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Department of Computer Science



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Project Specification Report

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Table of Contents

1. Introduction	3
1.1 Description	3
1.2 Constraints	5
1.2.1 Implementation Constraints	5
1.2.2 Economic Constraints	5
1.2.3 Social Constraints	6
1.2.4 Ethical Constraints	6
1.2.5 Sustainability Constraints	6
1.3 Professional and Ethical Issues	6
2. Requirements	7
2.1 Functional Requirements	7
2.1.1 Sign up - Login	7
2.1.2 Holiday Arrangement	7
2.1.3 Social Media Aspect	8
2.2 Non-functional Requirements	8
2.2.1 Usability	8
2.2.2 Security	9
2.2.3 Maintainability	9
2.2.4 Performance	9
2.2.5 Extensibility	9
2.2.6 Scalability	9
2.2.7 Accessibility	10
2.2.8 Supportability	10
3. References	11

1. Introduction

Vacations are fun, but planning them, not so much. Especially if you are responsible for planning a holiday trip that suits many people with different interests, budget and available times. This is a serious task for everyone, and on average, a person spends 10 hours planning their holiday, as the survey of Independent Newspaper claims [1]. Moreover, the results of the poll that includes more than 7800 people's opinions from 26 different countries show that over 25 percent of people think holiday planning is one of life's 'biggest stressors'. Thus, Our application, "Travela" focuses on solving this problem, while being a total travel companion.

Travela is an app that provides a unique way of planning your holiday trips with your friends. With the machine learning systems we use, the app suggests the best location or route of vacation for your trip group, taking all of the group members' holiday interests, budget and time constraints into consideration. While doing that, the app also suggests to you the popular landmarks or recommended activities in your route, to make your trip well-worth. Also, you can share these holiday plans and your holiday memories on the app, and highlight the places visited in your own unique Globe. By this way, you can see your previous holidays with your most fun memories, and also your friends' too. Thus, it is also a social media app for travel lovers!

1.1 Description

Travela is planned to bring innovation of service and customer engagement, as the provided service and functionality of recommending vacations to a group of users by taking account their interests, is different from the already existing products on the market. Also, this app makes planning trips easier and more enjoyable, thus it is an innovation of service that increases user experience. The innovation that is planned is also incremental, as it is not achieved by leveraging a radical technology, but it is something that fulfills a need in the market for many users. The machine learning recommender system is similar in terms of creating a feature matrix of a person's interests, but whenever a group is formed, these matrices will be taken into consideration together, which is a new technique, but not a radical one. Travela's business strategy is Digital Business Optimization, which focuses on enhancing

customer experiences. Also, it provides a new way of engaging the customers in the tourism / travel planning domain, thus, it can be said that it creates a new digital business model.

Like every new business idea, Travela has some risks too. Firstly, it proposes a new social media, which may have a hard time finding its customer base amongst the giant media companies like Instagram or Facebook. And one important consideration is that it is vital to provide good service when users sign into the app for the first time, as most of the users would download the app to plan a trip immediately. Thus, it is a challenge to crawl as much data about the users holiday interests as possible in a short amount of time and suggest possible vacation alternatives. Also, the success of recommender systems depend on third party applications and their integration with Travela such as Instagram, Facebook, Google Maps, Google Calendar etc. Due to privacy concerns of these big companies, the integration to them can be challenging.

As Travela is an app whose success depends on the experience of users within the app, it is essential that the recommender systems are fast and accurate. It is important to mention that the target user group is anyone that plans trips online, especially young people that try to plan holidays through an app with their friend group. Baring that in mind, having an easy and usable user interface for the target customer base is a requirement, which adds to the user experience. One should easily search for trips, form travel groups, view possible vacations for the group and view the activities around the travel route, almost intuitively and without any issue. Our goal as the Travela team is that this app is used internationally, has lots of users in holiday seasons (as it is not realistic to expect people to browse through a vacation app every day), and recognized in the market as a new social media app.

As there are many features that are planned to be implemented in a limited period of time, it is reasonable to prioritize the features. Firstly, the number one priority functionality is recommending possible holiday trips to a user or some group of users. In order to recommend a suitable vacation, user data is needed. In order to get this data, it is essential to connect the app to Instagram or Facebook (facebook is an ongoing discussion) for the previously visited location data, and also, asking informational questions like “Which of the photos below is more suitable for your dream holiday?”, without boring and losing the users interest to the app. Moreover, it is important for a user to form groups and view the possible vacations almost

intuitively. It is almost equally important for a user to search through the app to find holidays or popular trip locations on his own. Then, there are features that are important, but not as important as the ones that are mentioned above like showing the possible activities or landmarks within the holiday location, showing their ratings in Google maps, or finding and suggesting a route to visit popular landmarks, once the vacation city is settled. Also, the app should suggest hotels and transportation alternatives according to the budgets. To do this, it has to be connected to an external API. Moreover, the features that help decision making of the travel location like polls within the group are planned to be implemented. The proposed features are mentioned in more detail in part 2.1 of this report. Even though the features mentioned above have different priorities, they are all planned to be implemented. We do not think of supporting payment or making reservations through our app at this moment, as there are plenty of other applications that do this functionality like Hotels.com Otelz, Tatilbudur, Etstur Hotel, and the market is quite saturated with these kinds of applications. As the business model, we provide connections between the customer and relevant vacation reservation companies. While doing so, Travele is planned to earn money through advertisements.

1.2 Constraints

1.2.1 Implementation Constraints

- The application will have a mobile and web version.
- Git will be used for source control.
- Social media APIs (such as Instagram) will be used.
- Java, Kotlin or Dart (Flutter) could be used for the mobile app.
- JavaScript, TypeScript or Dart (Flutter) could be used for frontend of the web app.
- Java, JavaScript (Node.js) or Kotlin could be used for the backend of the web app.

1.2.2 Economic Constraints

- The application will be free.
- Advertisements will be used to generate revenue needed to maintain the app.

- Transactions (booking flights, hotels etc.) won't be made from within the app, they will be redirected.

1.2.3 Social Constraints

- The app will have an important social aspect, allowing users to make group travel plans and interact with other users in multiple ways.
- The target audience will be people who like to travel, especially as groups.

1.2.4 Ethical Constraints

- The app will be able to access users' social media accounts. This data needs to be handled carefully and it will not be shared externally.
- Since any purchases are redirected outside the app, no data about payment such as credit card information or transaction history will be stored.

1.2.5 Sustainability Constraints

- The app will be maintained regularly, fixing bugs when necessary.
- Information about travel items such as hotels, places, transportation will be obtained from external sources, so they will be kept up to date.
- Feedback from users will be taken into account when releasing new features.

1.3 Professional and Ethical Issues

- The application will profile users to enhance its suggestions. This requires training our system on personal information and preferences. Our application will not share or use this information elsewhere.
- Users will be allowed to delete their personal information/profiling from our system whenever they want, and the system will also delete their information if they close their account off. We will not do any profile matching, by which we mean we will not store that information to try to match it with the same user in their future uses from different instances.
- Third party API's will be used, but any information shared will be anonymised to protect personal information.
- Users will be able to block other profiles and report others for mis-usage/abuse. Our team will look into them and take proper actions.

2. Requirements

2.1 Functional Requirements

2.1.1 Sign up - Login

- Allows users to sign up and login to the system by using their Google/ Facebook account or via email and password that is determined in the sign up process.
- Enables users to renew their password when it is forgotten using their email.
- Collects data from the user during the sign up process to see his/her preferences like favorite location, preferred routes or activities via a quick questionnaire.

2.1.2 Holiday Arrangement

- Enables users to form travel groups via sending an invitation to other users to arrange a holiday together.
- Enables users to integrate their calendar hence important dates to the system like exam dates or national holidays.
- Shows the common available dates of the group members via Google Calendar integration.
- Allows users to search places that they want to visit.
- Shows suitable hotels and transportation opportunities for the given dates and place.
- Suggests travel routes according to groups' overall preferences (budget, date) by using ML algorithms.
- Suggests activities (concerts, festivals, etc.) between the given dates in selected locations.
- Shows reviews and ratings of the places and activities from Google Maps, TripAdvisor, AirBNB etc.
- Shows information on which season a place is generally visited like Ibiza is often visited in summer season and Switzerland is in winter season.
- Enables users to create polls among their group to determine possible routes, plans, itineraries, activities, etc.

2.1.3 Social Media Aspect

- Allows users to see previous trips of both themselves and their friends in a World map, create routes and plans according to their map.
- Enables users to create a profile.
- Allows users to send friend requests to other users.
- Allows users to see their current travel groups in their account.
- Allows users to share their trips (pictures, routes) with others to influence others' possible trips on their accounts.
- Enables users to rate the places that they see in the platform to be able to collect data for suggestion algorithms which is similar to rating movies in Netflix (dislike,like,love).
- Enables users to delete their account if preferred.
- Allows users to take a questioner to his/her traveler personality.

2.2 Non-functional Requirements

2.2.1 Usability

- User interface should be understandable and not complex, also catchy to impress users.
- Headings should be in larger font size than the other parts to draw attention.
- Font size for the body should be minimum 16 px.
- Interfaces should be responsive for both mobile and web.
- Design should be made with a mobile first approach as mobile app is thought to be used more commonly.
- To apply mobile first design, for iOS the Human Interface Design should be considered and for Android Material Design should be considered [2] [3].
- While fetching data, refreshing animations should be attractive not to distract users.
- It should address all kinds of users from various ages.
- The language should be English to be universal.
- The user shouldn't have to re-login if he/she refreshes the page.

2.2.2 Security

- Users will not be able to enter the system without a password as the app also has a social media aspect.
- Passwords will be saved in the database in an encrypted version.
- Loss of data in a possible crash should be prevented.
- Users' all previous trip data should be removed if the user deletes his/her account.
- An authentication token should be implemented to determine the specifications of a session [4].

2.2.3 Maintainability

- Updating the system should not affect the end user's experience for a long time.
- Encapsulation should be used to facilitate detection of problems.
- Consistent commenting method will be used to follow the process of code and make it more understandable.

2.2.4 Performance

- While logging in and logging out, the processes should not take more than 5-10 seconds.
- Navigation between pages should happen fast enough to keep users in the system and should happen at the same speed on all platforms.

2.2.5 Extensibility

- Travela should be available on multiple platforms (web, mobile).
- Travela should work well with external APIs. (TripAdvisor, AirBNB, etc.)
- Google Calendar should be integrable to the system.

2.2.6 Scalability

- It is aimed to reach many people so Travela should be scalable and handle data properly.

2.2.7 Accessibility

- Travela's mobile app should be downloadable for free from the App Store or Google Play Store.
- Travelable should be easily visited through its URL.

2.2.8 Supportability

- For mobile, Travela should support iOS and Android operating systems.
- For web Travela should support Firefox, Chrome, Opera, Microsoft Edge, and Safari browsers.

3. References

[1] Knight, Rob. "Average person spends 10 hours planning their holiday, survey claims". Independent UK.

<https://www.independent.co.uk/travel/holiday-booking-planning-travel-survey-tourist-a8801211.html>. (Accessed: 15 Oct 2022)

[2] A. Inc., "Human interface guidelines," *Human Interface Guidelines - Human Interface Guidelines - Design - Apple Developer*. [Online]. Available: <https://developer.apple.com/design/human-interface-guidelines/guidelines/overview/>. (Accessed: 17-Oct-2022).

[3] "Material design for Android : android developers," *Android Developers*. [Online] Available:<https://developer.android.com/develop/ui/views/theming/look-and-feel>. (Accessed: 17-Oct-2022).

[4] "What is token-based authentication?," *Okta*. [Online]. Available: <https://www.okta.com/identity-101/what-is-token-based-authentication/>. (Accessed: 17-Oct-2022).