Table of Contents

List of Figures

1 Introduction

1.1 Problem statements

- Tourists often have difficulty finding reliable and knowledgeable travel guides or partners when visiting a new destination.
- Existing travel guide services are often expensive, inflexible, and lack personalization.
- Language barriers and cultural differences can make it challenging for tourists to communicate with locals and find the best experiences.
- Tourists may miss out on hidden gems and authentic experiences because they are unaware of what is available.

1.2 Objective

The objective of this web application is to provide a user-friendly and convenient platform that matches tour guides and tourists easily. In addition, the application provides a reliable and knowledge-rich interaction for tourists, thereby enhancing their travel experience and uncovering the hidden treasures of each destination.

1.3 Features

1.3.1 User profile management portal

user portal allows users to create and manage their profiles, including personal information, such as profile pic, bio, travel destination preferences, languages, budget.

1.3.2 Tourist places content recommendation portal

- Attractions content recommended by the website content curators. (preview & details)
- Restaurant/Drinks recommendation based on current/targeted locations (preview & details)

1.3.3 AI-Powered Interaction (via ChatGPT API)

It empowers users to pose inquiries, seek assistance, or simply interact, offering an engaging and streamlined communication experience throughout their journey.

1.3.4 Social Messenger

it is a vital component that allows users to connect with other users and engage in real-time conversations. It facilitates communication, information sharing, and community building among travelers. Here's a detailed explanation of its key aspects:

- **Private User Interaction:** This aspect permits users to engage in intimate one-to-one conversations with fellow users, facilitating personal connections.
- **Intuitive Chat Interface:** Our chat interface prioritizes user experience, enabling smooth communication via text messages, emojis, and images for enriched interaction.
- **User Moderation Feature:** Ensuring a respectful and secure environment for our users is paramount. As part of this commitment, our Social Messenger includes an integral 'Block User' tool.

This feature allows individual users to control their interaction by having the ability to block communication with other users as needed.

1.3.5 Review & Experience Sharing Forum

The forum serves as a collaborative platform for users to interact, exchange experiences, and seek travel advice. The main components of this interactive forum include:

- **Thread Creation & Interaction:** Users have the freedom to generate new threads, selecting a relevant category to post inquiries or share personal experiences. This ensures each thread has a focused discussion and facilitates targeted interaction among users. Other users can peruse these threads and contribute with their thoughts and replies, promoting lively, insightful discussions around varied topics or destinations.
- **Search and Filtering**: Users can use the search bar to find specific threads or topics. Advanced filtering options allow users to narrow down results by category, keyword, or the date of posting.

1.3.6 Competitor Analysis

In the travel planning industry, several platforms offer services targeting Singapore, yet few specifically cater to the unique needs of Chinese tourists. Here's an analysis of key competitors and how our application stands out:

- ***Current Competitor in the market***

Ctrip (Trip.com Group): As a leading travel service provider, Ctrip offers comprehensive travel services globally. However, its offerings may lack the localized content and personalized experience that Chinese tourists often seek while visiting Singapore. The platform tends to focus on general services rather than customized solutions for specific cultural preferences.

Klook: Known for its wide range of travel activities and booking services, Klook operates primarily as an aggregator. It lacks personalized itinerary planning and does not provide in-depth guides that are tailored to the unique cultural and personal preferences of Chinese tourists in Singapore. This makes it less appealing for those seeking a tailored travel experience.

TripAdvisor: This platform is one of the largest and most popular globally, catering to international travelers, including those from China. TripAdvisor's strength lies in its extensive database of user reviews and ratings, covering a broad spectrum of destinations, accommodations, attractions, and dining options. While it provides valuable information, it does not offer personalized travel planning or community-driven recommendations that are specific to Chinese tourists.

Our application will differentiate itself by focusing on personalized experiences, integrating comprehensive guides tailored to Chinese tourists, including local tour guide matching, AI-powered travel assistant, and community forums.

- ***Competitive Advantages of Our Platform***

Our platform differentiates itself from existing travel planning services by focusing on tailored experiences that cater specifically to the needs and preferences of Chinese tourists visiting Singapore. Here are the key areas where our platform excels in comparison to major competitors like Ctrip, Klook, and TripAdvisor:

Personalized Itinerary Planning: Unlike platforms such as Ctrip and Klook, which offer general travel services and aggregation, our platform provides personalized itinerary planning tailored to the cultural and personal preferences of Chinese tourists. This service ensures that tourists can enjoy a travel experience that feels more bespoke and aligned with their expectations.

Localized Content and Experiences: We go beyond general travel information by offering localized content that addresses the specific interests and cultural nuances important to Chinese travelers. This includes recommendations for local dining spots that cater to Chinese culinary tastes, Chinese-speaking tour guides, and attractions that are of particular interest to Chinese visitors.

Community-Driven Insights: Unlike TripAdvisor, which primarily offers a vast database of user reviews, our platform leverages a community forum specifically for Chinese tourists. This forum allows for the exchange of travel tips, advice, and recommendations that are culturally relevant and more relatable to Chinese users. It fosters a sense of community and shared experience that is not typically found on other platforms.

AI-Powered Travel Assistant: Our use of AI technology to offer real-time assistance sets us apart. This AI-powered travel assistant can respond to queries in Chinese, offer context-sensitive recommendations, and adapt to the user's individual preferences in real-time, providing a more responsive and engaging user experience than static travel services.

Integration of Local Tour Guides: We provide an unmatched service by integrating local tour guides into our platform, offering not just generic guided tours but personalized experiences that include stories, history, and activities that resonate specifically with cultural interests.

These distinctive features not only enhance the travel experience by making it more personalized and culturally sensitive but also position our platform as a preferred choice for tourists looking for a tailored, insightful, and supportive travel service while visiting the world.

2 Architecture

2.1 Architecture Overview

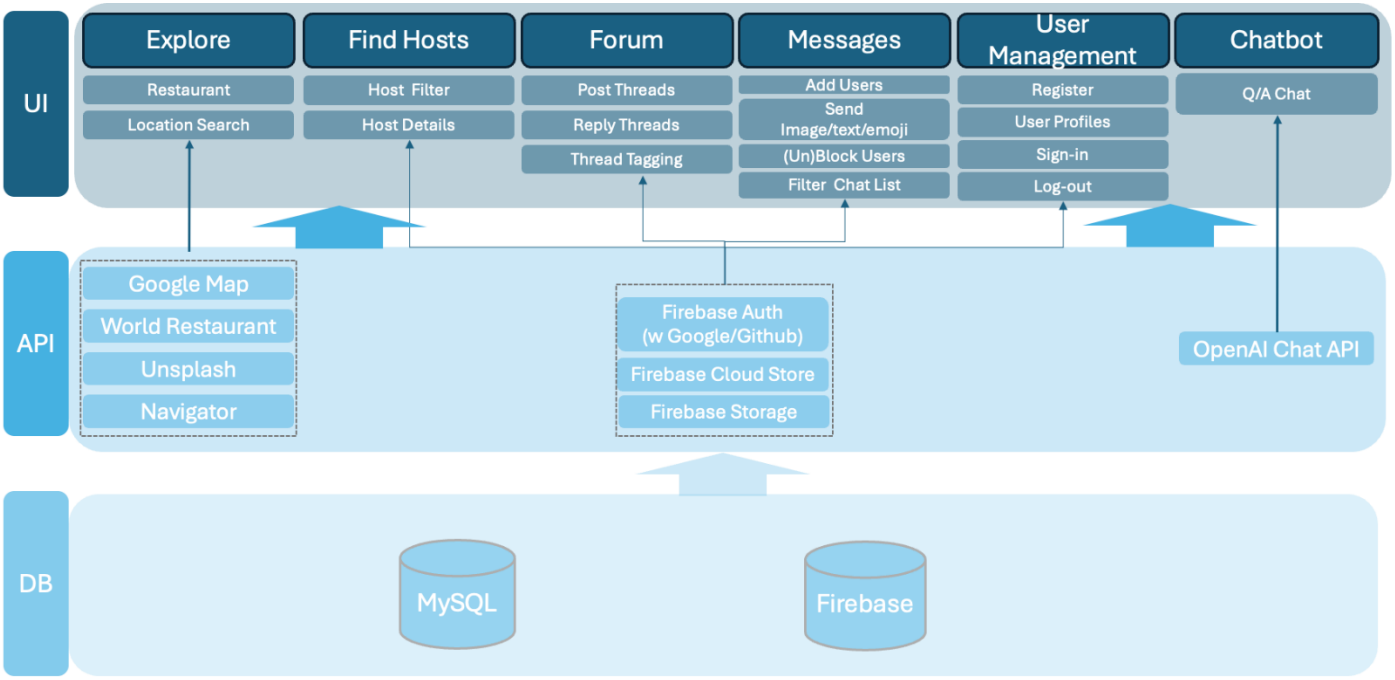

Figure 1 - Architecture Overview Diagram

2.2 Backend

2.2.1 Framework: FastAPI

FastAPI is a modern, high-performance web framework for building APIs using Python 3.7 or later. Developed by Sebastián Ramírez in 2018, it uses standard Python type hints to help developers create robust, scalable applications efficiently with minimal code. Due to FastAPI's ease of use, built-in data validation and asynchronous support, it is used for our backend.

Below is a list of FastAPI endpoints, which can be accessible from http://127.0.0.1:8000/docs

Figure 2 - FastAPI endpoints

2.2.2 Database: SQLite

SQLite is a popular open-source relational database management system that provides a lightweight, file-based SQL database engine. It is widely used in embedded systems, mobile applications, and small-scale web applications due to its simplicity, ease of use, and low resource requirements.

In our tripper web application, SQLite have been used to manage the attraction details and forum functionality.

Here is the entity relationship diagram of the forum.

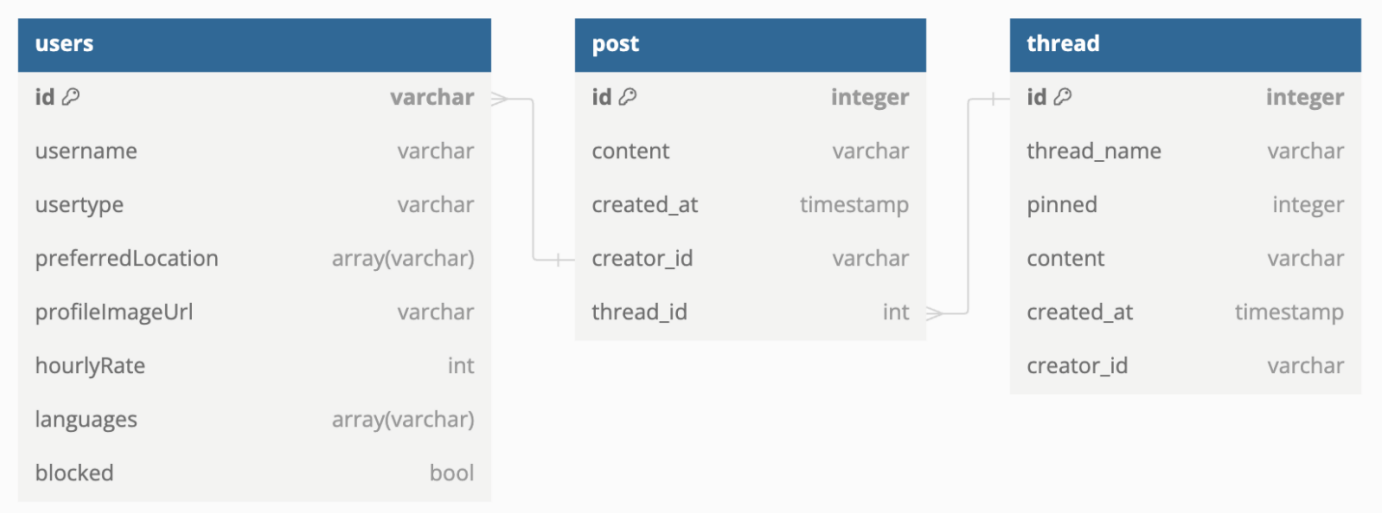

Figure 3 - entity relationship diagram of the forum

thread

id	thread_name	pinned	content	created_at	creator_id
2036	Where best to see MBS light show	5	I know this has been asked before but where is the b…	2024-05-05 02:48:20	hOEgWGmrGDfjZC…
2037	Best place to exchange currency in S…	7	I am from India, I am visiting Singapore on May 9th. I…	2024-05-05 02:57:08	hOEgWGmrGDfjZC…
2038	Affordable Hotels near great foods	21	Hello everyone, I am currently planning a trip to Sing…	2024-05-05 02:58:45	hOEgWGmrGDfjZC…
2039	First Timer Questions	33	Hello! My husband and I will have 3 full days on a sto…	2024-05-05 02:59:20	hOEgWGmrGDfjZC…
2040	Changi Airport tour at Arrival - Check…	16	Ill be ARRIVING at T3 Changi at 730 AM and I have a…	2024-05-05 02:59:43	hOEgWGmrGDfjZC…

post

id	content	created_at	creator_id	thread_id
3427	Event Plaza. Obviously no one can accurat…	2024-05-05 02:49:25	hOEgWGmrGDfjZ…	2036
3428	The MBS sound and light show is set up to…	2024-05-05 02:52:08	hOEgWGmrGDfjZ…	2036
3429	A couple of weeks ago on a weekday I got…	2024-05-05 02:52:34	hOEgWGmrGDfjZ…	2036
3430	Is it better to make reservations or can one…	2024-05-05 02:52:35	hOEgWGmrGDfjZ…	2036
3431	No, none of the restaurants will give as goo…	2024-05-05 02:53:09	hOEgWGmrGDfjZ…	2036
3432	Apple store is close to the MBS light show.…	2024-05-05 02:56:38	hOEgWGmrGDfjZ…	2036

Figure 4 - sample data of forum post and thread

Here is the table schema of attraction details. Explore uses the **attraction_details** table, which is structured to hold information about various attractions. Below are the details of each column in the table:

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	auto_increment
title	varchar(255)	NO		NULL	
description	text	YES		NULL	
location	varchar(255)	YES		NULL	
latitude	decimal(10,8)	YES		NULL	
longitude	decimal(11,8)	YES		NULL	
images	text	YES		NULL	
created_at	timestamp	YES		CURRENT_TIMESTAMP	DEFAULT_GENERATED
country	varchar(255)	YES		NULL	
video_url	varchar(1024)	YES		NULL	

Figure 5 - details of each column in the attraction_details

2.2.3 Database: Firebase

Firebase is a comprehensive app development platform offered by Google, known for its scalability and ease of use. It provides a suite of tools and services including authentication, database (cloud store, real-time database), messaging, and great extensions to help developers build and manage web applications efficiently.

In our tripper web application, Firebase authentication / cloud store / storage have been used to manage the user profiles and messages functionality.

Here is the entity relationship diagram of the messages.

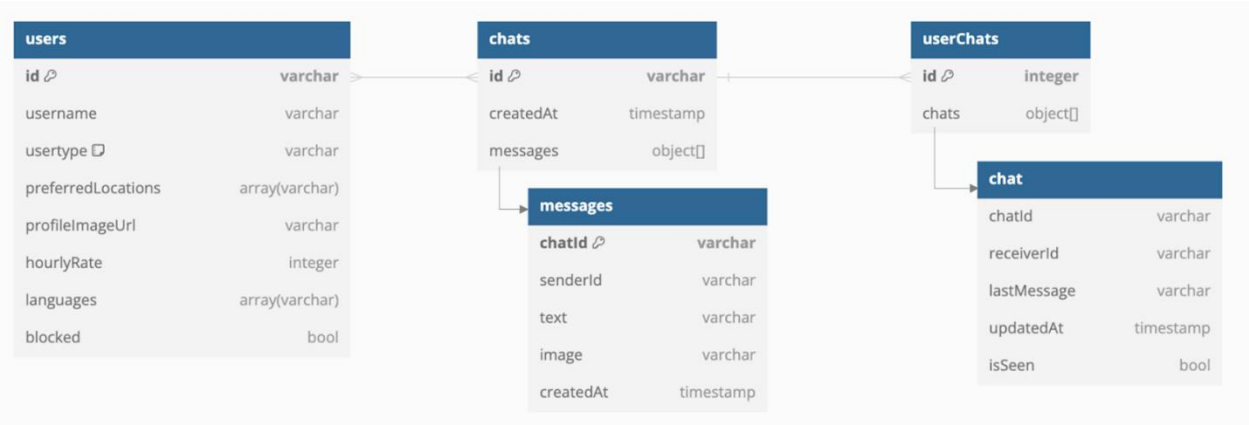

Figure 6 - entity relationship diagram

users chats userchats

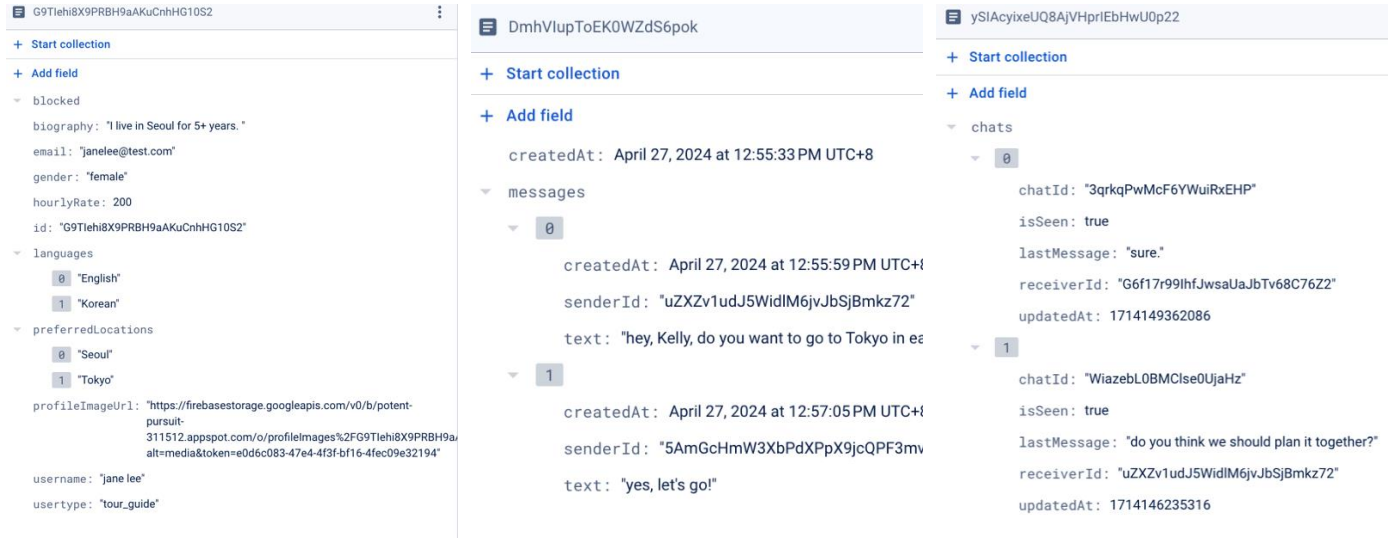

Figure 7 - sample data of each collection

2.3 Third-Party APIs

2.3.1 Google Map API + Navigator API

The Google Maps API is a collection of services that enable developers to incorporate highly interactive and customizable maps into their websites or mobile applications, utilize Google's vast geocoding services, and generate detailed directions between multiple points, among other features.

The Navigator API is a part of the Web APIs provided by browsers, which offers interfaces to interact with the client's browser session and retrieve information about the system where the browser is running.

In our Tripper app, we utilize the Navigator API to pinpoint the user's geographical location. This location data is then used with the Google Maps API to determine and display the city name.

```
export const getCurrentLocation = (setLocation, setCity) => {
  if (navigator.geolocation) {
    navigator.geolocation.getCurrentPosition(
      async (position) => {
        const { latitude, longitude } = position.coords;
        console.log("Latitude:", latitude, "Longitude:", longitude);
        try {
          const res = await fetch(
            `https://maps.googleapis.com/maps/api/geocode/json?latlng=${latitude},${longitude}&sensor=true&key=${API_KEY}`
          );
          const data = await res.json();
          if (data.results && data.results.length > 0) {
            const addressComponents = data.results[0].address_components;
            const localityComponent = addressComponents.find((component) => component.types.includes("locality"));
            const cityName = localityComponent ? localityComponent.long_name : "Not found";
            setLocation({ latitude, longitude, cityName });
            setCity(cityName);
          } else {
            console.error("No results found for this location.");
          }
        } catch (error) {
          console.error("Error during reverse geocoding:", error);
        }
      },
      (error) => {
        console.error("Error getting location: ", error);
      }
    );
  } else {
    console.error("Geolocation is not supported by this browser.");
  }
};
```

Figure 8 - Navigator API & Google API Implementation

2.3.2 Worldwide restaurant API

The Worldwide Restaurants API hosted on RapidAPI, developed by PT WebSolution, is a comprehensive tool designed to assist developers in accessing a vast array of restaurant data from across the globe. This API allows for the retrieval of information about restaurants, including details about their cuisine, location, ratings, reviews, and much more. It's an ideal resource for applications that require restaurant data to enhance user experience or for creating dining guides, travel apps, or local business locators.

In our Tripper app, users can enter a location to automatically receive detailed information about restaurants in that area, enhancing their exploration experience.

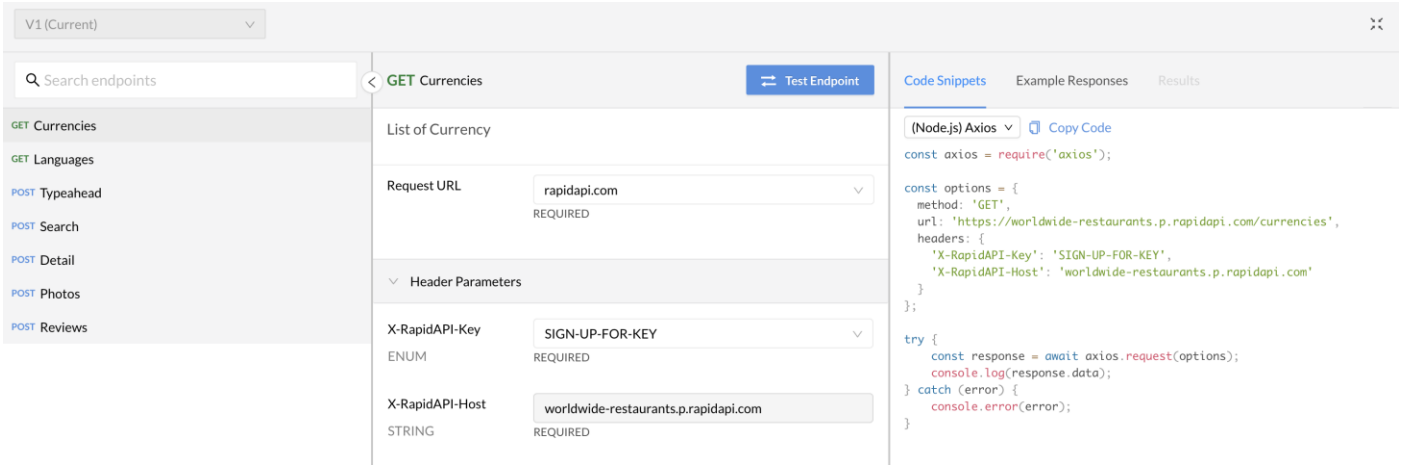

Figure 9 - Worldwide restaurant API

2.3.3 OpenAI Chat API

The OpenAI Chat API provides access to powerful conversational models developed by OpenAI, such as ChatGPT. In our app, we've integrated the OpenAI Chat API to enhance user interactions, allowing users to effortlessly obtain information about tourist destinations through a chat interface. We've programmed a specific prompt system to ensure it delivers accurate travel-related answers. Currently, the chat completion model is based on gpt-3.5-turbo.

```
@app.post("/message")
async def send_message(messages: List[Message]):
    response = openai.ChatCompletion.create(
        model="gpt-3.5-turbo",
        messages=[message.dict() for message in messages],
        stream=True
    )

    return StreamingResponse(get_streamed_ai_response(response), media_type='text/event-stream')
```

Figure 10 - OpenAI Chat API

2.3.4 Unsplush image API

Unsplash API is a robust service provided by Unsplash, a platform that offers freely usable, high-quality images contributed by photographers worldwide. The Unsplash API allows developers to access these photos and integrate them into their applications. This API is widely used for retrieving random photos, searching for specific images, and downloading them directly through API calls.

When a user enters a location to search, the webpage's background will automatically update to display an image of that location.

```
export const fetchBackgroundImage = async (query) => {
  const url = `https://api.unsplash.com/search/photos?page=1&query=${encodeURIComponent(query)}&client_id=${UNSPLASH_ACCESS_KEY}`;

  try {
    const response = await axios.get(url);
    const photos = response.data.results;
    if (photos.length > 0) {
      return photos[0].urls.regular;
    }
  } catch (error) {
    console.error('Fail to get the picture:', error);
  }
```

Figure 11 - Unsplush image API

3 Product Functionality

3.1 Website Goals and Vision

"Tripper" is a platform aimed at connecting global travel enthusiasts with local guides, providing a one-stop solution for exploring corners of the world. This platform simplifies and personalizes travel planning by offering detailed travel information, user-customized functions, and social interactions.

3.2 Home Page design

Visualization: Features scrolling high-quality images of beautiful scenes from around the world, conveying a compelling vision of global exploration. These images not only showcase the modernity of various places but also communicate vibrancy and allure through their lighting elements and lively scenes.

Navigation Simplicity: The navigation bar is clearly marked with "Explore," "Forum," "Find Your Host," and login/signup options, allowing users to intuitively understand how to navigate the site.

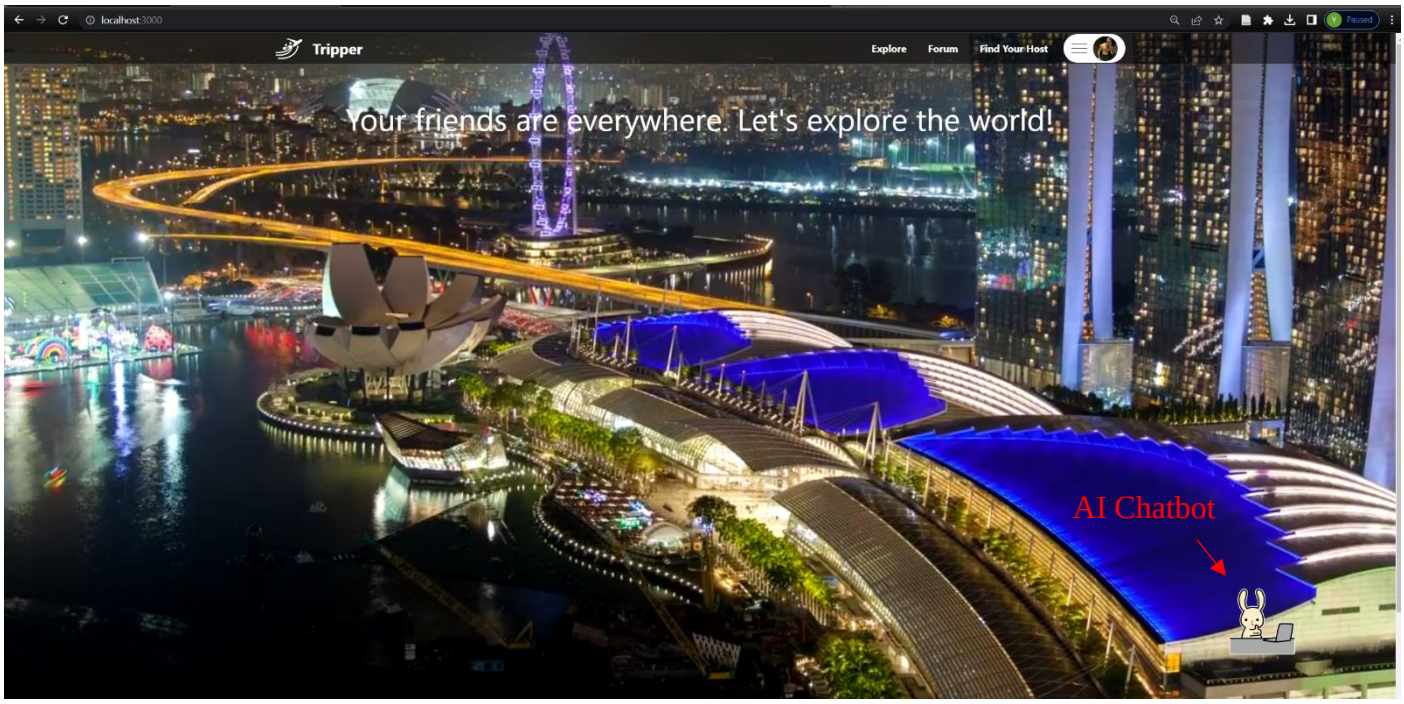

Figure 12 – Home Page of Tripper

3.3 Registration and Login Functionality

3.3.1 User Access

Provides multiple registration options, including traditional email signup and social media account logins (Google and GitHub). This integration simplifies the access process for new users and enhances convenience.

The login interface is designed to be clean and sophisticated, offering a distraction-free environment that supports quick user access.

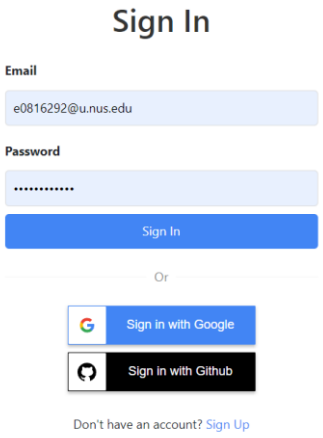

Figure 13 – Sign in

Figure 14 – Sign in

3.3.2 Role Selection

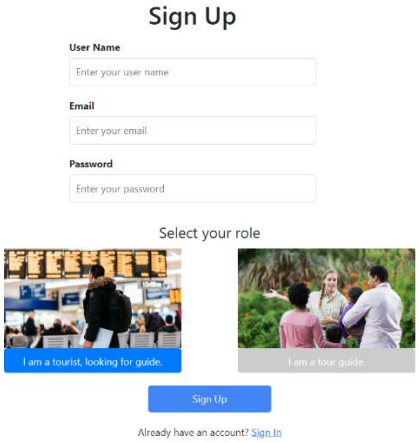

Figure 15 – Sign Up page

Introduces role selection (e.g., tourists, guides) during the signup process. This not only personalizes the user experience but also helps the platform deliver tailored content and suggestions, enhancing the relevance and effectiveness of the service.

3.4 User Center

3.4.1 Common Features Across All User Types:

The User Center on the "Tripper" platform serves as a personal dashboard where users can personalize their profiles and manage settings, enhancing community interaction and connectivity. Key features include the ability to upload a personal avatar, set a username, and write a short biography. Users can also set their geographic preferences, choosing a default starting point for exploration or preferred regions, which tailors the content and recommendations they receive.The difference between tourist and tour guide

3.4.2 Differences Between Tourist and Tour Guide Settings

Tourists:

Objective: Tourists primarily use the User Center to enhance their travel experience by managing personal preferences and settings that influence the suggestions and information presented to them.

Customization Options: They often have settings related to travel preferences, such as favorite destinations or travel interests, which help in receiving personalized travel tips and promotions.

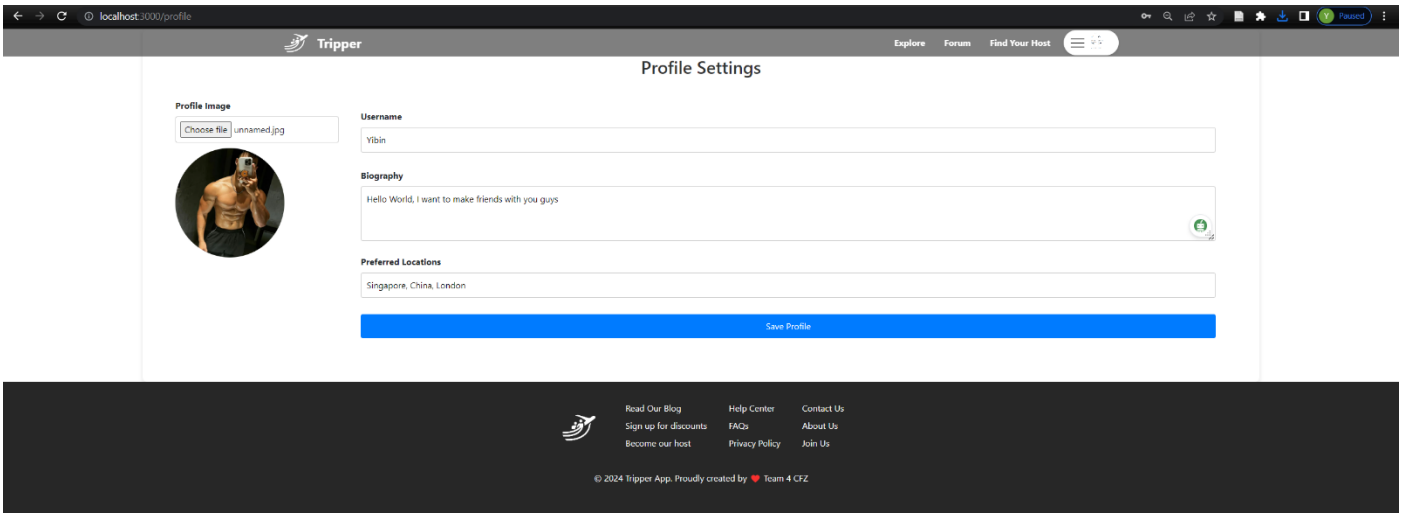

Figure 16 – User center for Tourists

Tour Guides:

Objective: For tour guides, the User Center is more about showcasing their expertise and services to attract tourists. This involves more professional settings that highlight their skills and offerings.

Customization Options: Tour guides can list detailed professional information including their service areas, languages spoken, and special skills or tours they offer. This information is crucial for tourists to find and select guides who match their specific travel needs.

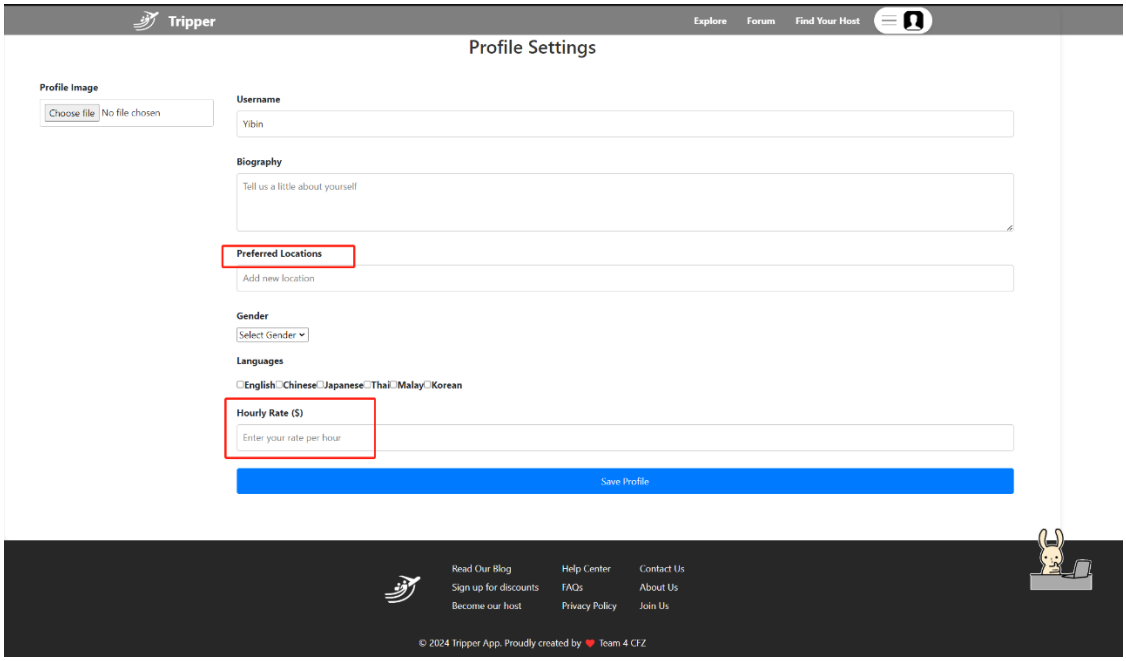

Figure 17 - User center for Tourists

3.5 Guide Matching and Social Features

3.5.1 Guide Search and Filtering

Users can filter guides based on multiple criteria such as location, gender, language abilities, and hourly rates, making it more efficient and precise to find suitable local guides.

Each guide's detailed card offers rich information, including photos, ratings, services provided, and pricing, facilitating informed choices.

3.5.2 Instant Messaging Feature

The platform's built-in messaging system allows users and guides to communicate directly without third-party apps, enhancing communication efficiency and ensuring privacy.

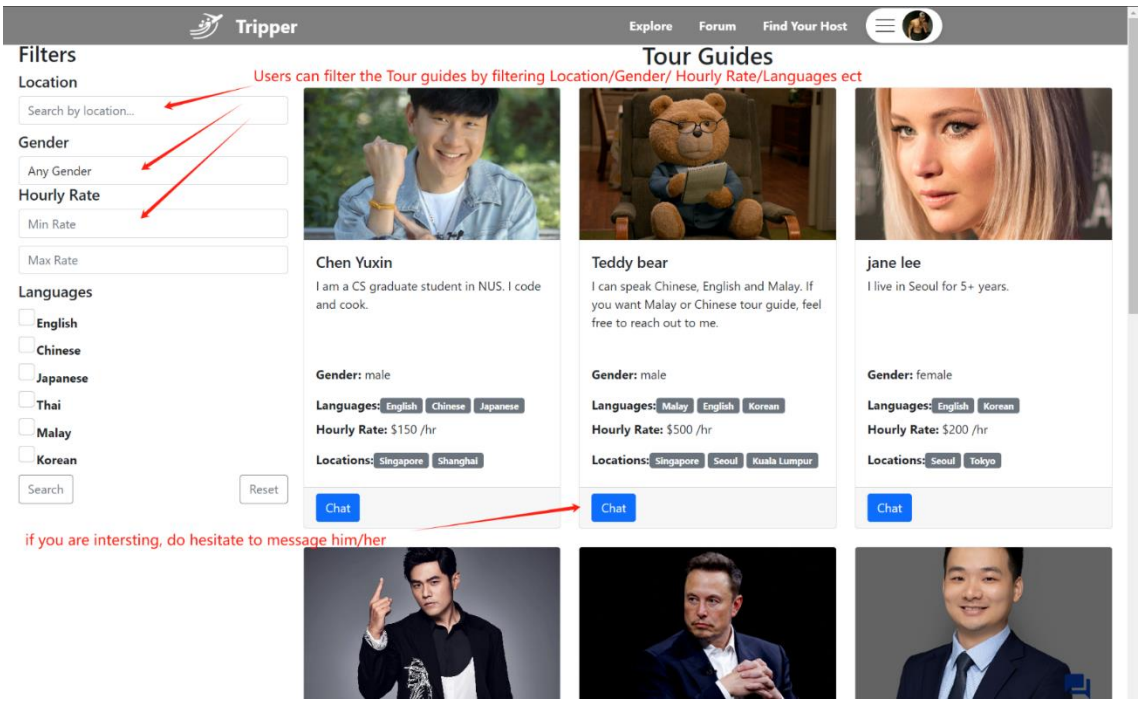

Figure 18 - Guide Matching and Social Features

3.6 Instant Messaging Interface

The instant messaging feature is more than just a simple tool for exchanging messages; it also serves as a social interaction platform, allowing users to create and maintain connections with guides worldwide. This interaction provides a more personalized and in-depth approach to travel preparation, enabling users to gain unique insights and recommendations from locals, thus enriching their travel experience.

3.7 Dialogue Box

Users and guides can send and receive messages in this area. The message window clearly displays the conversation history, including timestamps, allowing both parties to track the dialogue progress.

3.8 Search and Add New Contacts Feature

A search bar at the top of the interface allows users to search for and add new contacts (e.g., guides or other travellers). For example, mentioning "Elon Musk" in a conversation triggers a quick search and add option.

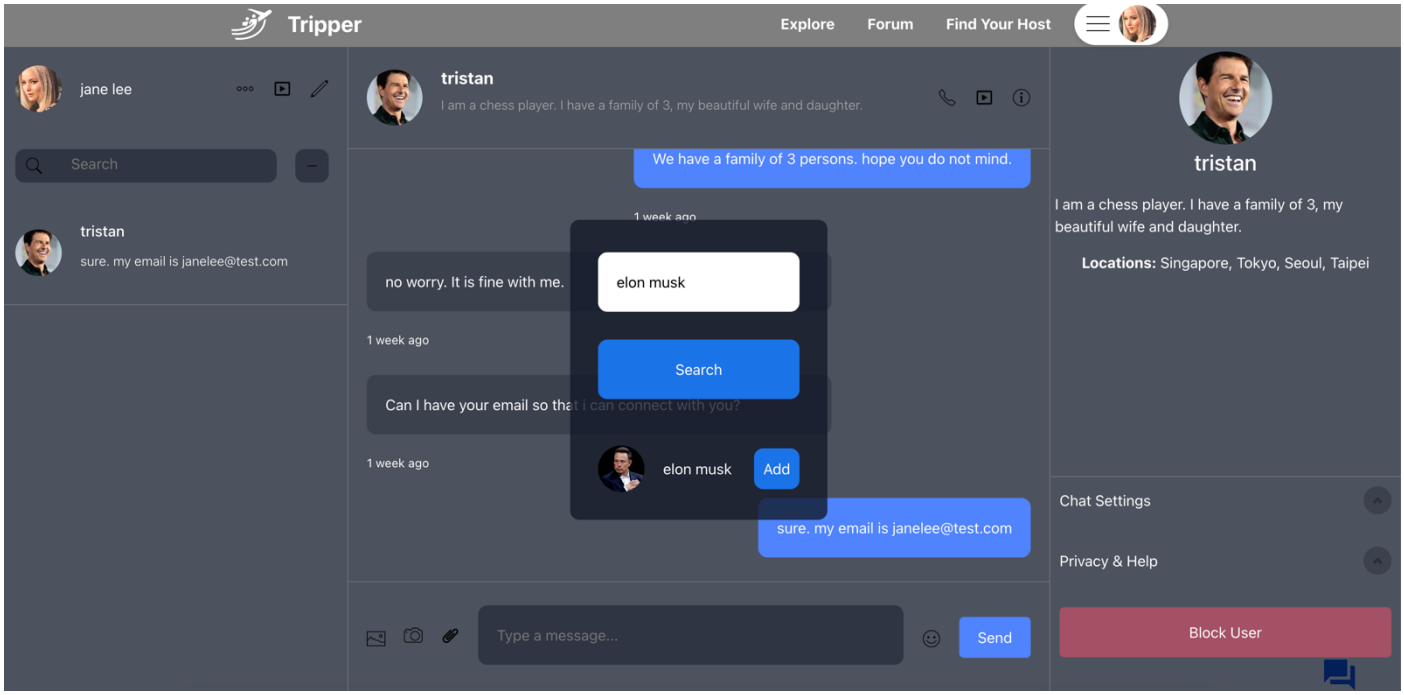

Figure 19 - Search and Add New Contacts Feature

3.9 Brief Information of Users and Guides

The chat window side displays basic information about the guides, such as name, profession (e.g., chess player), family situation, and the locations they serve (e.g., Singapore, Tokyo, Seoul, Taipei). This helps users understand the background of the people they are communicating with.

3.10 Chat Settings

Users can manage conversations through chat settings, such as blocking users or adjusting priv acysettings, ensuring they can control who can contact them.

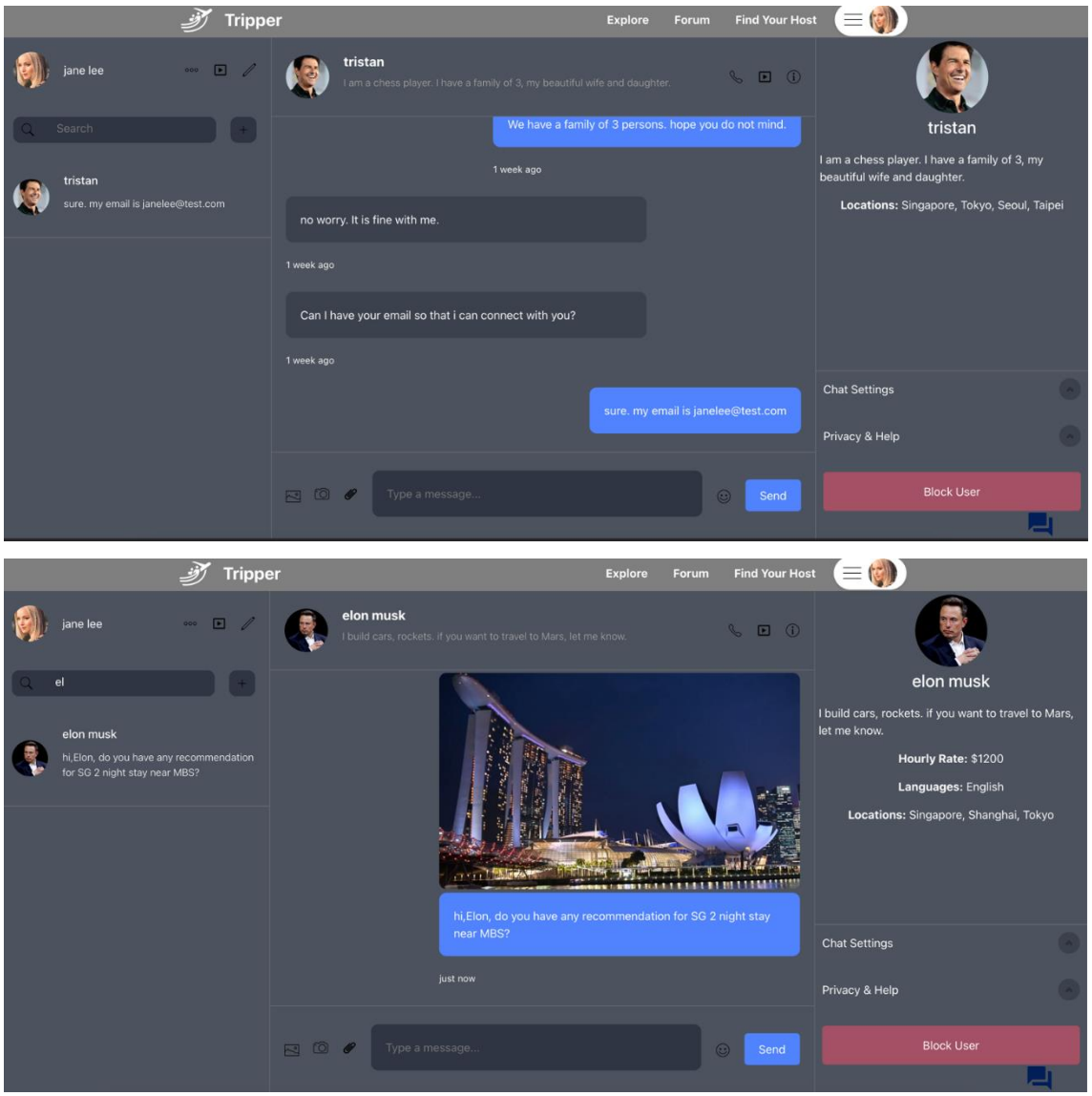

Figure 20 - Instant Messaging Interface

3.11 Forum

3.11.1 Forum Overview

The Tripper Forum serves as a dynamic social platform where users can share and discuss their travel experiences. The homepage provides an overview of the forum's main sections, featuring a welcoming banner, various discussion threads, and easy navigation through different categories and tags. Users can immediately see each post's title, category, tags, the poster's avatar, username, number of replies, and the date posted.

3.11.2 Sidebar Navigation:

The sidebar includes quick links to the homepage and facilitates the retrieval of posts by geographic categories or tags. A prominent button allows users to create new threads, specifying categories and tags, enhancing user engagement and content organization.

3.11.3 Functional Details in Home view

Post Listings: Displays multiple posts with detailed information such as titles, categories, and tags to help users quickly identify topics of interest.

User Interaction: Clicking on a post title opens the content and discussion area, where users can engage in detailed discussions.

Replies and Dates: Each post displays the number of replies and the posting date, inviting users to read more and participate.

Post Sorting: A dropdown menu allows users to sort posts by criteria such as latest or most popular.

3.11.4 Search Functionality

Users can filter posts by categories and tags, making it easier to find discussions relevant to their interests.

3.11.5 Creating Posts

Users can initiate discussions by clicking the “Create a Thread” button. A modal window facilitates the entry of the post title and content, and the selection of relevant categories and tags.

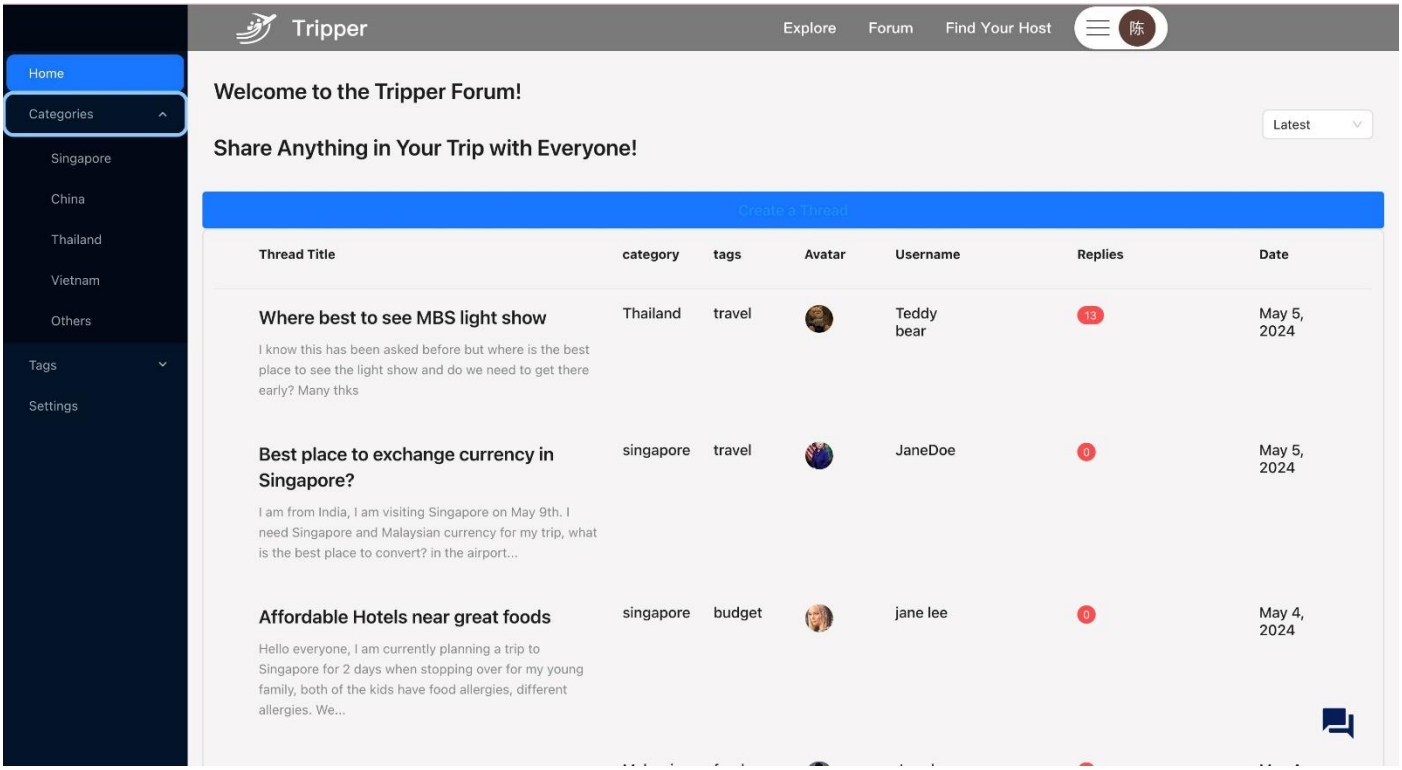

Figure 21 - Home Page for Forum

3.11.6 Functional Details in Home view

Personalized Posts: Each post page includes the poster's profile, adding a personal touch and fostering community interaction.

Detailed Content: Posts support rich text, allowing users to comprehensively describe their travel experiences or inquiries, such as optimal visiting times and activity recommendations.

Interactive Features:

Pagination: A pagination feature at the bottom of the post list allows users to easily navigate between pages.

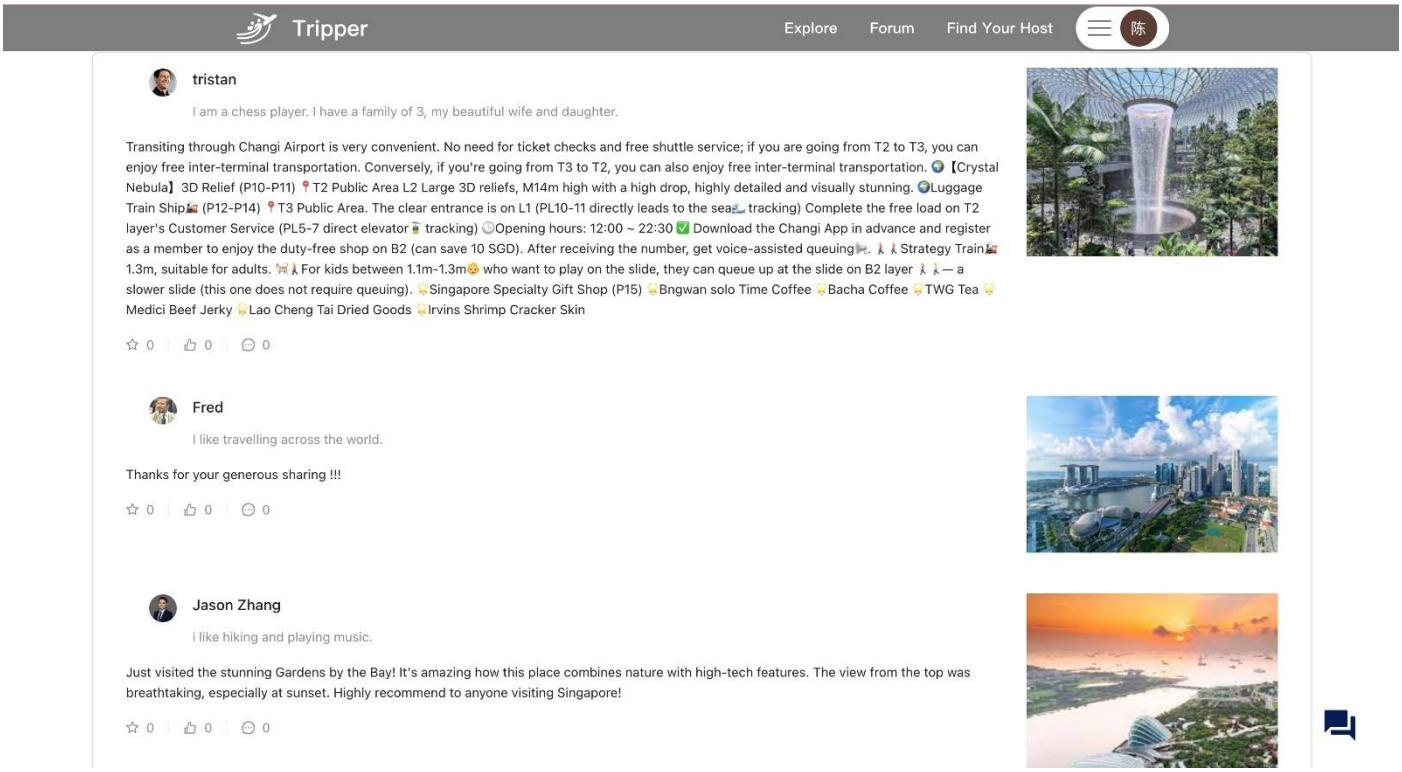

Figure 22 - thread example

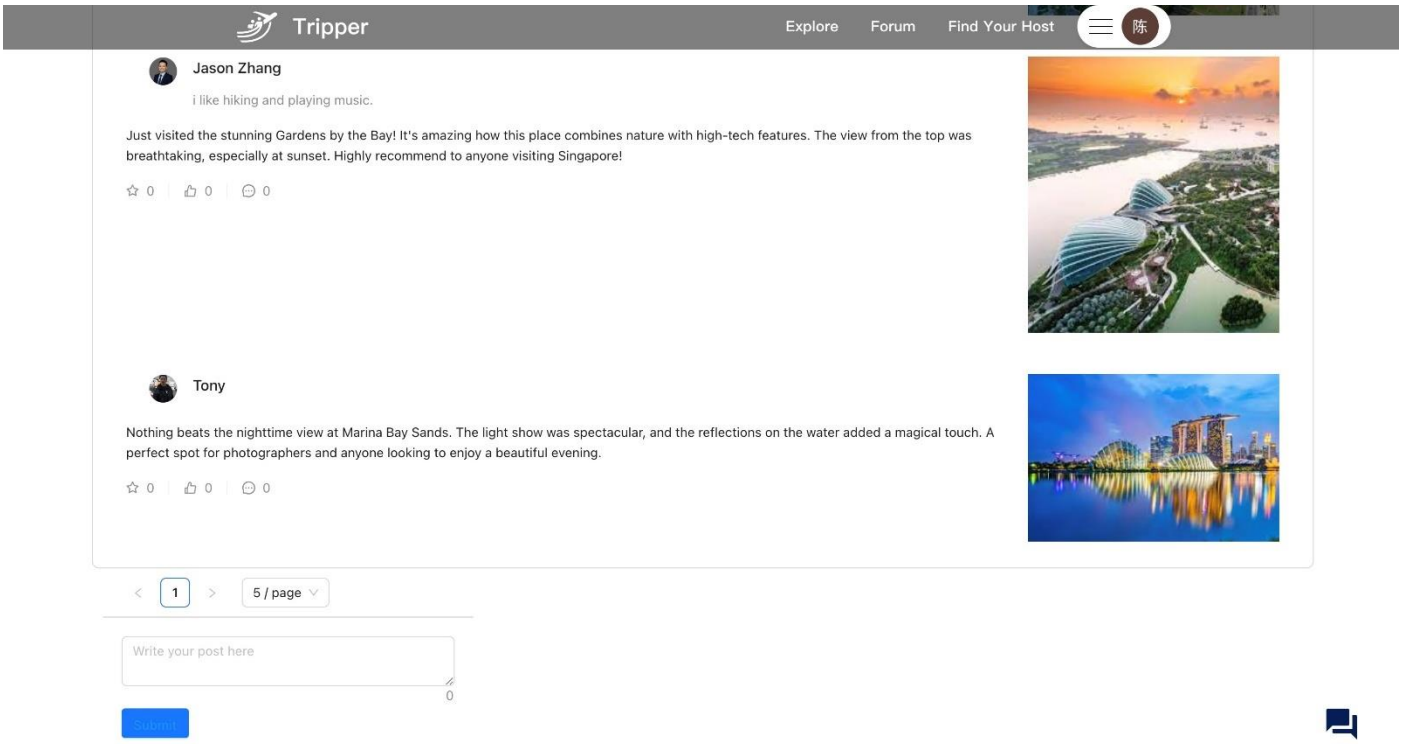

Figure 23 - thread example

3.11.7 Conclusion

The Tripper Forum platform actively encourages users to share their travel stories and tips, while also providing a resourceful community for those seeking travel advice. Each feature is designed to enhance user

experience and community engagement, ensuring that Tripper remains a valuable tool for travelers worldwide.

3.12 AI Boosted Trip Assistant

The AI Assistant acts as an interactive travel guide that aids users by crafting personalized itineraries based on their preferences. It offers information about weather conditions, top places to visit, dining options, and even assists with booking tickets and making reservations. This feature is designed to mimic a human tour guide, providing not only recommendations but also practical travel tips and cultural insights.

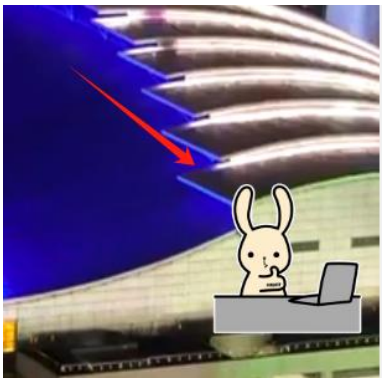

Figure 24 - AI Tripper Rabbit

Unlike generic travel platforms, our AI Assistant is tailored to deliver a highly personalized experience. It utilizes advanced algorithms to analyze user preferences and past behavior to suggest customized activities and attractions. This personal touch helps in crafting a unique and memorable travel experience, especially catered to individual tastes and interests.

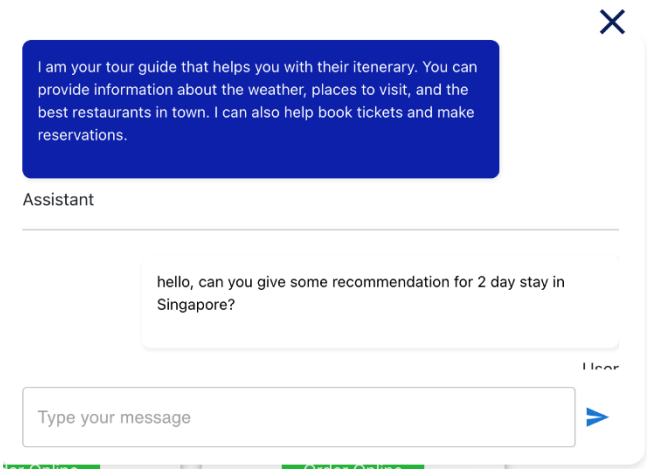

Figure 25 - Chat history With Tripper AI

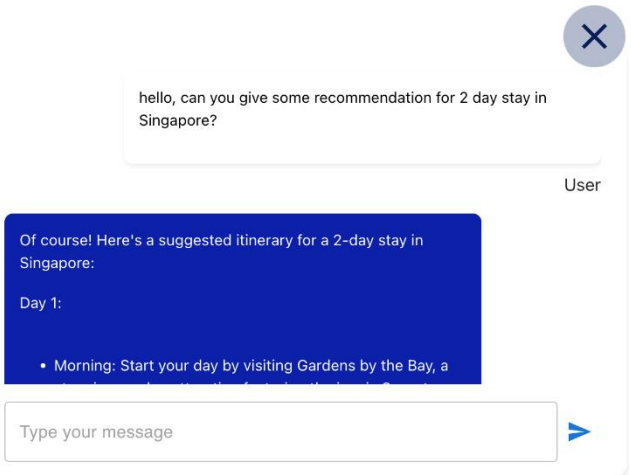

Figure 26 - Chat history With Tripper AI

3.13 Explore

The Explore page offers users a rich interactive interface, including attractions, restaurant recommendations, and drink options. Users can obtain background images, restaurant, and attraction information for specific areas by entering the name of a city. The page design focuses on enhancing user experience, incorporating dynamic loading, modal windows, and pagination features.

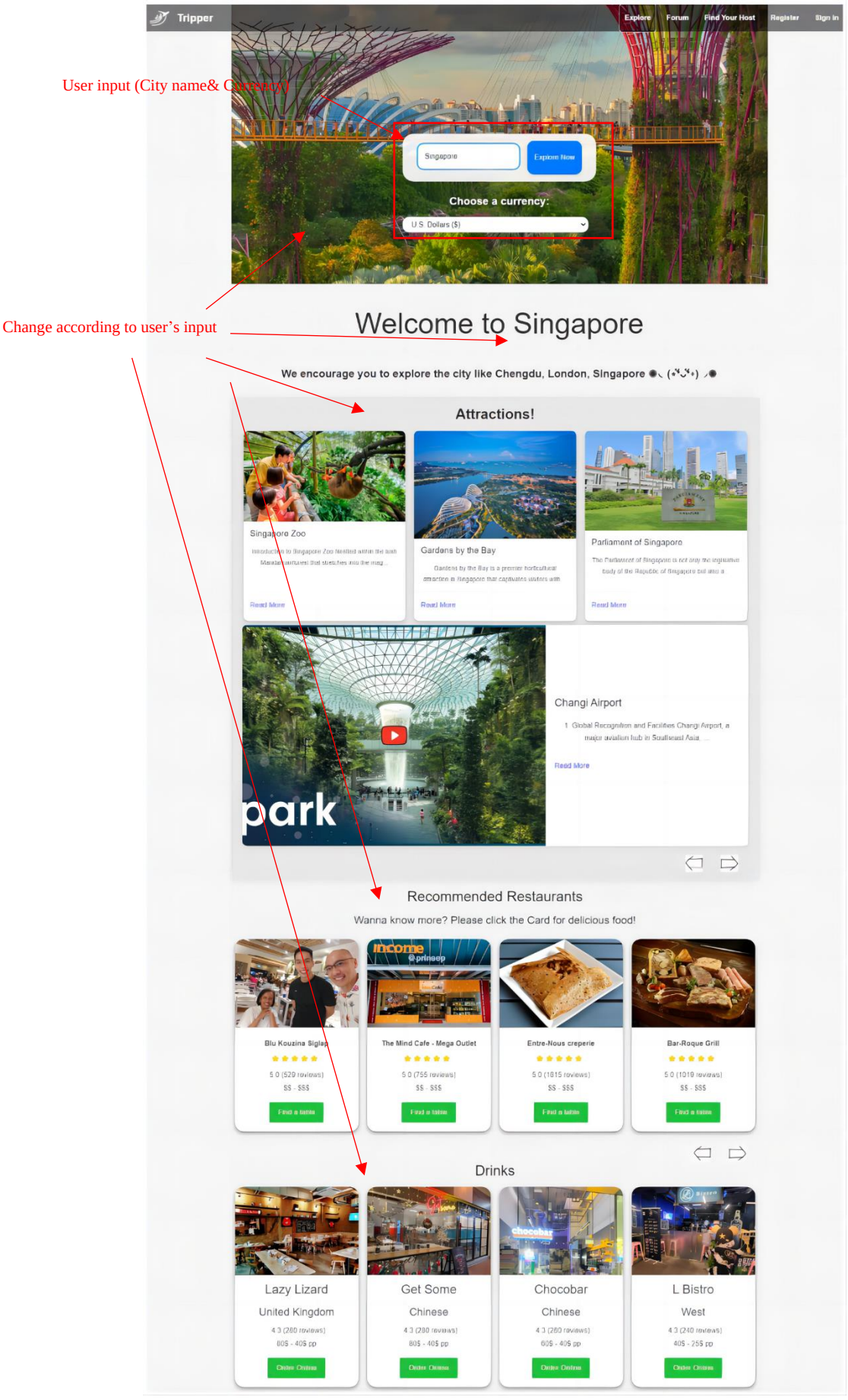

Figure 27 - Explore Preview Page

3.13.1 Geographic Location Retrieval and Background Image Updates

Automatically retrieves geographic location when users consent to share their location, and manually updates the background image upon city selection, fetching recommendations for attractions, restaurants, etc. This not only reflects user-friendly design but also emphasizes the importance of privacy.

3.13.2 Responsive Search Function

Provides a search box for users who prefer not to share their personal location or wish to travel to a specific country/city. Clicking the “Explore Now” button updates the page content to display relevant information about the chosen city.

3.13.3 Dynamic Currency Selection

Offers a dropdown menu for users to select a currency, displaying related information based on the chosen currency to enhance the international user experience.

3.13.4 Attraction/ Restaurant/ Drinks Preview

RestaurantPreviewCard displays an overview of the restaurant, including the restaurant’s name, photo, rating, price level, number of user reviews, and a booking link. Users can click ‘Find a table’ to make a reservation.

DrinkCard displays an overview of drink establishments, including the name, photo, rating, price level, and number of user reviews, with a booking link. Users can click ‘Find a table’ to make reservations.

3.13.5 Detailed Information Access

Users can obtain more details by clicking "Read more". Explore integrates recommendations for attractions, restaurants, and drinks.

3.13.6 Pagination and Navigation

Implements pagination, supporting paginated browsing of attractions, restaurants, and drinks. Uses left and right arrows to navigate forward and backward through the pages.

3.13.7 Detail Pages

Attraction Detail Page: Users can enter the detail page by clicking the 'read more' on the preview card or directly clicking on the card. The detail page includes the title, a detailed description, specific location information, and can directly display the exact geographic location on Google Maps, as well as high-quality videos. Users can also choose to return to the Explore page to view other attraction information.

Restaurant Detail Page:

- **Name and Image Display:** For example, the page prominently displays "The Mind Cafe - Mega Outlet" at the top, accompanied by a photo of the café's exterior, immediately providing users with clear brand and location recognition.
- **Basic Information:** Includes details about the café’s features and services, such as offering board game experiences and environments suitable for various gatherings.
- **Location and Contact Information:** Clearly lists the café's location, phone number, and email address, facilitating contact or reservations.
- **Business Hours:** Details the daily operating hours of the café, including adjustments for special days, allowing customers to easily plan their visits.
- **Interactive Map:** Embeds a Google Map to visually display the café’s location and enables map navigation features for route planning.

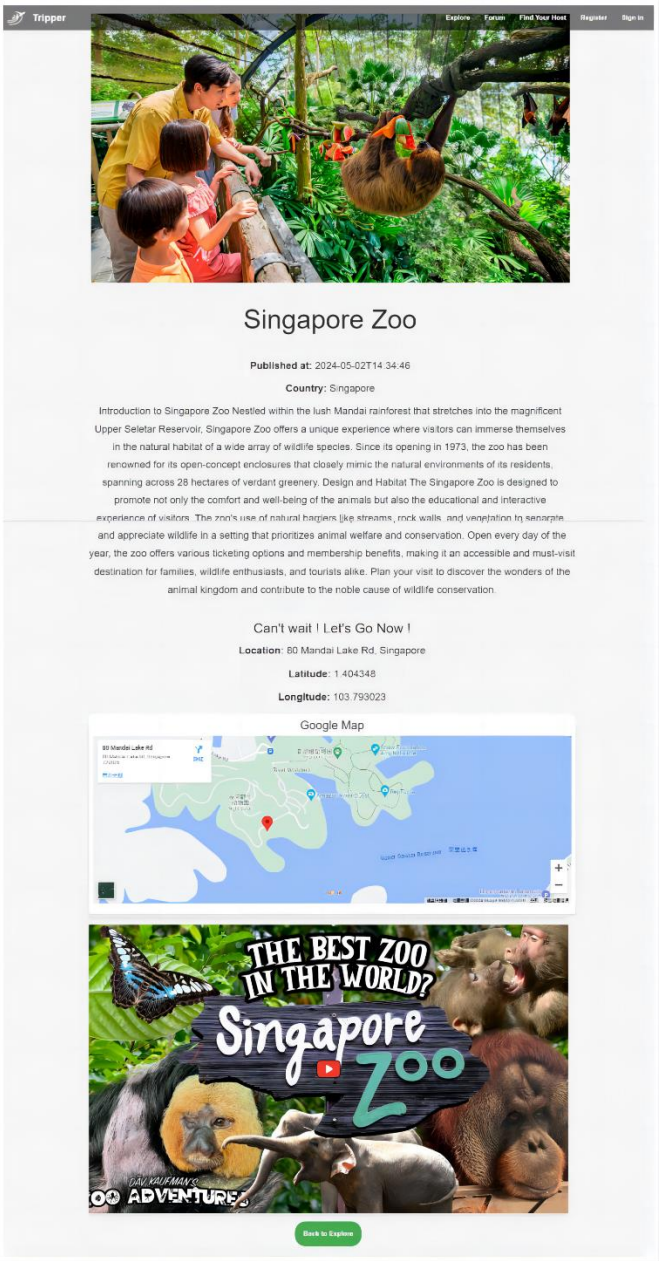

Figure 28 – Attraction Details Card

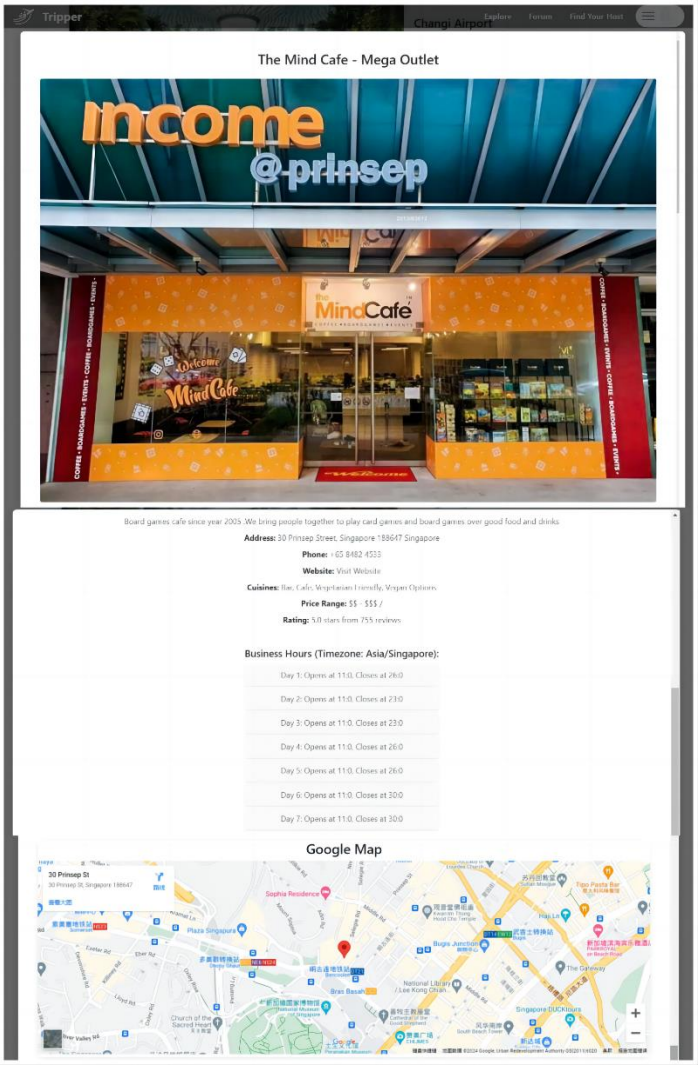

Figure 29 – Restaurant details Card

3.14 Boundary Condition

The "Tripper" platform incorporates a robust boundary condition management system to handle user inputs across different functionalities, particularly during the sign-up and sign-in processes. This system is designed to enhance security, maintain data integrity, and ensure a seamless user experience.

3.14.1 Pagination and Data Handling

Condition: The navigation must handle boundary conditions such as attempting to go past the last page or before the first page.

Implementation: The "Previous" button is disabled on the first page, and the "Next" button is disabled on the last page. This prevents users from navigating beyond the available data set.

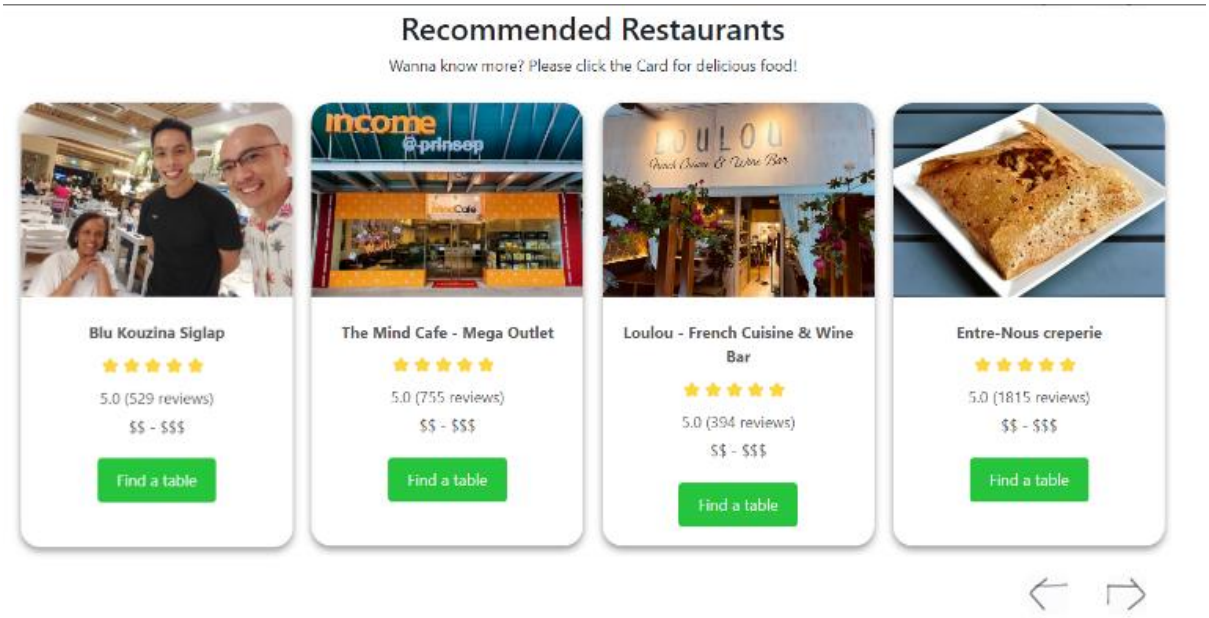

Figure 30 – Restaurant Pagination

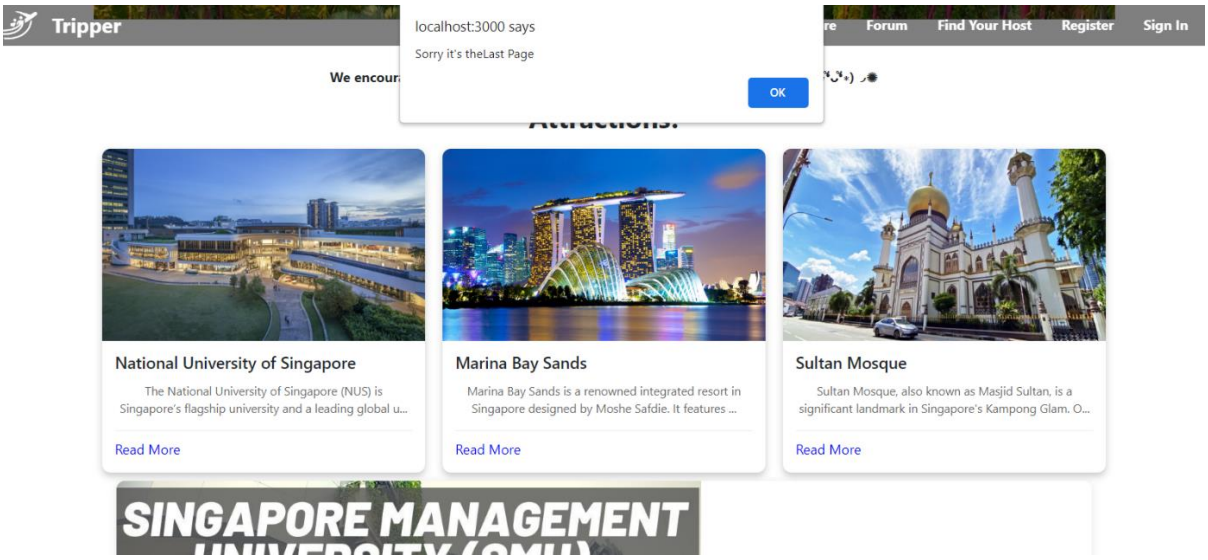

Figure 31 - Pagination Boundary Handling

3.14.2 Loading data NA and Timeout Conditions

Condition: The system must handle situations where data retrieval takes significant time or times out.

Implementation: Implementation of loading states and timeout notifications ensures that the system remains responsive under all conditions.

User Feedback: During prolonged data processing, a "Loading..." indicator is displayed. If operations time out, a message informs the user of the delay and suggests possible actions.

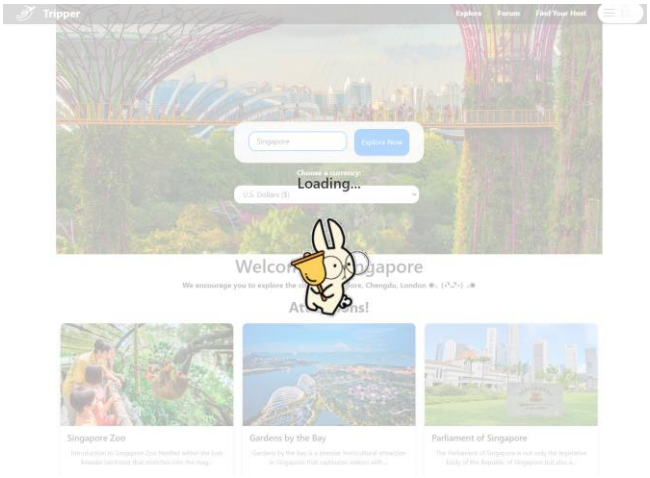

Figure 32 - Loading Notification

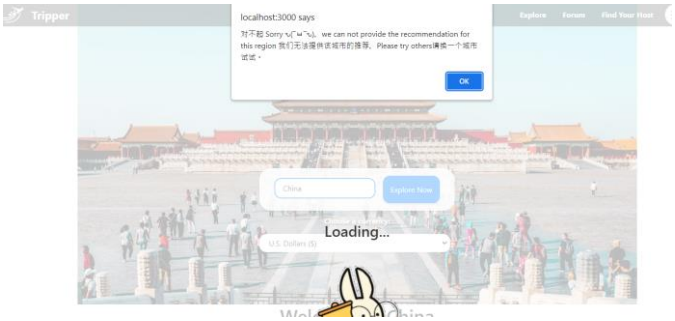

Figure 33 - Data NA or Timeout Notification

3.14.3 Email Verification during Registration and Sign-in

Condition: The platform requires that a valid email address is entered during registration and sign-in processes.

Implementation: The system uses regex patterns to verify the format of the email address. If the input does not match the expected format, the user is prompted to enter a valid email.

User Feedback: If an invalid email is entered, the platform displays an error message such as "Firebase: Error (auth/missing-email)." This informs the user about the necessity to provide a correct email format.

3.14.4 Password Complexity Requirements

Condition: Passwords must meet specific complexity requirements (e.g., a minimum number of characters, inclusion of numbers, and symbols).

Implementation: During account creation, the password input is checked against defined complexity criteria. Failure to meet these criteria prevents form submission.

User Feedback: If the password does not meet the complexity requirements, the system provides a feedback message detailing the nature of the issue, guiding users to create a more secure password.

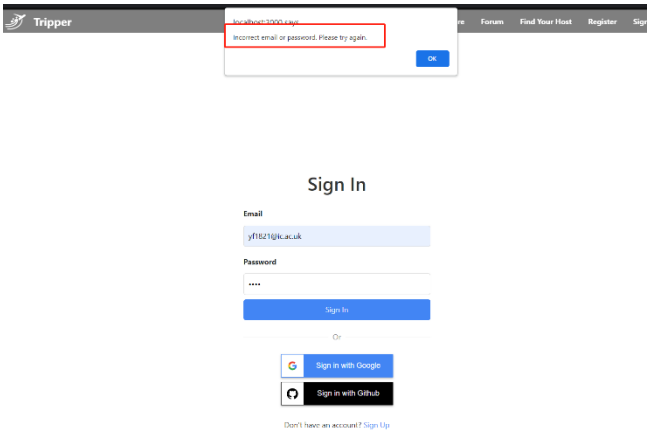

Figure 34 - Sign Up alert

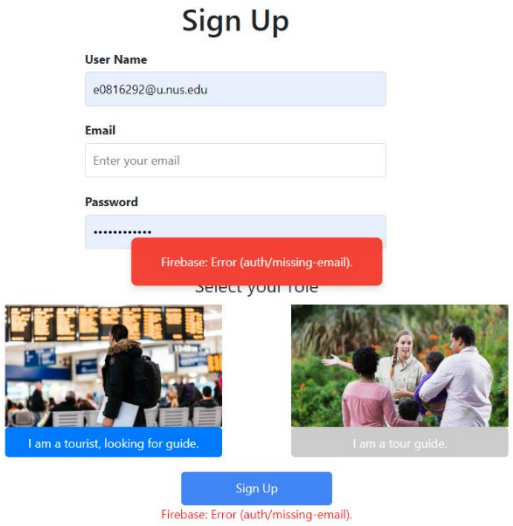

Figure 35 – Sign Up alert

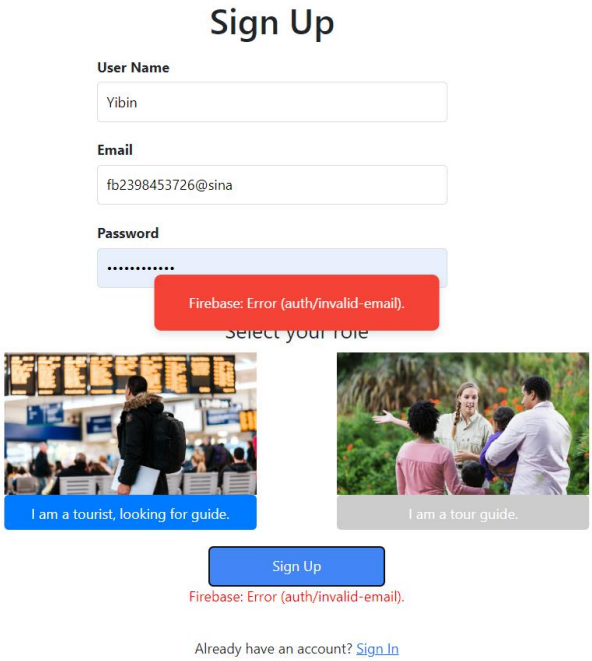

Figure 36 - Sign Up alert

3.14.5 Users' information centre

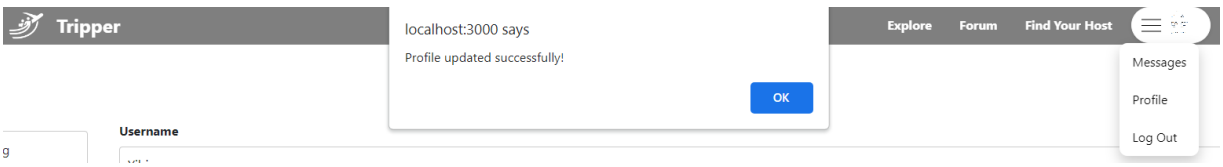

Figure 37 - update notification

3.15 UI Design

In the UI design of the pages, we focus on high interactivity and visual appeal to ensure a smooth and enjoyable user experience. Here are several key advantages and features of the UI design:

3.15.1 Modern and Attractive Interface

The design style is modern, with a clean and attractive interface. Clear typography and a strong sense of visual hierarchy in the layout ensure users can easily navigate and find the information they need.

The color usage is appropriate and primarily consists of comfortable tones, ensuring a comfortable user experience during prolonged use.

3.15.2 Responsive Design

The page design is responsive, adapting to various devices and screen sizes, ensuring an optimized browsing experience whether accessed from desktop computers, tablets, or smartphones.

Media queries ensure the adaptability of layouts and content across different devices, maintaining functionality and accessibility.

3.15.3 Dynamic Interactive Elements

The interface's interactivity and appeal are enhanced with dynamic background images and smooth transition effects. For instance, background images dynamically update according to the city selected by the user, enhancing the visual effect and personalizing the experience.

Interactive buttons such as "Explore Now" utilize micro-interactions, such as hover zoom effects and click compression feedback, enhancing user operational awareness.

3.15.4 Intuitive Navigation

Pagination controls and navigation elements are intuitively designed, allowing users to easily understand how to operate them, thus enabling quick transitions between attractions, restaurants, and drinks.

Navigation elements like the left and right arrow icons are large and clear, making them easy to click and providing good visual feedback, such as click responses and transition animations.

3.15.5 Rich Visual Content and Information Card Design

Each attraction, restaurant, and drink is presented through carefully designed information cards. These cards not only provide essential information such as names, ratings, and summaries but also cleverly incorporate images to make the presentation more vivid and appealing.

The layout of the information cards maintains consistency and also supports user interaction for more details, such as through "Read More" links or clicking on the card to trigger a modal window for further details.

3.15.6 Optimized User Feedback Mechanisms

During data loading or system processing, loading animations and timely user prompts (such as success or error messages) provide immediate feedback, enhancing user confidence in operation.

In cases of errors or when user attention is needed, modal dialogs or informational prompts are used to ensure users are aware of what is happening and how to respond

4 Improvement / Future Roadmap for Tripper Platform

4.1 Enhanced Content Recommendation Algorithm

Develop a more advanced content recommendation algorithm that leverages user behavior and preferences to suggest personalized travel plans, attractions, and dining options. This AI-driven approach will ensure that recommendations are increasingly tailored to the unique tastes and preferences of each Chinese tourist, enhancing user engagement and satisfaction.

4.2 Restaurant and Attraction Wishlists:

Introduce wishlists where users can save and organize their favorite restaurants and attractions. This feature will allow users to plan their trips more effectively by keeping track of places they wish to visit, creating a more organized and fulfilling travel experience.

4.3 Enhanced Interaction in Community Forum

Implement features like upvoting and replying to posts to increase interaction within the forum. This will encourage more active community participation and help users engage with content that is most relevant to them.

Allow image sharing within posts to enrich the discussion threads. Users can upload pictures from their travels, which can make advice more tangible and useful, such as images of hidden gems or local cuisines.

4.4 Real-Time Language Translation:

Integrate real-time translation capabilities to help overcome language barriers within the community forum. This feature will allow users to interact seamlessly with each other, regardless of their language, enhancing the inclusivity and utility of the platform.

4.5 AI-Powered Virtual Tour Guide

Develop an AI-powered virtual tour guide that can provide live guidance and information during trips. This virtual companion can offer instant translations, cultural insights, and navigational help, making travel smoother and more enjoyable for Chinese tourists.

4.6 Enhanced User Profile Customization

Expand user profile features to include tracking of visited places and a journaling feature where they can record their travel experiences. This personal touch can transform their profile into a travel diary, enhancing personalization and user attachment to the platform.

4.7 Improved Accessibility Features

Implement accessibility features that cater to a broader range of physical abilities, ensuring that all tourists, including those with disabilities, can fully utilize the platform and its resources.

5 Reference/ Acknowledgments

1. **Safak's GitHub Repository**: We are grateful for the foundational messaging functionality derived from Safak's React Firebase Chat, available at github.com/safak/react-firebase-chat.
2. **Public APIs Repository**: Our application benefited from the diverse list of public APIs provided by the repository at github.com/public-apis/public-apis, some of which we have integrated.
3. **OpenAI Cookbook**: The OpenAI Cookbook has been instrumental, offering exemplary use cases for the OpenAI API in crafting interactive chat interfaces. Access it at github.com/openai/openai-cookbook.
4. **Novu Blog**: The blog post on building a forum with React and Node.js at Novu's site (novu.co/blog/building-a-forum-with-react-nodejs) provided essential insights into our forum functionality.