

# **CSE 535 Group 28 Project Proposal Phase I**

## **1) Project Members**

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## **2) Project Idea**

Our application allows users to set Individual and Group Shopping Memos where they can list down products(categories) to purchase. Depending on user's current location context, he'll be notified about nearby stores to purchase those products. He can then choose to store his shopping preference for that category. Based on the geospatial context and his store preference, he'll be notified about the nearby stores when he wants to purchase the product again (Smart Search & Memo). Group Memos for a product(category) can also be set where each member of the group will receive the shared Memo. Each of them will receive notifications if the preferred store is nearby. Thus, any member of the group can purchase and update the memo and all Group Members will receive the update notification. User can also use Smart search to shop for products of a particular category like groceries, medicines, clothes etc. In this scenario, initially when there is not enough data(cold start) in his shopping preference, the app will show the nearest top rated stores. The user will also be able to recommend their shopping preferences to friends.

### **Project relevance to class**

The project is an Android application that will incorporate several important concepts taught in class such as adaptation, context-awareness, background services and context storage and retrieval models. The app will use GPS to track the user's current location (context acquisition), check his preferences/memo (delivery and reception) and suggest places(action). We will use storage mechanisms such as MongoDB to store user preferences.

## **3) Plan to use external sensors**

Currently, we do not require any external sensors for this project.

## **4) Type of platform being used**

The app should work on Android phones with Android API Level 19 + (KitKat and above)

## **5) Development Setup**

IDE: Android Studio 2.1.3

Testing: Emulator (AVD), Personal Cell Phones.

## 6) Specification of context aware behavior

- I. Using the current location and based on his memos, in case there is shop/place of the user's choice nearby based on user's geo-spatial location, the app will remind him that he can visit the place.
- II. We will use the GPS to get the current location that will prompt users to choose if or not they purchased at that particular store.
- III. The app will also allow the user to "smartly" search for shops to purchase any particular product. The app will consider his shopping preference to return the best result.
- IV. Initially, the app will not have any shopping preference stored. In this case, searching for a store will return the nearest one. In this manner, the app will adapt to the new user scenario (cold start)

## 7) 20 tasks for the project (with the category – acquisition, delivery and reception, action)

- I. User Management and Authentication - **Delivery and Reception**: User can Sign-Up/Login/Logout from the app using Wi-Fi and REST calls from the Server.
- II. Database Setup Server Side - **Delivery and Reception**: MongoDB setup on server.
- III. Server Setup - REST API - **Delivery and Reception**: REST API setup to handle calls in JSON format.
- IV. Push Notification Setup - **Delivery and Reception**: Setting up push notification to handle group based and other web server based notifications.
- V. Location using GPS - **Acquisition**: User's current location will be retrieved using Google's Location API
- VI. Geo spatial context awareness - **Acquisition**: Google's Fence API is used to determine the user's proximity to his shopping preferences
- VII. Storing User's shopping preferences - **Delivery and Reception**: The user's place of visit along with the time and location are stored in the DB.
- VIII. Memo Reminder - **Action**: Using the user's shopping preferences and geo spatial context, he is sent a reminder notification.
- IX. Memo creation - **Delivery and Reception**: The user creates a memo storing categories of products with the next date of purchase. This data along with user's current location and time is used to send reminder notifications.
- X. Group Memo - **Delivery and Reception**: If the user creates a group memo, the list is added to all the group members' memos and reminders are sent to anyone who is near the location to purchase a product.
- XI. Group Memo Update notification - **Action**: Based on any member of the group updating the memo, all the group members receive a notification regarding the same.

- XII. Place Identification - **Acquisition:** Google's Places API is used to return the user's location in terms of the place rather than geo coordinates.
- XIII. Smart Search - **Acquisition:** The app retrieves the best store based on user's current location and his shopping preferences.
- XIV. Cold Start - Initial data handling - **Delivery and Reception:** When the user does a smart search for a product to shop for, and there is no history stored initially, the app uses his current location to search for places that are the nearest.
- XV. Context - Location Aware Smart Notification - **Action:** Based on his current location, the user receives a notification asking if he has shopped at a particular place and he also has to choose the category of product if yes. For example, he receives a notification stating "Have you shopped at Safeway?" This data is accordingly stored in his shopping preferences.
- XVI. Snooze and Do Not Disturb to stop notifications - **Delivery and Reception:** User can choose to stop his notifications temporarily for a particular category of products or for all memos.
- XVII. Sharing Shopping Preference (Recommendations) - **Delivery and Reception:** The app will allow a user to share any place from his shopping preferences to his friend.
- XVIII. Accepting a recommendation - **Delivery and Reception:** When the user accepts a recommendation, it is added to his shopping preferences.
- XIX. UI and Architecture Design - **Delivery and Reception:** Finalizing UI and architecture for the application.
- XX. Background Services - **Delivery and Reception:** When the user opens the app, data is fetched from the server and synchronized for Group Memo.

#### **Additional tasks if time permits**

- a. Shopping History in Map View
- b. Shopping Suggestions based on outside Weather
- c. Frequency based suggestions

#### **8) Timeline for each task and member responsible**

Serial No	Task	Assignee	Deadline
1	User Management and Authentication	Digant	10/02/2016
2	Database Setup Server Side	Deepika	09/27/2016
3	Server Setup - REST API	Purushotham	09/27/2016
4	Push Notification Setup	Purushotham	10/20/2016
5	Location using GPS	Mihir	10/02/2016
6	Storing User's shopping preferences	Digant	10/20/2016

7	Memo Reminder	Mihir	11/01/2016
8	Memo creation	Digant	10/07/2016
9	Group Memo	Deepika	10/20/2016
10	Group Memo Update notification	Deepika	11/15/2016
11	Place Identification	Purushotham	10/10/2016
12	Smart Search	Mihir	11/23/2016
13	Cold Start	Digant	11/23/2016
14	Context - Location Aware Notification	Mihir	10/15/2016
15	Geo spatial context awareness	Deepika	10/07/2016
16	Snooze and Do Not Disturb to stop notifications	Digant	11/10/2016
17	Sharing Shopping Preference (Recommendations)	Deepika	11/29/2016
18	Accepting a recommendation	Purushotham	11/30/2016
19	UI and Architecture Design	Mihir	09/23/2016
20	Background Services	Purushotham	11/15/2016