CENG491

Tour Guide Recommendation App for Groups

TourGuide KickOff Document

DESCRIPTION

This project is related with location and social media, but considers recommendation aspect. It focuses on location recommendation and tour of locations (such as first going to lunch, then to a movie theatre and then a coffee place) for a group of people. The resulting software will be a social mobile application such that users register and form groups. The expected users of the product are groups which want to travel together but having different preferences on which places to visit.

MASTER FEATURE LIST

MF-1 Recommendation Algorithm for Individuals

MF-2 Recommendation Algorithm for Groups

MF-3 Google Maps Integration

MF-4 Communication between Users

MF-5 Managing Operations for Groups

MF-6 Venue Features (Rating, followers etc.)

MF-7 User Authentication Functionalities

MF-8 User/Group Mobile Interfaces

MF-9 Search Operations for Users and Venues

MF-10 Notifications About Groups, Users and Recommendations

WORKPACKAGES

WP	Term	Workpackage Titles	Estimated number of man-months
1	491	Project Planning and Architecture Design	3
2	491	Database Infrastructure	2
3	491-492	Recommendation Algorithm	7
4	491-492	Server Operations	4
5	491-492	Android Application	5
6	491	Google Maps API Integration	3
7	491-492	User/Group Interaction	4
8	492	Publishing the Results as a Research Paper	2
Bonus-1	492	Multiplatform Support	5
Bonus-2	492	Social Media Integration	2

Detailed Descriptions of High-Level Workpackages

WP1 - Project planning and architecture design

In this workpackage, the following functionalities / features / work items will be implemented.

1. Develop the list of master features of the project.
2. Produce project development plan in accordance with Master Feature List.
3. Design the overall architecture of the project.
4. Analyze risks and make a management plan.

WP2 - Database Infrastructure

In this workpackage, the database architecture will be designed.

1. Relationships and entities will be determined and constructed.
2. CRUD operations
3. Importing datasets into our database schema.
4. Database-application connection will be implemented.

WP3 - Recommendation Algorithm

In this workpackage, a recommendation algorithm will be developed based on several ones that are suggested in the literature. Existing algorithms may be combined, compared, and used in testing while developing the new algorithm.
The developed algorithm will be implemented for working in background and it will be making recommendations to users/groups via application's interface.

WP4 - Server Operations

In this workpackage, many server operations such as computing algorithms, integration with database and application will be implemented. Examples:

1. Connection between database and application for user operations.
2. Computing recommendation algorithms for individuals/groups
3. Search operations for users and venues

WP5 - Android Application

In this workpackage, android application will be implemented. Features:

1. The application will provide an interface for users.
2. Android services will run in background.
3. User authentication functionalities such as login, logout
4. Notifications about messages, recommendations and requests.

WP6 - Google Maps API Integration

In this workpackage, Google Maps API will be used for the map feature in the mobile application. Features of the map will be:

1. Venues demonstration
2. Route drawing
3. Getting user inputs for venues (start/end points etc.)

WP7 - User/Group Interaction

In this workpackage, user-user and user-group interactions will be implemented.

1. Friend request / Send message / See profile etc. for user to user interaction
2. Form a group / Join a group / Leave a group etc. for user to group interaction

WP8 - Publishing the Results as a Research Paper

In this workpackage, we will compile the algorithms and the results gained from the implementation in a paper. We aim to publish this paper in a conference.

Bonus-1 - Multiplatform Support

In this workpackage, an iOS mobile application is aimed to be implemented with the same features and functionalities as the Android application has.

Bonus-2 - Social Media Integration

In this workpackage, various social media platforms such as Facebook, Twitter will be integrated into our system. Through this feature, users will be able to register, log in, find friends. Moreover, data coming from those apps can be used in recommendation algorithm.
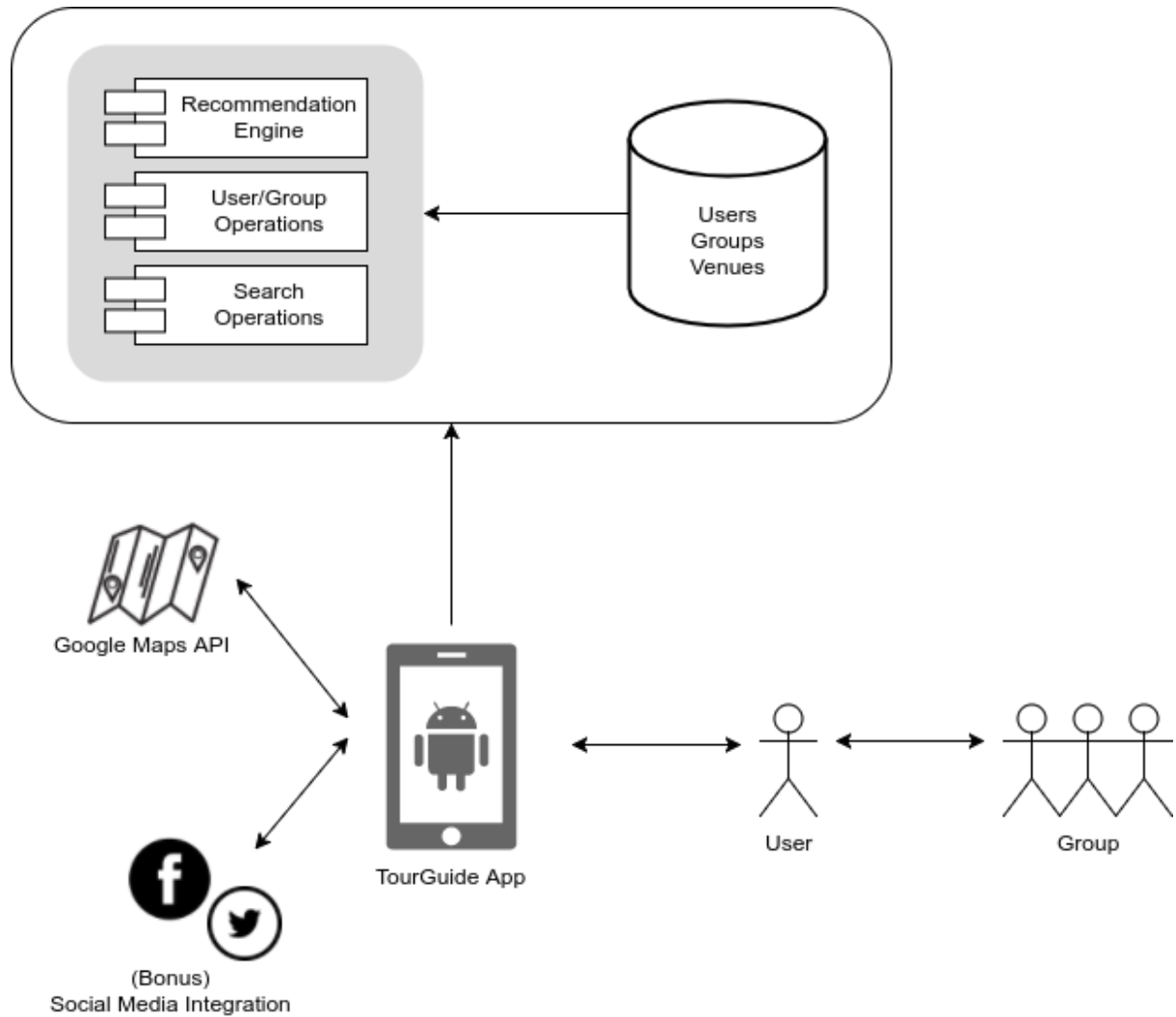
OVERALL SYSTEM ARCHITECTURE

Figure 1: Overall System Architecture of TourGuide

TIMELINE

	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15
WP1 - Project planning and architecture design	▓	▓	▓												
WP2 - Database Infrastructure				▓	▓	▓	▓	▓	▓	▓	▓	▓			
WP3 - Recommendation Algorithm	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓ MS2
WP4 - Server Operations				▓	▓	▓									
WP5 - Android Application	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓ MS1
WP6 - Google Maps API Integration	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
WP7 - User/Group Interaction										▓	▓	▓	▓	▓	▓
WP8 - Publishing the Results as a Research Paper															

	W16	W17	W18	W19	W20	W21	W22	W23	W24	W25	W26	W27	W28	W29	W30
WP1 - Project planning and architecture design															
WP2 - Database Infrastructure															
WP3 - Recommendation Algorithm	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓ MS3
WP4 - Server Operations	▓	▓	▓	▓	▓	▓	▓	▓	▓						
WP5 - Android Application	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓	▓
WP6 - Google Maps API Integration	▓														
WP7 - User/Group Interaction	▓	▓	▓	▓	▓	▓	▓	▓	▓						
WP8 - Publishing the Results as a Research Paper							▓	▓	▓	▓	▓	▓	▓	▓	▓ MS4

Figure 2: TourGuide Gantt Chart

- **MS1:** Basic Android Application
- **MS2:** Recommendation for User
- **MS3:** Recommendation for Group
- **MS4:** Publishing Research Paper

RISK ASSESSMENT

Risk #	Description	Possible Solution(s)
1	Dataset not extensive enough	Finding more datasets
2	Even after optimizations, algorithms may take too much time	Changes in data/algorithm or data sampling
3	Security Issues	Taking professional help from experts.