StudyBuddy

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Project description

We plan to design and implement an android application that will help students find and choose study groups around them based on their interests. The active study groups near the user will be plotted on the map using markers with relevant group information. Apart from filtering the suggested study groups based on subject, time and group size, students can also filter the results based on geospatial queries like range based queries (within certain radius from the user) and k nearest neighbor queries. Users will be able to create a new group, delete, search and join an existing group.

Feature description

Client-Side (Phone):

User will have the following features:

- Create a group: The user can create a group and will be assigned by default as an admin/owner of that group. The admin will also be responsible for granting/denying requests by other members to join that group. The admin can provide the following information when creating the group:
    - Target subject, Start and End time, Maximum group capacity and Location
- Searching a group: The application will provide rich functionalities for the users to find and filter the study groups relevant to them. The following filters will be provided:
    - Subject : Filter based on subject(s)
    - Group size : Filter based on maximum group capacity
    - Time : Filter based on user's desired time specification
    - Range : Filter based on specific range with respect to user's current location
    - k Nearest Groups : User can look for k nearest study groups within his/her current location
- Join a group: User can request to join an existing group using the "Join" button placed on the marker popup that displays the group details. The admin/owner of the requested group will be notified and can allow or deny access.
- Delete a group: The admin/owner of a group will have the option to delete the group created by him/her. A group will be auto-deleted when the time duration chosen by the group expires.

Server-Side

The server will be processing four types of requests:

1) Sign In

- The application provides an authentication interface for the users to sign in

- After the ‘Sign-In’ is successful, a request will be sent to the server with the user’s current GPS coordinates. Server will respond with the active study groups near the user’s current location.

2) Create group
- Once the user enters required information such as subject, group capacity, duration and location to create a group, a request is sent to the server for creating the group.

3) Search groups
- Based on filters like range and k-nearest groups specified by user, the server returns the active groups as response.
- User can also specify the preferred subject(s), group capacity and time to filter the query results.

4) Join group
- The owner of the group is notified by the server when a user requests to join a group
- Once the group owner accepts the user request, server updates the group information and sends the response back to the user

5) Delete group
- When the owner of the group requests to delete a group, the server verifies the identity of the user and deletes the group information
- Server also checks periodically to delete the expired groups

Timeline

Completed Before midterm (Oct 16th)

Client
- Design the application home screen and other feature layouts
- Integrate Google Maps to display the current user location and active study groups in vicinity
- Design and implement an interface to create new study groups

Server
- Design Database schema
- Decide and set up the framework for backend api development
- Api to create a group and store the relevant information in the database
- Api to delete a group on request by the owner

After Midterm

Client
- Mobile Interface for searching groups based on filters
- Interface to display group information with an option to join that group
- Design an additional layout to display and filter groups based on interests

Server
- Feature to automatically delete a group from the database post its expiration
- Api to search and filter active groups based on:
    - Non spatial features, such as Time, Location, Group Capacity, Interest
    - Spatial features, such as Range and K-nearest neighbors

Stretch Goal (Optional)

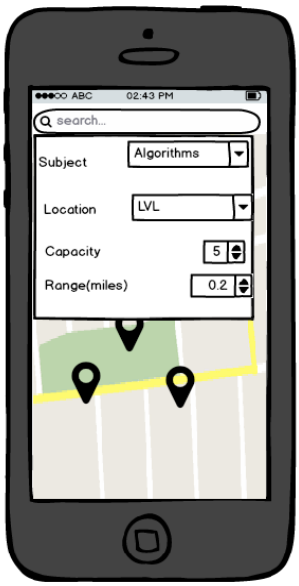
- Sending notification to a wearable device when a group of interest is active within a certain range of the user

UI mock-ups:

1. **Home Screen:** When the user launches the application, the active study groups in their surrounding are displayed with markers. If no filters are applied, all the study groups will be presented.

2) Display & Join a group: The marker displays group information with an option to join the group

3) Search Filter Screen: Users can search and filter groups based on spatial and non-spatial features



4) Create a group: Users can create a study group and provide information about it