Get Jac'd

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Abstract

Over half of America's population does not exercise regularly even though it is essential for maintaining good health. From the conducted field study, it was concluded that people that exercise with friends stay more motivated to exercise than those who work out alone. This project seeks to promote physical activity by providing an application for users who would like to do outdoor mobile exercise such as running in groups. It will help users create groups in which they can schedule runs with other members of the group. The app will keep runners connected even if they do not run at the same pace. It seeks to facilitate the act of getting motivated and motivating others to exercise as well as the ability to communicate from different geographic locations while undergoing intense athletic activity. The target demographic is English-speakers in the United States who would like to run with companions.

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Introduction

Smartphones have become a major part of the lives of most Americans. It is estimated that there will be more than 196 million smartphone users in the U.S. by 2016 (Statista, 2014). For these users, a large variety of mobile apps are written to support them in accomplishing everyday tasks. Mobile apps can range anywhere from calculating how to split a bill at a restaurant to locating where the nearest gas station is. More recently, applications that promote health and fitness have grown in popularity.

Physical activity is an extremely important behavior for staying healthy and preventing diseases. Although by now it is common knowledge that exercising is important, the percentage of sedentary American adults reaches almost 35% and over half do not exercise regularly (Ba, 2013). Many fitness apps seek to address this problem by both making it easier to exercise and easier to track progress. The top free health and fitness apps in the Google play store include an application that counts the amount of calories you consume and burn each day, as well as an app that tracks the number of steps you have taken. Jac'd, rather than only focusing on supplying a supplemental tool to help with exercise wants to work on motivating people to engage in physical activity.

While many of the reasons that people exercise are self-centered regarding health and appearance, Jac'd believes that having friends to hold you accountable can also be a major source of motivation to exercise. In the past decade or so, many health communities have

emerged to promote healthy lifestyle and encourage people to exercise more. Two doctors, Sulin Ba and Lei Wang, conducted a research experiment two years ago on whether participation in these types of health-related social networks actually motivates people to exercise more. While they did not have enough data in this experiment to conclusively link these communities and individual motivation causally, they did find a significant positive correlation between the number of "motivators: and the number of health-related goals each person within the group achieved (Ba, 2013).

The target activity of this project is running. Running is an activity that almost anyone can participate in for exercise without training. In addition, although running in the past has typically been seen as an individual activity, a growing number of runners are choosing to run in groups or joining running clubs (Maurellio 2014). With this trend, an application that supports running groups and helping people find them will be needed.

Figure 1: A symbolic representation of how everyday runners are intrinsically connected to each other via their mobile devices which have the ability to monitor their "digital footprint" and achieve greater communication, and exercise environment.

Some applications and inventions targeting running already exist. *Social Fabric Fitness* (SFF) is a wearable display on the back of shirts that supplies information about a running group's performance. In a field study of ten running groups using *Social Fabric Fitness,* it was qualitatively found to help running groups stay together and improve their motivation (Maurellio 2014). *Road ID* is a mobile application that tracks the location of runners. It allows friends and family to follow a digital trail on a map of the runner so that they can stay connected.

The purpose of this project is to create a single mobile application that encourages group running. Some of its features will include creating running groups with friends, coordinating times to run together, and finding open groups of people to run with. Additionally, when running together with people of different paces, the app will allow users to track each runner's position and stay connected while not being physically next to each other.

The primary users of this project will be owners of Android phones who want to join a running community. The secondary user base will be friends and family of these runners who would be willing to exercise with them.

Motivation

To gain a more comprehensive understanding of our domain and the general interests of the people within, we conducted surveys with 15 subjects spread over a variety of different demographics. Aged from 15 to 40+ years old, the interviewee's physical expertise ranged from those who casually exercise individually to more competitive members of teams, communities, or other groups. We primarily focused our interviews on understanding the subject's workout background, their general attitude towards how they exercise, as well as their aspirations on what they wish they could change with their routines. In addition, we studied with whom they typically workout (individually, with friends, with a team or community, etc...), and their outlook on the idea of meeting up with new people while exercising.

Figure 2: Generalized flow of how the surveys were segmented, including levels and example questions asked at each level.

Figure 2 displays our interview outline, grouped into our 3 main categories, with two example questions from each category. We start by allowing the interview subject to reflect on their personal workout routine, allowing us to effectively understand their background, as well as their credibility for the study. In specific, how they perceive *themselves* in terms of athletics and running in specific; whether they "are on a strict workout routine" or "only workout a couple times a month". In addition, we address their current, and previous methods of training. In terms of whom they run with (whether "by-[them]self" or in a "running club"), as well as their running patterns. Through our affinity analysis we identified

people who “pride [them]self on being consistent, and love to run on a single path that [they] created”, while others are “completely okay with exploring new routes and scenery.”

Next, we moved on to understand the underlying or subliminal reasons that motivates increased running activity. More specifically, we wanted to determine why people exercise the ways they do, and if there were certain things that are directly correlated with their increased running activities. While a person who enjoys independent exercise may be motivated by the opportunity of mental clarity that running presents (“I workout to escape the stress of schoolwork and personal life”), a different person, who may enjoy community running groups may be motivated for entirely contrary reasons, to explore and connect with friends or new acquaintances.

Finally, we talked about possibly, under ideal circumstances, to change any of their routines or patterns that would help holistically improve their running conditions and experience. We studied their attitude towards being involved in a more social and community-based running experience. This provided extremely interesting insights for those whom presently run individually as well as those whom are already involved in a club. We found that despite the fact that our interview subjects had wide ranges of running patterns, routines, and even expertise levels, the vast majority of subjects displayed an overall acceptance to increased social interaction between runners, and in specific meeting others with similar interests as themselves. One interviewee said such an app would “be useful in helping keep track of exercise, give reminders, as well as encourage others to exercise too!” Utilizing all of this

information we conducted an affinity analysis, which can be seen in Figure 2. Segmenting our data into 3 hierarchies (white, blue, green), we identified several main themes that we isolated and used to solidify our app design. Overall we established there was significant demand for an app to "keep people connected based on their own schedule", as well as being able to "easily find other people in the area to workout with."

The motivation of Get Jac'd is to bridge this gap between runners, who are all intrinsically similar, primarily through the fact that they enjoy to exercise and running, and provide a means for them to meet, motivate, and connect with each other. By introducing this new dimension, Get Jac'd expands the horizons of running to allow a novel new motivation for running other than a monotonous exercise routine. Furthermore, it sparks additional levels of social interaction as well as competition which, according to our study, was something lacking from the routine of many runners.

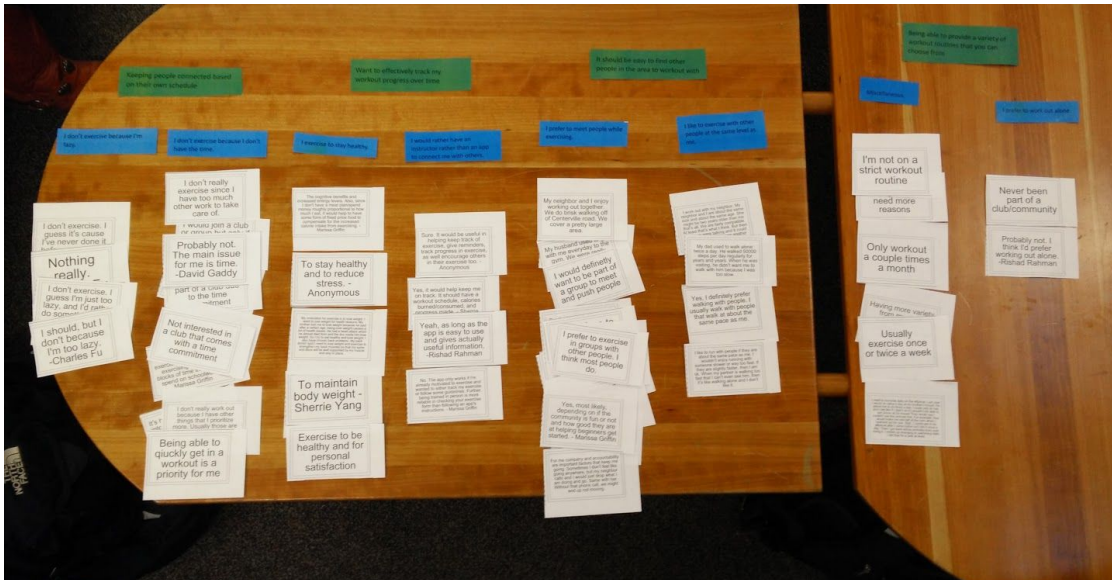

Figure 3: A snapshot of the affinity analysis created after conducting 15 surveys. The first level of hierarchy is the white notecards and represents the exact quotes and comments from the surveys. The next level (blue), represents the single sentence summary of each of the first level groups. The top level (green), groups together multiple lower levels to establish a declarative statement about the user behaviour.

The user scope of GetJac'd will focus primarily on runners in the US interested in meeting new people with similar values, while also concerned about improving their own running endurance. While this sample space will be the main concentration for phase I of the development of the app; one can easily imagine the scope being drastically increased to include a much larger range of exercise where there exists a lack of social communication throughout participants despite their close physical proximity; such additional application could include (but not limited to), cycling, walking, etc.

Description

Key Use Cases

Athletic Motivation

Kelly is a college student who leads a sedentary lifestyle. She spends her days sitting at a computer, and the vast majority of her physical activity involves walking from class to class or to her various commitments. Before college, Kelly played several sports, and she enjoyed the team aspect of it. She recognizes the importance of physical activity to a healthy lifestyle, but her schedule is too volatile for her to be able to sign up for a club sport or group athletic activity. In addition, she has been leading a sedentary lifestyle for so long that she is stuck in a rut, and has a hard time motivating herself to switch to a regular exercise regimen. With Get Jac'd, she can know when her friends are going running, and knowing that she will not be alone will motivate Kelly to exercise. Over time, this will help her change her lifestyle so that she can be a healthier person.

Companionship

Blake is a young, working professional with a lot of friends who like to go running or biking. He would like to run and bike as well, but as an extroverted individual he would rather not have to do it alone. Unfortunately, many of his friends have been doing triathlon training for years, and are therefore much more advanced than he is. He would like to find a way to exercise with his friends.

Chester is one of Blake's friends who has been triathlon training for several years. As Blake's good friend, he would love to exercise with him, but since he is at a much higher physical fitness level, running at Blake's pace would not do him any good: it would not be an intense enough workout for him to keep improving in his training.

With Get Jac'd, Blake and Chester can run together without having to run at the same speed. They can send each other messages during the workout, and spend time together before and after the workout, while both getting the exercise they need at the level of intensity that is right for them.

Safety Monitoring

Susan is a high school student living in a big city. Susan plays on her school's varsity volleyball team, and she likes to supplement her team's workouts with runs on her own. She is also involved in several after school clubs, which means that she tends to get home after sunset, especially in the winter when the sun sets early.

Janice is Susan's protective mother. She loves that her daughter leads such a healthy lifestyle, but does not feel completely comfortable letting Susan, a teenager, run on her own in the park after sunset in such a big city. Even if Susan runs with friends, Janice would feel most at ease if she knew Susan's route beforehand, as well as where she was at all times.

With Get Jac'd, Janice and Susan can create a private running group for themselves, and Susan can exercise her healthy lifestyle by going running, while Janice can check in on her daughter to assure herself of her safety.

Design Strategies and Considerations

The design strategies arise from the key use cases of the application: athletic motivation, companionship, and safety monitoring. Key features must be developed in the Get Jac'd application to cater to each of these use cases: user groups, communication, and scheduling.

The most important feature for Get Jac'd to have in order to address the issues presented in the key use cases is the ability to create exercise groups. All users of the Get Jac'd would have certain information in a profile, and when activated for use the application would have access to users' GPS locations, so as to display them to other members of the same group in the application.

The second most important feature for the application to have is the ability to message different members in the group. Users should be able to broadcast to their group members a desire to wait for them, come get them if they are injured, or several other pre-programmed messages. There will have to be pre-programmed messages because it is dangerous and inadvisable to text while running, biking, or roller-blading down the street. These

pre-programmed messages can serve as a communication forum for the exercisers in the group.

Of lower priority is a scheduling feature. To ease the coordination of scheduling a workout session, the application can be integrated with a calendar, so users can immediately see which times are mutually free between certain people in their group, and decide upon a time based on that rather than having to go through a potential myriad of schedule conflicts that could be easily avoided.

Security will also be an important concern in the application, as it would be disastrous for a hacker to be able to masquerade as someone else. This will be the fourth most important consideration in the design process.

Design

Get Jac'd is the new cool thing to have. You can easily get fit and make friends on your own schedule! The point of the app is so that runners can join each other on their runs, even if they are separated geographically.

To use this app, new users will first have to create an account, identifying themselves with their name, email, and location. Once the account is created, the user must confirm their account via email. People can search for other people, but only a user's name and username

will appear at this stage. Once a user finds someone based upon name or username, he can ask to connect. The other user must accept the request, and if that happens, they can view more detailed information about each other such as height, weight, routes they have run, and past workouts. These are done to protect the safety of the users and keep their personal information as private as possible.

Users can then create groups with those they have connected with. Of course, a user will have to accept whether or not they want to join the group. These groups can be private groups, where a list of administrators adds in members that they know to the group, or an open group, where everyone of a particular category can join. For example, it would be possible to create an MIT running group, where everyone who has an MIT email could join.

Within each group, members can open a group chat or schedule a run, and other members can choose to join in on the run. When the scheduled run is coming up, a user that joined the run can choose to display or not display his/her location to others. The app will also have a 'wait up' button that notifies the others for runners that are running a little late.

The best part of the app is that users need not meet up or even be in close proximities to run together. Once a run begins, the app will plot people's routes in parallel so that each runner can see his/her location with respect to others. Users appear as a colored dot on their route. As they run, the dot will move corresponding to their speed, and will point an arrow in the direction they are heading. This is intended so that people can motivate each other in their

workouts. The user can choose and filter whose routes and groups they want to see on their screen. Subsequently, their route will also only be visible to the groups that they choose to view.

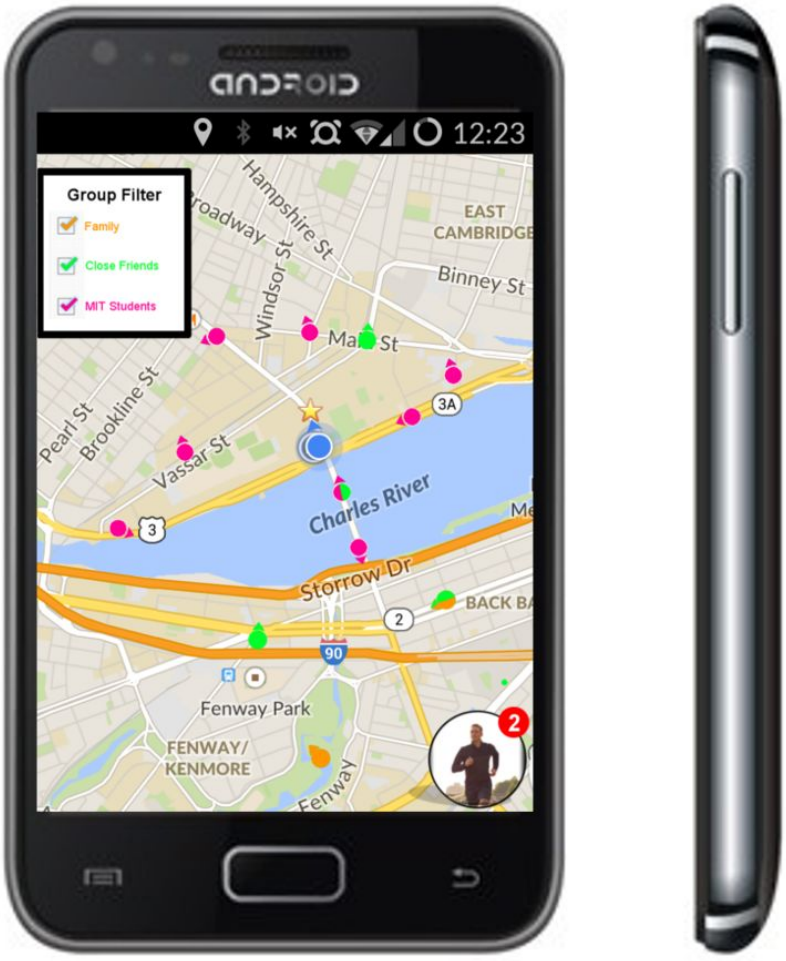

Figure 4: A user's screen in the midst of a run. Every marker indicates a runner while their arrow represents their heading in real-time. Visible groups can be filtered by (un)selecting categories from the Group Filter (top left). The client can also see their message and profile by clicking their avatar on the bottom right.

As you can see, each runner is indicated by a colored marker, with the color corresponding to the group that the user placed them in. By clicking a marker you can view additional details about the runner (how long they have been running, their previous and planned route, as well as their public profile). The runner will have the option of terminating the run at any time; data collection is alway terminated when a run is completed. After each run, the app will save the route, distance run, the average pace, and calories burned during the workout and updates your personal profile. All of your statistics and private messages from other runners can be viewed in greater detail by clicking your profile, which is the bottom right avatar.

Technical Requirements

On the client side, the user's Android device will collect data, in real-time, such as the workout information, the user's connections, and the groups that the user is in. This data will be sent to a MYSQL server where it will be processed and stored. The statistics of each user's workouts will be updated in real-time within the MYSQL database, for quick and

efficient retrieval by the client. The user will need to be connected either via Wifi or other data connection to ensure a stable and secure connection to the server.

Necessary Tools

To build the app, we will use integrated development environments (IDE) such as Eclipse or Android Studio. If we need help with the development portion, any programming guides on the web should be more than enough to debug and learn more. On server side, we will be storing large amounts of data in a MYSQL database, including user's personal information, user's performance data (heart rate, pace, and calories), routes that users run, the groups and members of each group, and finally, the users who are connected with each other. After coding the app, we will use an Android developer account to put the app on the Google Play Store.

Platform Dependencies

Phase I of the Get*Jac'd* will be developed and be available for Android phones. We want to prioritize users with updated phones, so the app will be compatible with Android version 4.4 (KitKat). This version of Android is currently the most popular distribution of the Operating System, accounting for about 40% of the market-share in October 2014 (*Statista*, 2014). This new version is also compatible with larger screens, has better connectivity of apps, and supports high performance 2D and 3D graphics. Once we establish a functional version of the app, we can begin to focus on allowing distributions with Android 4.0.3+, which cummulatively would account for over 90% of all Android owners.

Tasks

The following graph, Figure 4, provides an overview of the major tasks necessary to create Get Jac'd and the schedule at which they should occur. It is followed by a more detailed description of each task.

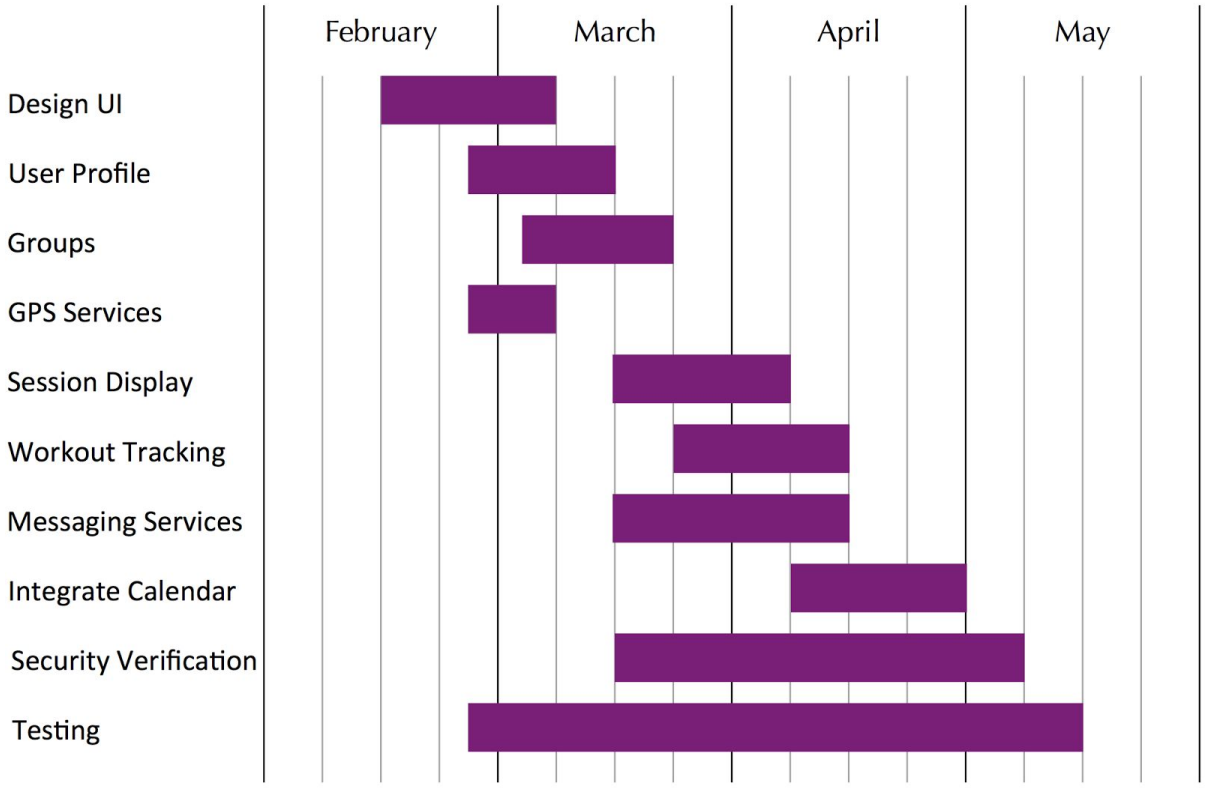

Figure 5: Overview of task schedule

Design UI - Design user interface of the application. Have concepts for all the app pages as well as the flow between them.

User Profile - Implement user profile functionality. This will contain fields for user data as well as the ability to log in with Google.

Groups - Implement functionality for users to be able to join various exercise groups. This is a many-to-many relationship: one user can be in many groups and one group can have many users. Include functionality for private/public groups: a group created by users that requires an invitation to join, or a group that can be joined simply by having a specific kind of email address.

GPS Services - Give application access to phone's GPS services. Display map with user's location.

Session Display - When a workout session has been scheduled and has begun, display all participating users' locations on each user's phone. This includes an implemented user interface to go back to the group or user profile page if necessary.

Workout Tracking - Implement back-end for keeping track of and storing workout information on a server. Include a front-end to be able to view these statistics on the user's phone.

Messaging Services - Implement messaging services with pre-determined messages so that users can communicate with each other on the run. Include the ability to type a custom message if necessary.

Integrate Calendar - Integrate calendar into user profile to make it easier for groups to schedule a workout. Since this is not a scheduling application, it will merely find and display the intersection of all available times for the relevant users.

Security Verification - Ensure that a hacker cannot masquerade as a user, and enforce proper requirements for joining a group.

Testing - An ongoing process to keep testing the application during development, both with user trials and user studies.

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