also, personalized recommendations help travelers save time and effort in researching accommodations and activities, while social sharing and community engagement provide the opportunity to share travel experiences and connect with like-minded individuals.

The unique feature of Tourzee is safety and emergency assistance. It enables real-time support that helps in the event of unexpected events. It is beneficial not only for travelers but also for business owners in the industry because they also could use Tourzee to advertise and market their properties.

The final product of this research is crucial for the Sri Lankan tourism industry to compete with the world, as Tourzee is a cutting-edge tool for tour guiding developed utilizing contemporary technologies rather than traditional tour guidance methods. It will accomplish the aim of the research by bridging the gap between traditional tour guiding methods and modern tourist preferences and enhancing the tourism sector of Sri Lanka.

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