DEVELOPMENT OF A HOLIDAY PLANNER APPLICATION USING MERN STACK&KNN

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ABSTRACT
In today's scenario people are busy with their work and they want to plan their holiday vacation perfectly. As technology increases there are many other applications providing single feature as service. Our website with the help of latest technology called "MERN Stack" which is stated as MongoDB, Express JS, ReactJS, NodeJS and Application program Interface (API) is the heart of our project which helps to integrate all the services that are useful to make a perfect holiday planning.We use ReactJS as front-end and ExpressJS and NodeJS as back-end to our website which improves the performance of our application. User interface is an important aspect for our application to gain more users. Material UI is beautiful by design and features a suite of customization options that make it easy to implement customized design system on top of our components. This Material-UI is used to design UI of our application. We also use google map API service to update real-time location of user. We propose to use KNN Algorithm for performing location-based search. The Integrated Services of this application include retrieving nearest restaurants, motels based on user location so that users can plan their holiday vacation right from their home we also recommend user to give their feedback for respective hotels and locations that they visit so that it may help other users to plan their holiday vacation and feedback to service provided by our application so that we can improve our services.

INTRODUCTION:
There are currently many online travel-related applications available. These programmes typically try to help users with itinerary planning and location-based searches. Yet, current web applications do not offer their users a customizable travel experience. The suggested web application solves this issue by providing a convenient travelling experience. By encouraging users to interact with our application, features like RealImages, Chatbots, and Google Translate contribute to the best user experience. With real time photographs, users may view a location in real time at their convenience from any location. In order to assist users on their travels, chatbots act as travel agents. By receiving travel recommendations based on their historical browsing habits, users can save a tonne of time by spending less time perusing the web. Offering content in the users' local tongues enables a travel app to reach a bigger audience. Inexperienced users may be intimidated by the intricacy of contemporary travel-related applications. Companies actually struggle to engage users. The following are the three main parts of developing a MERN Stackapplication:

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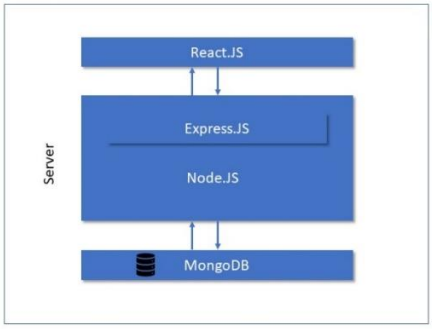

MERN Stack Architecture

In this effort, we've included extras like a chatbot to assist people in making plans.travel destinations, the ability to view some well-known locations in augmented reality, a geocoding API to preview a location on a map Users are given access to construct their own travel profiles and view locations submitted by other users after being authenticated and authorised in real time. This full stack web application has been installed on a legitimate web server.

- API
  API is heart of our Project
- It makes it easier for you to efficiently incorporate content from any website or application.
- It is mainly used to fetch the data of restaurants in our project

LITERATURE SURVEY:

It is important to take the client's preferences and interests into account while developing a tourism webpage. Today, the majority of transactions take place online. Among others, Artem Vysotsky, Nataliya Antonyuk, Anatolii Vysotskyi [1] created a travel app that enables one to discover well-known locations, eateries, religious sites, and shopping centres. The programme also offers access to maps, which the user can use to get to the destination you choose. The Google Cloud platform has been used to offer data integration and user-friendliness for saving and displaying data. Data is locally stored, and even real-time events that are not online continue to function, providing the end user with an emotional experience. This application's disadvantage is the dearth of fresh features. augmented reality or tools like geotagging or 3dTravelers can learn about tourism destinations from visitor reviews. Regrettably, some reviews are pointless and end up being noisy data. A framework of aspect-based sentiment classification is presented by Muhammad Afzaal, Muhammad Usman, and Alvis Fong[3] that not only identifies the aspects effectively but also performs classification tasks with high accuracy. The framework has been turned into a smartphone application that directs travellers to a city's top eatery or accommodation. This model has very high accuracy. (85 percentage identification and 90 percentage classification). Image classification is one element that can be added to text classification. The programme will be simpler to use and less vulnerable as a result.Providing travellers with accurate and engaging information is never easy.In order to promote rapid development of the Internet-based tourism industry,Qiaoyi Li [5] primarily focused on the current state of development of the sector and issues with tourism industry integration management. Enhancing smart system development, enhancing online tourism management system, developing compound tourism talent, optimising market investment mechanism system, and expanding marketing and operation methods are a few examples of the local tourism sector economy. These solutions, however, necessitate ongoing industrial integration management improvement. Additionally, a toroughextension of the local tourism sector, management of the integration of the tourism industry, and improvement of the entire service offering are required.

EXISTING SYSTEM:

In most of the existing systems, free content and offline content is not available. Tourist places search is also not available.

PROPOSED SYSTEM:

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With the help of this software, a user can choose a destination, select arrival and departure dates, and define the number of adults and children staying there.
Access to the saved data is available to the user offline.
To respond to customer inquiries, a chatbot is offered.
Access to unrestricted content is granted to the user.
Users' searches are used to offer the closest, best hotels and rooms.

KNN ALGORITHM:

- (Based on SupervisedLearningTechnique)
- Based on supervised learning, KNearest Neighbour is one of the most basic machine learning approaches.
- The new instance is placed in the category that is most similar to the existing categories via the KNN algorithm, which assumes that the new example and the previous cases are comparable.
- The KNN algorithm categorises new input based on similarity and preserves all the data that is available. So, using the KNN approach, new data may be properly and quickly categorised into the appropriate subsets.
- The KNN method can be used to solve classification and regression problems, but it is more typically employed to solve classification difficulties..
- During the training phase, the KNN algorithm merely stores the dataset and sorts it into a category that is relatively similar to the new data as it is received.
- Example: Assume we have a photograph of a creature that resembles both a dog and a cat, but we aren't sure which it is. Yet because the KNN method is built on a similarity measure, we may use it for this identification. Our KNN model will search for properties in the new data set that are similar to those in the photographs of cats and dogs in order to categorise it into the cat or dog category.
- KNN can be explained by the following algorithm:

In step 1, Choose the neighbour's K-number as your first step.
In step 2, is to determine the Euclidean distance between K neighbours.
In step 3, depending on the estimated Euclidean distance, choose the K neighbours that are closestyou.
In step 4, The number of data points in each category among these k neighbours is counted in step four
In step 5, Put the fresh data points to the category for which the neighbour count is highest.
In step 6,Our model is prepared.

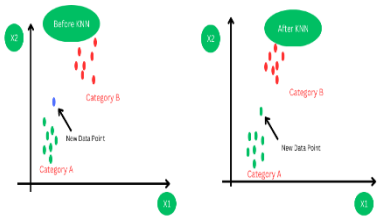

Fig 1: KNN Algorithm Process

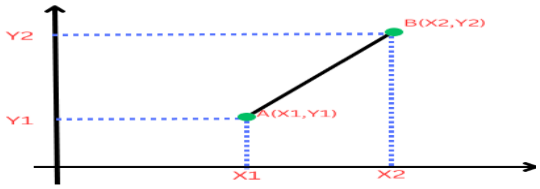

Fig 2: Distance between two data points

EXPERIMENTAL RESULTS:

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Euclidean Distance between A_1 and B_2 = $\sqrt{(X_2-X_1)^2+(Y_2-Y_1)^2}$

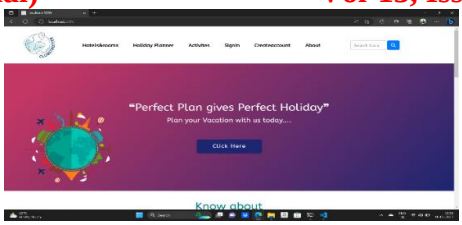

Fig 3: Home page

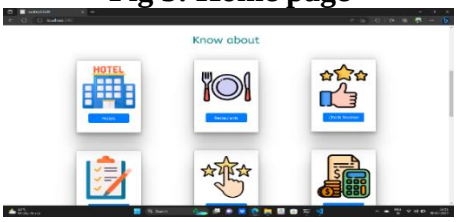

Fig 4: Our application services

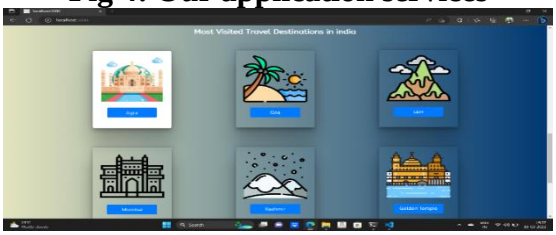

Fig 5: User Actions

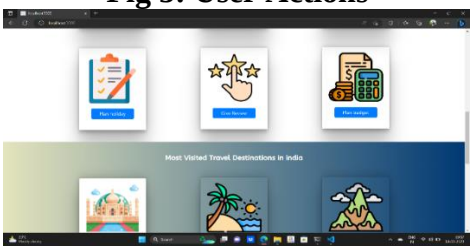

Fig 6: Travel Destinations

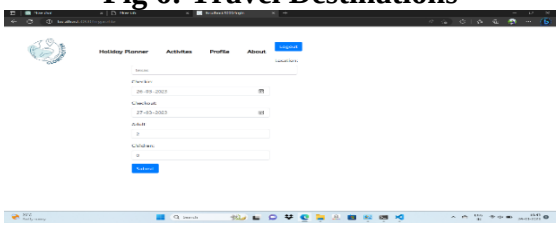

Fig 7: Searching nearest hotels by city name.

Fig 8: Result for Search by location

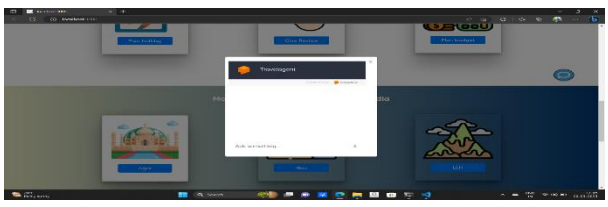

Fig 9: Chatbot Implemented with google dialogue Flow.

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CONCLUSION:

Any country can generate significant revenue from tourism. Governments all around the world have a ministry of tourism in charge of drawing tourists from all over the world. The most crucial role is to draw tourists and to educate them about the travel process. The job of the travel agency is crucial for drawing travellers. Travel agencies conduct business through an internet website where customers may make bookings and receive personalized recommendations. But as technology advances, our suggested online application satisfies contemporary user needs. The web application is made up of a MongoDB database for storing user information, Node.js and Express.js for the backend, and React.js for the frontend. For the greatest user experience, Chat Bot has been integrated into the app to make it available for solving the user doubts. Chatbot makes web application more engaging with the users and helps them to explore their travel destinations.

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