

CS496 Proposal: FriendFinder

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1 Overview

The goal of this capstone is to develop a social networking application for the Android mobile platform. The application will allow users to connect with other people and plan events. Users will be able to find people by name or through mutual interests. The application will allow users to invite other users to events they are planning. The application will display friends and nearby users on a map. The application will allow users to select a location for their events and have it appear on a map to other users. This will provide students with a fun and easy-to-use social networking application.

2 Semester One Background

The application currently supports basic a basic set of functionality including user registration and authentication, secure network communication between a backend server and instances of the client application, and the ability for users to search and view groups and events. Users have their own profiles that contains some basic information about them and their interests. This includes their name, birthdate, gender, and e-mail address. Users can also navigate through the full application, despite some features not being implemented yet. All data is stored on a backend database in order to synchronize data and prevent unauthorized access of some user data. The backend database is accessed by the client application using Transfer Control Protocol (TCP) for network communication and Secure Socket Layer (SSL) for the encryption of network data. JavaScript Object Notation (JSON) is used as the protocol for the transfer of application data. Java Database Connectivity (JDBC) is used to access the backend PostgreSQL database. A user-relevant subset of the backend data is stored within the application using a Sqlite3 database.

3 Semester Two

The application will allow users to create events and groups, as well as invite other users to events. Users will also be able to modify their group, event, and profile information. In addition, users should be able to upload profile pictures to represent themselves.

Users will be able to upload a schedule using the Android Calendar framework[3]. Users will be able to keep a list of friends; a user may view their friend's schedule through their user profile. To preserve privacy, other users will be able to view if a user is currently busy, according to their schedule, by looking at their profile.

Event pages will allow users to view the location of a scheduled event using a Google Map[2]. Users will also be able to view the location of their friends, relative to their own, on a Google Map[2] interface. The ability to view locations should be relative to a user's position, and extend to a certain radius around that area. Events searches may be limited to a location radius as well. All Google Maps[2] and location-based information will require a way to transmit location data over the network and store it in a database, or a peer-to-peer system for transmitting this data to other users[6].

4 Testing

With the implementation of a variety of new functionality and frameworks, it is critical that the application is regularly tested for regression. Both the application and server backend will require some level of unit testing to be implemented to prevent regression. This will include the user of the standard Java unit testing suite, JUnit[1]. The application will make use of the standard Android testing framework, which is based on JUnit[4]. Android test devices include an LG G2, an HTC One M8, a Nexus 7, and a Nexus 10 tablet. Testing will include the aesthetic quality of layouts, the functionality of layouts, the existence of error checking in the event of unpreventable issues such as network connection loss, and the proper and safe querying, modification, and insertion of database entries. Testing will be performed during and upon completion of each feature, with Unit Tests being developed incrementally as time allows.

5 Problem Statement

The remaining functionality to be implemented contain a number of challenging aspects. Presently, the backbone of the project is complete; database and network functionality are implemented. However, allowing users to modify profiles, events, and groups requires the implementation of several database functionalities. Allowing clients the ability to modify backend database data requires additional precautions and careful exposition of functionality in order to prevent inadvertent data destruction. Research will need to be completed on the functionality of the Android testing and calendar frameworks. Allowing users to share current location information with their friends will require the ability to store location data on the server. Alternatively, it may prove to be too slow, or data intensive, so a peer to peer option needs to be investigated for this setting. Applications with a feature similar to this, such as YikYak[5], will need to be investigated for this purpose. Unit Testing on mobile devices may also prove difficult when it comes to testing user interface elements.

6 Requirements Specification - MoSCoW Analysis

6.1 Must Have

- User creation of groups and events.
- User modification of profile, groups, and events.
- Map locations of events with markers and touch-event informational pop-up windows.
- User schedules and a 'busy/available' status on user profiles..
- Providing an interface for visualizing locations of friends.
- Extension of user location visualization to events.

6.2 Should Have

- User profile pictures.
- Ability for users to enter their own likes instead of selecting from a dropdown menu.
- Provide a system for suggesting a like that another user has already created. This would likely be implemented as an autocomplete function.

6.3 Could Have

- An “I forgot my password” button.
- Token authentication.
- Autocomplete for searching and other text fields.

6.4 Won't Have

- Group recommendations.
- Web application.
- iPhone implementation.

7 Schedule of Completion

Tuesday, February 3, 2015

Implementation and testing of group, event creation and modification will be completed. Users will be able to create and modify groups and events.

Tuesday, February 17, 2015

Events will support locations and display them on a map. This includes a method for storing and parsing location data. Users will also be able to select times and dates from dialogs on their events. User profile modification will be completed. Testings of maps and user profile modification will be complete.

Tuesday, March 3, 2015

Users will be able to maintain a user's schedule inside the application on a calendar interface. Busy/Available statuses will be visible on user profiles. Testing of user schedules and statuses will be completed.

Tuesday, March 24, 2015

Users will be able to visualize locations of their friends. Peer to peer transfer will be investigated, and possibly implemented. Unit tests will be caught up to this point.

Tuesday, April 7th, 2015

User and group pictures will be implemented. Users will be able to submit photos for their group or user account for others to see. Storage of profile pictures on server and client side will be implemented. Testing of picture storage and retrieval will be completed.

Tuesday, April 21, 2014

Autocomplete for search fields will be complete. An "I forgot my password" button will be available and functional. Users will be able to reset their password from within the application. Testing of autocomplete and "I forgot my password" functionality will be completed.

References

- [1] Junit. Web, 2015. [JUnit.org](http://junit.org) Accessed: 2015-01-18.
- [2] Google maps api v2. Web, 2015. <https://developer.android.com/maps/documentation/android> Accessed: 2015-01-18.
- [3] Android calendar. Web, 2015. <https://developer.android.com/reference/java/util/Calendar.html> Accessed: 2015-01-18.
- [4] Android testsuite. Web, 2015. <https://developer.android.com/reference/junit/framework/TestSuite.html> Accessed: 2015-01-18.
- [5] Yikyak. Web, 2015. <http://yikyakapp.com> Accessed: 2015-01-18.
- [6] Ekhiotz Jon Vergara, Mihails Prihodko, and Simin Nadjm-Tehrani. Mobile location sharing: An energy consumption study. In *Proceedings of the Fourth International Conference on Future Energy Systems*, e-Energy '13, pages 289–290, New York, NY, USA, 2013. ACM.