Lab 2- Draft

Itiner-Ease - Team Copper

Old Dominion University (ODU)

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Version 1

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1.0 Introduction

In a world where people are able to afford going on trips less and less, all the planning and effort it requires to even go on the trip in the first place can lead you to choose to just stay home instead. While some travelers try to turn to tour guides and other online planning methods to save them the hassle, they lose out on the personal feel and hidden treasures you might find planning the trip yourself. 62% of travelers wish to include a customized experience in their trip[7], but doing so yourself often takes upwards of 5 hours to plan a trip that is supposed to relax you and not feel like a second job. 70% of travelers think a tour guide is going to be the perfect solution and are willing to pay the price to avoid it, but of that 70% we drop down to 40% for millennials and 22% for older generations actually following through with it[15]. Then once you consider factors such as group travel, and most people travel in groups or that as many as 60% of travelers experience some kind of disruption in their plans even after they spent so much time making them[10]. It is no wonder that travel feels like it is becoming more of a hassle than it is worth.

Itiner-Ease is our solution to all these listed problems, through our features including AI-driven itinerary creation, local expert advice, dynamic itinerary updates, and group itinerary creation and voting. These features are powered by our personalized profiles containing user interests that give users a unique personalized experience. While the app is intended to be a replacement for traditional itinerary methods it is customizable to users' needs and can adapt to existing plans.

1.1 Purpose

The purpose of this document is to provide an outline of the Itiner-Ease product's purpose, functionality, constraints, and to create a clear explanation of the system's requirements.

1.2 Scope

Itiner-ease is intended as primarily an itinerary creation and recommendation application. After account creation including a personalized profile containing user interests the user will be able to automatically with the aid of AI create an entire itinerary of a location of their choice with activities, locations, and food based on the interests filled out in their profile. The product also includes several secondary features to aid in customer confidence and satisfaction in the product including local expert advice, or dynamic updates. Itiner-ease is not however a replacement for travel agents or other all encompassing travel packages. Therefore, one key aspect of the travel process that Itiner-ease does not cover is lodging and travel.There are no current plans to partner or otherwise directly interact with any of the recommended businesses beyond advertising and discount benefits. As a consequence the user will not be able to purchase goods or services for said businesses directly through the application. Finally, the user is generally responsible for all booking and follow-through of the activities and locations that Itiner-ease recommends.

1.3 Definitions

AI Preferences Learned Behaviors: The ability of the app's AI to learn from a user’s past behavior to provide more accurate recommendations in future interactions.

AI Recommendations: Suggestions generated by artificial intelligence to personalize itineraries based on user preferences and behaviors.

Curated Itineraries: Personalized travel plans that are specifically tailored to a user's preferences and interests.

Dynamic Itinerary Support: Real-time adjustments or updates to travel plans based on changing conditions like weather or local events.

Explorer Rewards: Incentives, such as discounts or coupons, for users based on their activity within the app (e.g., completing tasks, rating attractions).

Foot Traffic: The number of people visiting a location or business, often used to measure the success of promotions or events.

Group Profiles: A feature that allows multiple users to create and share a single itinerary for a group trip, capturing the collective preferences and needs of the group.

“Hot Spot” Advocating: Recommending popular or noteworthy locations (such as restaurants, parks, or attractions) to users, helping them explore the best local experiences.

Itinerary Creation: The process of planning and organizing travel plans, including activities, accommodations, and transportation.

Joint Itineraries: Collaborative itineraries created by multiple users to coordinate their travel plans.

Offline Access: The ability for users to access and view their travel plans without requiring an internet connection.

Targeted Promotions: Marketing efforts aimed at specific groups, such as nearby travelers, to promote local businesses or attractions.

Tourism Industry: The sector of the economy focused on services related to traveling, including accommodations, transportation, and guided tours.

Git: Distributed version control software system for managing versions of source code or data

Github: A web-based platform for version control and collaboration that uses Git to host and manage code repositories.

Laravel: An open-source PHP framework used for building web applications.

Laravel Blades: A templating engine included with the Laravel PHP framework. It provides a way to write clean and reusable view files by offering a concise syntax for common PHP structures and features.

HTML: HyperText Markup Language, the standard markup language used to create web pages and web applications.

Alpine.js: A lightweight JavaScript framework designed to add reactive and declarative behavior directly within your HTML markup.

Tailwind.css: A CSS framework designed for rapidly building custom user interfaces directly within HTML markup.

MySQL: An open-source relational database management system.

OpenAI: An organization that designs and maintains artificial general intelligence models and products.

OpenAI API: provides developers with programmatic access to OpenAI's advanced artificial intelligence models.

GPT: Generative Pre-trained Transformer, refers to a family of large language models developed by OpenAI.

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1.5 Overview

The remaining sections of this document contain the product software and hardware interfaces, configurations, and features of the Itiner-Ease prototype implementation. This includes a detailed description of the requirements for features implemented in this prototype stage.

2.0 Prototype Description

Itiner-ease's prototype will be deployed as a web application hosted on a Linux server. It will be focused primarily on the general traveler user interface and experience with a minor exploration into the local expert user interface. Most of the features involving the itinerary creation process will be included outside of the dynamic updating feature. It will focus on a limited selection of travel locations, with a simplified implementation of the activity selection process based on scraped online review data. The prototype will have static examples for unimplemented features such as the local expert intel or explorer rewards. The choice of feature implementation is intended to demonstrate Itiner-Ease as a successful itinerary creation tool with a focus on only the required functions and tools to perform that task.

2.1 Product Perspective

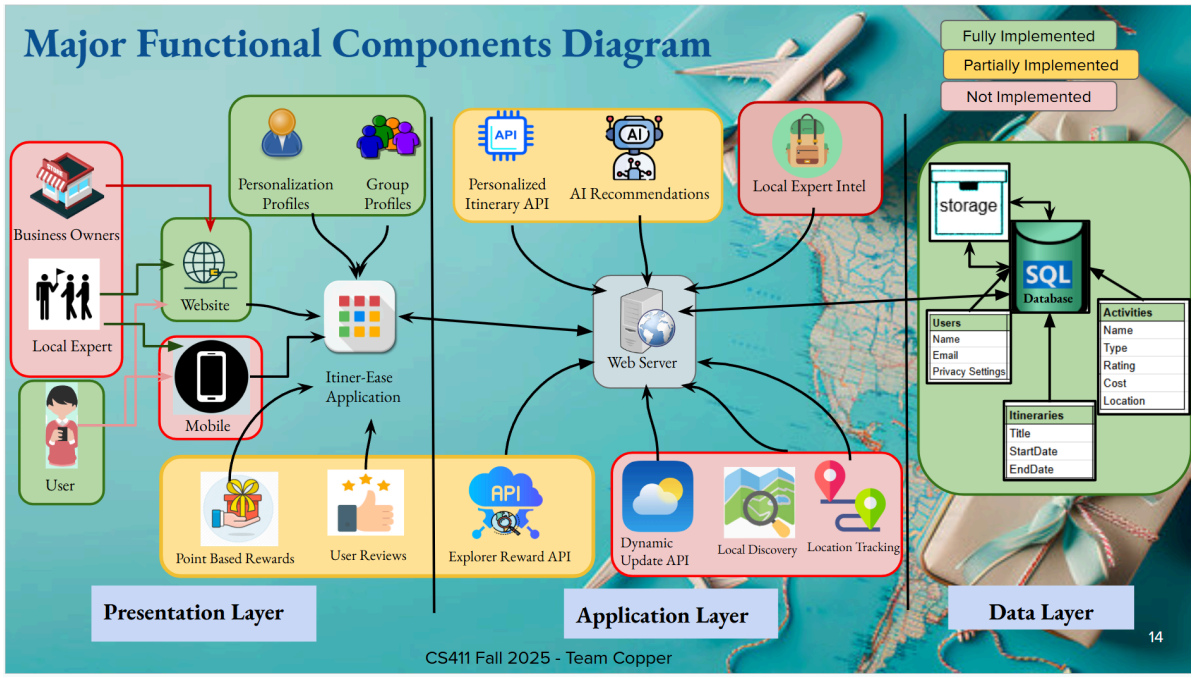

Figure 1. Prototype Major Functional Components Diagram

The presentation layer is where our users will access our website where the prototype will be hosted. Upon creating an account they will be prompted to create a personalization profile which will be required for our major features in the application layer. Our front-end development was handled through a combination Alpine.js, Tailwind.css, and basic HTML contained in Laravel Blades. The application layer is built through Laravel and takes the user's personalization profiles to build an itinerary through AI. This works via accessing our data layer, which is a MySQL database which contains location and activity entries tagged with matches for user preferences. These matching locations and activities are then provided to our OpenAI api via a prompt to give us a selection of activities/locations and food options with which we build the itinerary.

2.2 Product Functions

Feature Groups	Features	Real World Problem	Prototype
Account and Services	Login/Authentication	Fully Implemented	Fully Implemented
	Account Creation/Deletion	Fully Implemented	Fully Implemented
	Account Management	Fully Implemented	Partially Implemented
	Notifications	Fully Implemented	Eliminated
	Payment Information	Fully Implemented	Eliminated
Itinerary Creation	Personalized Profiles	Fully Implemented	Fully Implemented
	AI Recommendations	Fully Implemented	Partially Implemented
	Business/Location Reviews	Fully Implemented	Partially Implemented
	Itinerary Customization	Fully Implemented	Partially Implemented
Public/Group Profiles	Joint Itineraries	Fully Implemented	Fully Implemented
	Plan Sharing	Fully Implemented	Eliminated
	Choice Voting and Selection	Fully Implemented	Eliminated
Local Expert	Local Expert Selection	Fully Implemented	Partially Implemented
	Local Expert/User Correspondence	Fully Implemented	Eliminated
	Expert Reviews	Fully Implemented	Partially Implemented
	Character Reviews	Fully Implemented	Eliminated
Dynamic Itinerary Support	Weather Updates	Fully Implemented	Eliminated
	Congestion Tracking	Fully Implemented	Eliminated
	Dynamic "Hot Spot" Advocation	Fully Implemented	Eliminated
Explorer Rewards	Discounts and Coupons	Fully Implemented	Partially Implemented
	Review Goals	Fully Implemented	Eliminated
	Business Interface	Fully Implemented	Eliminated
Data Analytics and Reports	AI Preference Learned Behavior	Fully Implemented	Eliminated
	Profitability Metrics	Fully Implemented	Eliminated
	Income Summary	Fully Implemented	Eliminated
	Popularity Trend Visualization	Fully Implemented	Eliminated
System and Data	Algorithm Updates	Fully Implemented	Eliminated
	Health and Security Monitoring	Fully Implemented	Eliminated
	Full Database Access	Fully Implemented	Fully Implemented
	Review Moderation Tools	Fully Implemented	Eliminated

Table 1. Real-World-Product vs. Prototype Feature Table

The account and services features that will be fully implemented include account login, authentication, creation/deletion, and editable account information. Notifications and payment services are not going to be available in this prototype. We chose to eliminate these features as we wanted to focus on the demonstration of our core feature itinerary creation. For itinerary creation, the personalized profiles will be fully implemented but AI recommendations, location reviews, and customization will be only partially implemented due to a reliance on reduced data. For our group profiles, joint itineraries will be fully implemented, but sharing and choice voting are not going to be in the prototype stage as these features are better implemented after our core process is finished. Our dynamic itinerary feature implementation is fully unavailable for this prototype as are all data analytics and reporting features. These features simply are not required to demonstrate our prototype and therefore were dropped. The local expert and explorer reward features will have a simplified noninteractive implementation to show how they intend to be used in the final real-world product. The reasoning for this is that they require a larger user base to be demonstrated properly. Finally, database access will be available to developers as a way to view and modify database entries for testing purposes.

2.3 User Characteristics

Travelers represent the primary user base. These users seek assistance in planning their personal or business trips. They have varying levels of travel experience and are expecting an intuitive guided itinerary creation process that takes into account their interests and preferences. Traveler users will be responsible for accommodations, bookings, and other arrangements to facilitate the

recommendations that Itiner-ease will provide. A general understanding of web-applications, account creation, and internet access will be required to interact with the application.

Local Experts are a secondary user base that provides a service to our primary user base. These users seek to leverage their local knowledge to create an income source by providing itinerary recommendation advice to travelers. They expect to create a profile explaining their specific expertise and for that profile to be advertised to users who would be interested in hiring their services. They then need a method through which to view the traveler's itinerary, preferences, and make annotatable modifications to said itinerary. A general understanding of web-applications, account creation, and internet access will be required to interact with the application.

2.4 Constraints

N/A

2.5 Assumptions and Dependencies

OpenAI's GPT models are our current method of implementation for our AI-recommendation tool and access to this tool is required both for the initial tagging of locations and for the duration of the itinerary creating process.