ROLE

Requirements and Specification Document
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Meta-specifications: http://inst.eecs.berkeley.edu/~cs169/sp10/doku.php?id=proj2

Abstract

ROLE is a role-oriented game system for Android phones. At its core it is an augmented-reality game, where your everyday life is enhanced by role-playing elements. Other players of ROLE in your proximity will be able to interact with you, through individual battles or messaging. Motion will be detected by the phone's built-in accelerometer, and location by its GPS functionality, so that such interactions are possible.

Customer

Our target customers are teenagers or young adults. Although ROLE may be more catered towards gamers who enjoy role-playing games, the appeal of a game that doesn't involve large amounts of time set aside will likely draw a larger user-base. The game is suitable for people who are interested in using actual motions in the game play and for those who are quite active in their daily activities, as well as those who more often stay in one or a few locations throughout much of the day.

Some customers we have talked to are listed below:

- Dieter - 29, Ph.D. candidate here at Cal
  Frequent social-networking site user, occasional gamer in Farmville and World of Warcraft.
  Dieter wants to participate in a persistent, alternate world, where he can interact and compete with other players. He's particularly interested in highly tactical combat.
- Megan - 21, undergraduate, psychology major at Cal
  Inveterate mobile-phone gamer. Member of many groups and communities.
  Megan is looking for a cell-phone game she can play with friends. She's also interested in customization options for her in-game presence.
- Mao - 22, political science / economics undergraduate at Cal
  Avid MMORPG, RTS, FPS gamer, also plays many active physical games.
  Mao wants a ranking system and reward loot for winning battles. He's also interested in more role-playing elements.

Competitive Landscape

ROLE exists at the intersection of two gaming genres. One of these is Massively Multiplayer Online Role-Playing Games (MMORPGs). In the last few years, a good number of MMORPGs have been launched for mobile platforms, and achieved some success. Most follow in the mold of TibiaME (http://www.tibiame.com), which features non-player

opponents, quests, player crafting, and simple click-and-watch combat. There are key differences between ROLE and these games, because ROLE is intended to focus on interactions between players, and will dispense with traditional role-playing game elements that generally consume a great deal of player time. These elements include questing, crafting, and character-building through combat with computer-controlled opponents; using these features is collectively referred to as "grinding," reflecting the often tedious and seemingly interminable nature of the game-play. Veteran players of MMORPGs, both on mobile and desktop platforms, may expect to find these features in a new title, and be dismayed at their lack in ROLE. However, ROLE strives to provide a player experience distinct from traditional MMORPG's, one that enhances instead of replaces activities in the real world, and provides more competitive game-play. There is one recent, notable exception to the rule of click-and-watch combat: Blades and Magic (http://www.bladesandmagic.net). This title, however, offers just as much "grind" as its precursors.

The other genre which ROLE embraces is much more recent, and lacks a generally accepted name. Its principal feature is location-awareness, and it draws form two other genres itself: Alternate-Reality Games (ARG), and social-networking websites and games. In the social-networking category, Foursquare (http://foursquare.com) is a popular location-based, GPS-aware application. In Foursquare, users are able to "check in" to locations in the game based in their physical position, and garner points and titles. Users can also post comments about the locations they have visited, providing some of the community-based review functionality of such websites as Yelp.com. Though both ROLE and Foursquare use GPS tracking to provide location awareness, ROLE is very different from Foursquare in that it provides active gameplay and focuses on a particular region and regional community.

The most similar title to ROLE is Parallel Kingdom (http://parallelkingdom.com), a title with some elements of ARG. ARG is itself a nebulous and evolving genre, but a common feature of such games is the overlay of fictional or alternate content on a representation of the real world, as with a game-world overlaid on an interactive map of the physical world. Parallel Kingdom takes exactly this approach, and uses location tracking to provide character movement around the game world. In other respects Parallel Kingdom is very much a traditional MMORPG, and uses the often-seen click-and-wait combat.

Thus ROLE can be said to be in competition with a variety of other games. It shares some features, such as character classes and skills, with MMORPGs, and others, namely GPS

awareness, with Foursquare and Parallel Kingdom. However, the differences between ROLE and all other games are significant. ROLE does not replace the real world with a fictional version. It instead provides a map display of the real world, and invites players to take on a persona and extend their normal, very real activites with competitive gameplay. ROLE dispenses with passive combat and provides strategic battle, using physical-gesture-aware interface, again integrating real experience with its virtual counterpart.

User Requirements

The central requirement set volunteered by our users includes a casual play-style that can be integrated with daily activities, involve their physical location, and include their friends and members of their regional community.

- GPS tracking will allow integration of the game world and actual world.
    - Players' in-game personas must occupy the same position in the game-world as the players do in the physical world.
    - A map interface is central; it must show the location of game personas and allow for interaction between them
    - Gameplay should center on the users' geographical region to allow in-game extension and enhancement of actual relationships -- friends can play together, and community bonds can grow and deepen.
- Participating in ROLE must not require disruptive time commitments or interruptions to important actual activities
    - A user must be able to enjoy ROLE with only a few minutes or a quarter of an hour to spare, with no laborious character-building, or "grinding"
    - Users require options for character advancement while offline.
- Users are interested in player to player messaging for in-game communication.

Users also require a persistent game-world, and want to focus on other characters and players, not static quests and computer-generated opponents.

- Players inactive in the game-world should still be present in the game-world.
    - Safe (or comparatively safe) "home" locations must be available for characters, and defense benefits should increase with frequency of actual occupation of the corresponding physical locations.
    - AI control must be available for characters to defend themselves when the corresponding player is unavailable.
    - Users that have been inactive for an extended period of time can be removed to avoid clutter.

Users demand an active and strategic game experience.

- Active, real-time selection of attack and defense maneuvers is key.
- Gesture-based interaction using Android accelerometers is sought. For example, moving the phone forward in a straight line might constitute a stab, and pulling the phone back a block.

Despite the casual nature of the requested game-play, users require some traditional role-playing elements.

- Customers are interested in customization options for their in-game personas.
    - Characters should be customizable with special gear and items.

    - These items should be acquired by winning battles.
    - Players can choose from different classes, which each have their own special advantages and disadvantages.
    - Players can choose their own set of skills to allow variety and strategy in game-play.
    - A menu-based "AI Builder" is provided for players to customize how their AI will react in battles.
- Players can form teams or clans for faction-based play.

Users require a tiered advancement system that encourages others to participate.

- Staying and fighting online will allow for faster advancement, encouraging greater participation.
- Users want their experience saved across multiple accesses to the application so that they have incentive to keep advancing in the game and compete with others.
- Players who participate in more difficult battles gain more rewards, such as higher scores, more experience, and better loot.
- There will be a rankings or high score table for top players to gain fame and to motivate players to achieve and retain top status.

Use Cases & User Stories

Unit Cost	Priority	Description
		Case: Player wants to create a game account and login
155	Critical	As a new player I can create an account.
		• [Acceptance Test] I can launch the application, create an account, then close the application. Relaunching the application, I can play on the account I created previously
70	Critical	As an existing player I can link my account to a new installation.
		• [Acceptance Test] I can create an account, then install the application on another device and launch the application on that advice. Then I can link that device to the preexisting account, close the application, relaunch it, and play on that account.
35	Useful	After linking a account to my installation, the application should log in when I start it.
		• [Acceptance Test] After creating an account, I can launch the application and begin playing without entering account information
		Case: Player wants his character state saved between play sessions.
175	Critical	I want my character's advancement to be saved.
		• [Acceptance Test] After advancing a skill, I can close ROLE and reopen it and see that my advancement has been saved.
		Case: Players want to interact another player.

75	Critical	I can select another character by touching his/her icon on the map view.
		• [Acceptance Test] I can touch a character's representation on the map, see that the character is selected, and begin an interaction with that character.
70	Useful	I can select another character from a list of characters.
		• [Acceptance Test] I view a list of characters that are pre-defined, and they all appear on CharacterList view. I touch one, and the character is selected.
230	Critical	I can open the map view and see my location and the location of other players near me.
		• [Acceptance Test] If I open the map view I will see myself on the map and any other characters within range of the view.
80	Critical	I can send another player a message.
		• [Acceptance Test] I can touch a player's icon on the map, then select to send a message, type the message, and send it.
75	Critical	I can inspect another player
		• [Acceptance Test] I can touch a player's icon on the map, then choose to inspect them.
180	Critical	If I am within range, I can quickly initiate a battle with another player
		• [Acceptance Test] I can touch a player's icon on the map, then start a battle, which will switch to a battle screen.
135	Critical	In battle, I can see what my opponent is attempting and respond in real-time
		• [Acceptance Test] While in battle mode, I can see a display of my opponent's action, and attempt to counter it within a time-limit.
210	Useful	In battle, I can make special attacks or defensive moves with broad physical gestures, such as swinging a blade.
		• [Acceptance Test] While in battle mode, I can swing my arm or something similar to complete an attack / defense
115	Useful	When I close ROLE, my character should stay in the game world at my current location, and defend itself if necessary.
		• [Acceptance Test] When I close ROLE, another player within map-range should still see my character icon
		• [Acceptance Test] When I close ROLE, another player should be able to initiate battle with my character
		• [Acceptance Test] When I am offline, another player can attack me, and my character will actively defend itself.

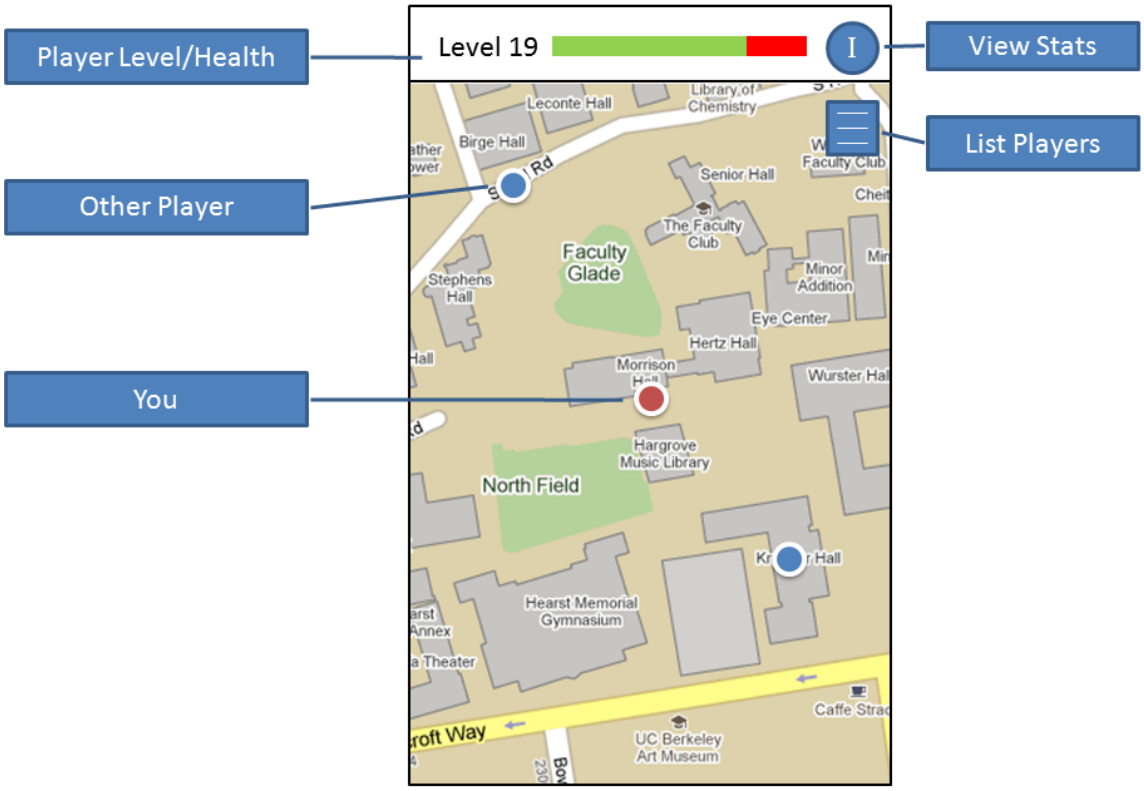
		Case: Players want to view information on their character's status
70	Critical	I can view my character's skill and attribute data
		• [Acceptance Test] From the map view, I can choose to inspect myself, and see information on my skills and attributes.
		Case: Players want flexible and convenient advancement options
65	Useful	I can select some skill(s) to advance while I'm offline.
		• [Acceptance Test] While inspecting my character, I can select skill(s) to advance passively, then close ROLE. Opening ROLE some hours later, I can inspect myself and see that the skill(s) I selected have advanced.
45	Useful	I can advance faster by actively playing.
		• [Acceptance Test] I can defeat another player and time the encounter with external means, and note the advancement received, then choose to advance the same skill or attribute passively. After closing ROLE for the amount of time recorded and reopening ROLE, the skill or attribute selected has advanced by less than the reward received for victory in battle.
45	Critical	I can advance fastest by battling more difficult opponents
		• [Acceptance Test] I can defeat a relatively easy opponent and note the reward, then defeat a more difficult opponent and see that the reward received is greater than the first.
		Case: Players want options to customize their characters
205	Critical	I can choose a character class with distinct advantages and disadvantages
		• [Acceptance Test] I can view information about class choices before creating a character, then select one of those choices.
270	Optional	I can select my offline response to attacks.
		• [Acceptance Test] I can select my overall offline response to attacks, and refine that selection by choosing specific skills.
135	Useful	I can equip special gear won in battle.
		• [Acceptance Test] I can defeat an opponent and receive the option to equip a special gear reward, then inspect myself and see the effects of the gear on my skills or attributes.
		Case: Players want to be safe(r) in the locations they frequent
120	Useful	I will get advantages to staying in the locations that I frequent in my daily routine.
		• [Acceptance Test] I can go to a location in the physical world that I frequent, then inspect myself and see that some skills or attributes are higher in that location than in others.
		Case: Players want to access information about top-ranked characters

130	Useful	I want to be able to see listings of the top-ranked players by a variety of indices, and view my own position in those rankings
		• [Acceptance Test] While inspecting myself, I can choose to view listings of the top-ranked players, and choose different criteria for that listing, as well as see my own position in that list.

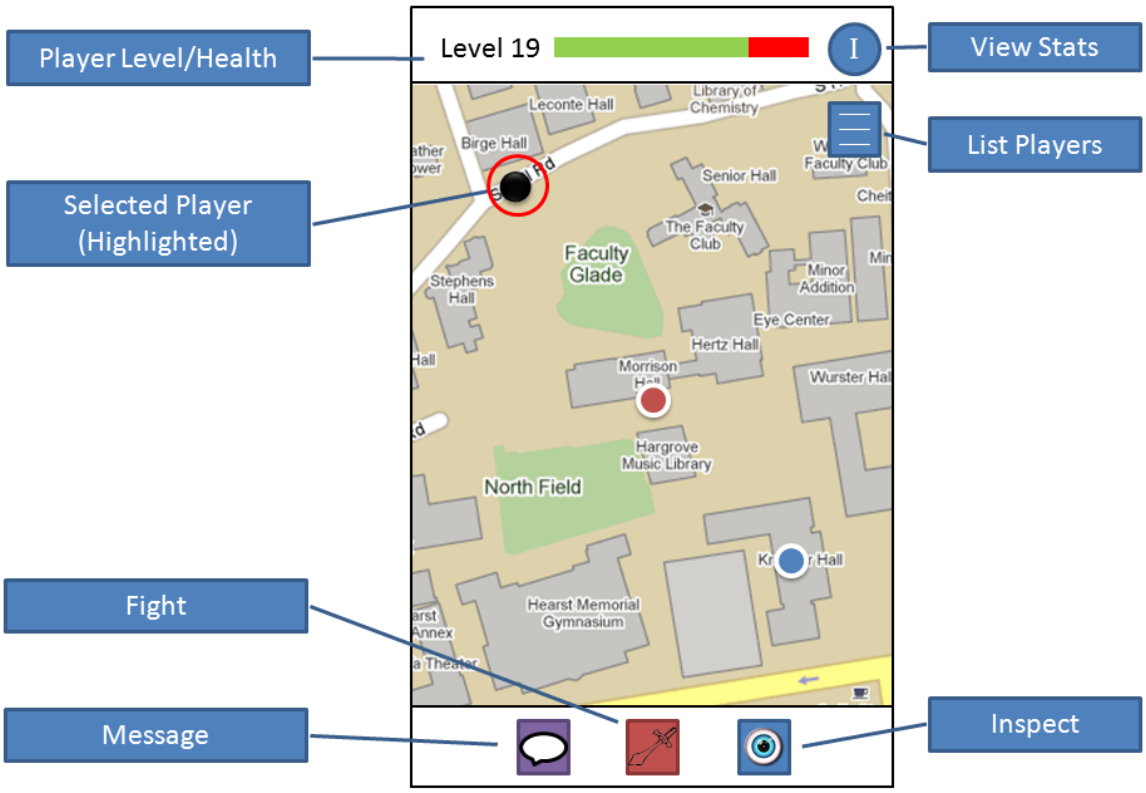
User Interface Requirements

To use ROLE, the user must have an Android phone with GPS signals and Internet connectivity, as well as having the ROLE application installed. Players use the touchscreen to select options and actions in the game.

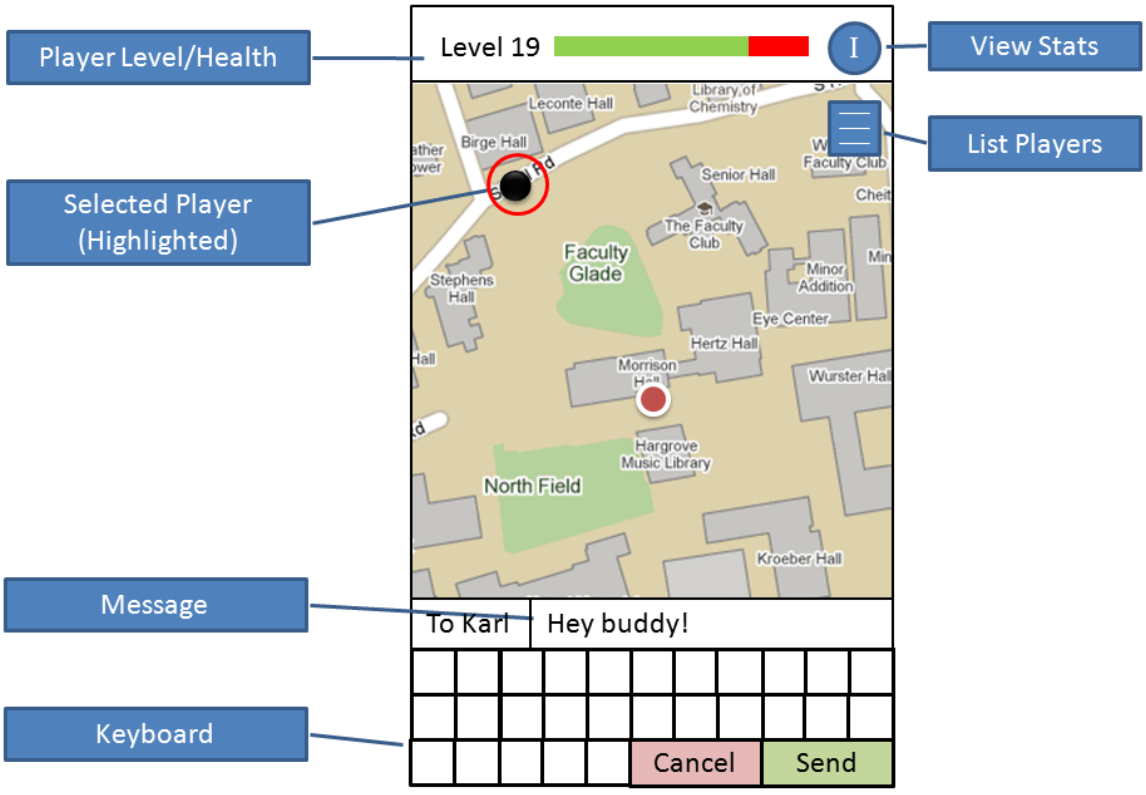
From the status display page, they can open a Google Maps-style view of the area surrounding the player, with the player and other players nearby displayed as symbols or images upon the screen. Clicking on these players will create an overlay over the map, giving a menu of options of what you want to do, such as chat, attack, and view stats.



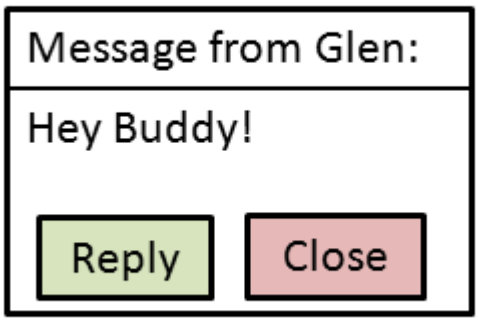
Player Selected:



Chatting is accomplished by a keyboard overlay over the map:

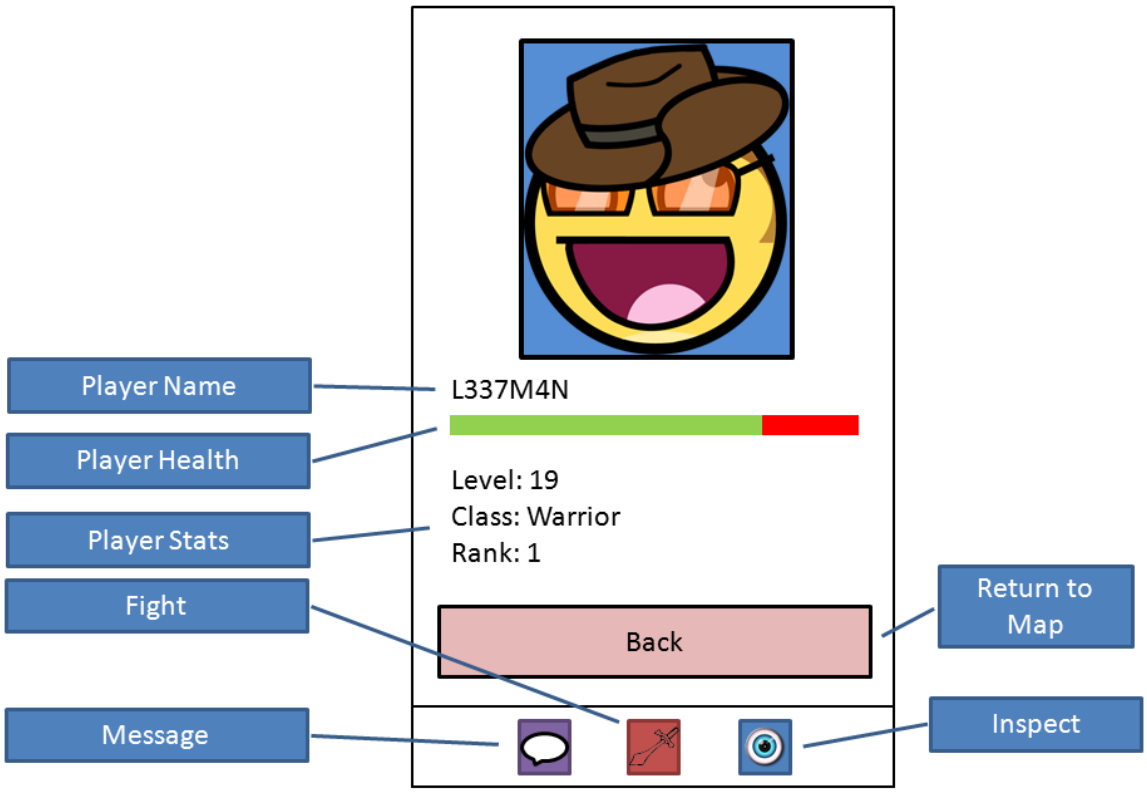


Messaging Alert Box:

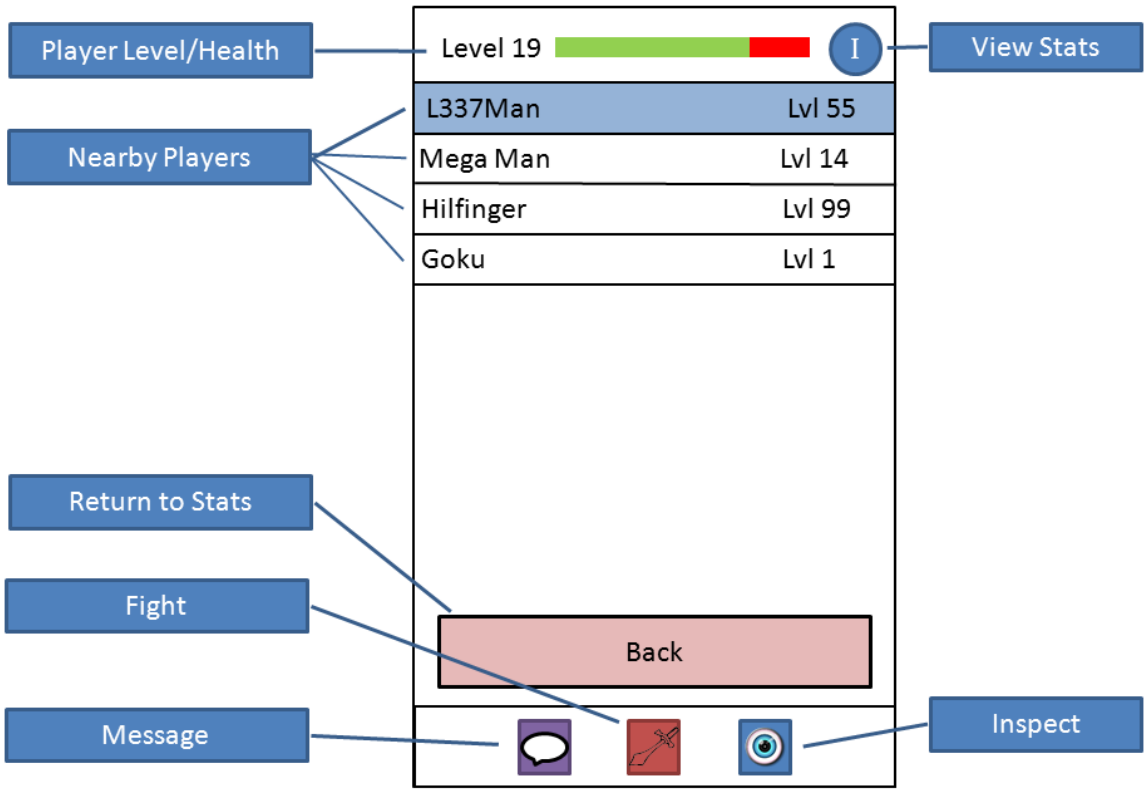


These message boxes will be suppressed during combat and shown at a later time to not interfere with combat. A chat log can be added to allow users to view past messages.

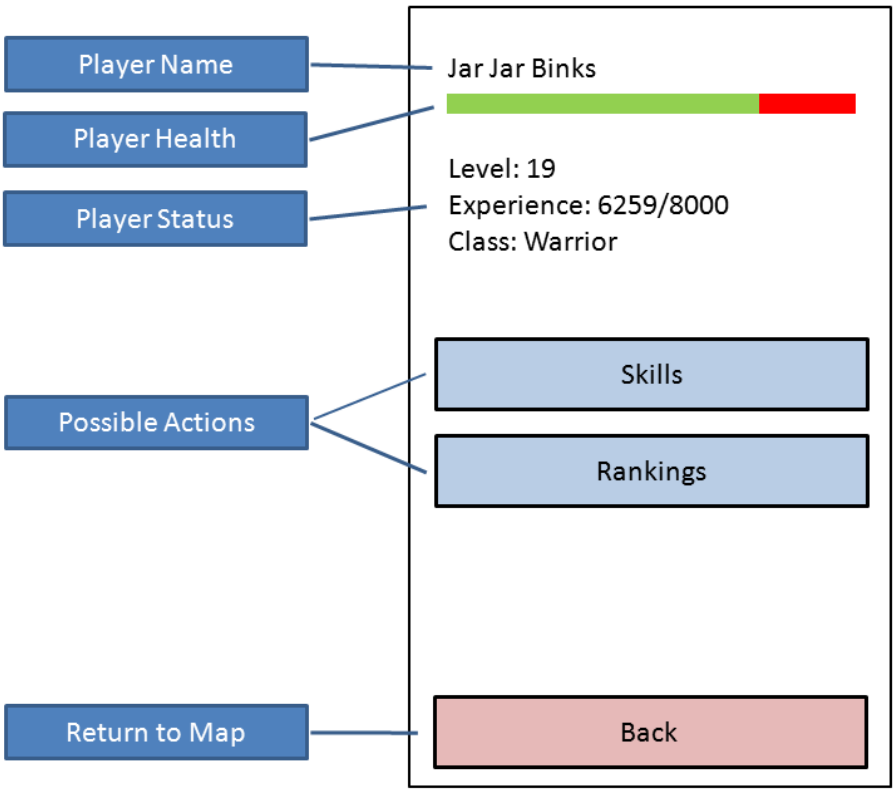
Player inspection allows you to see a players metrics:



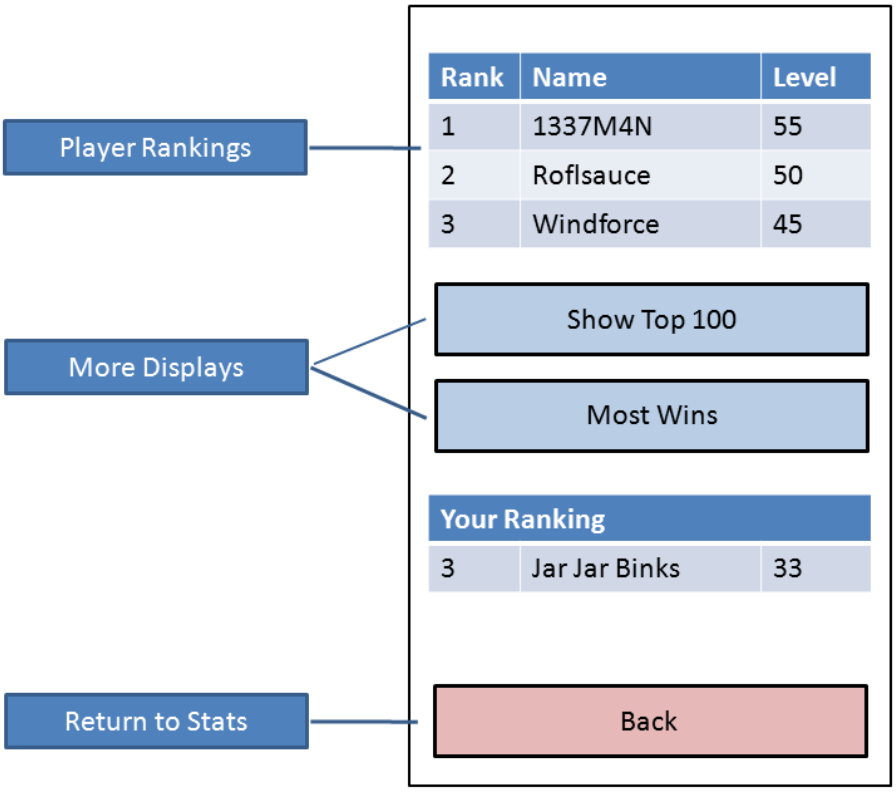
The user can additionally press a button to go into a list view with nearby players which gives equivalent functionality:



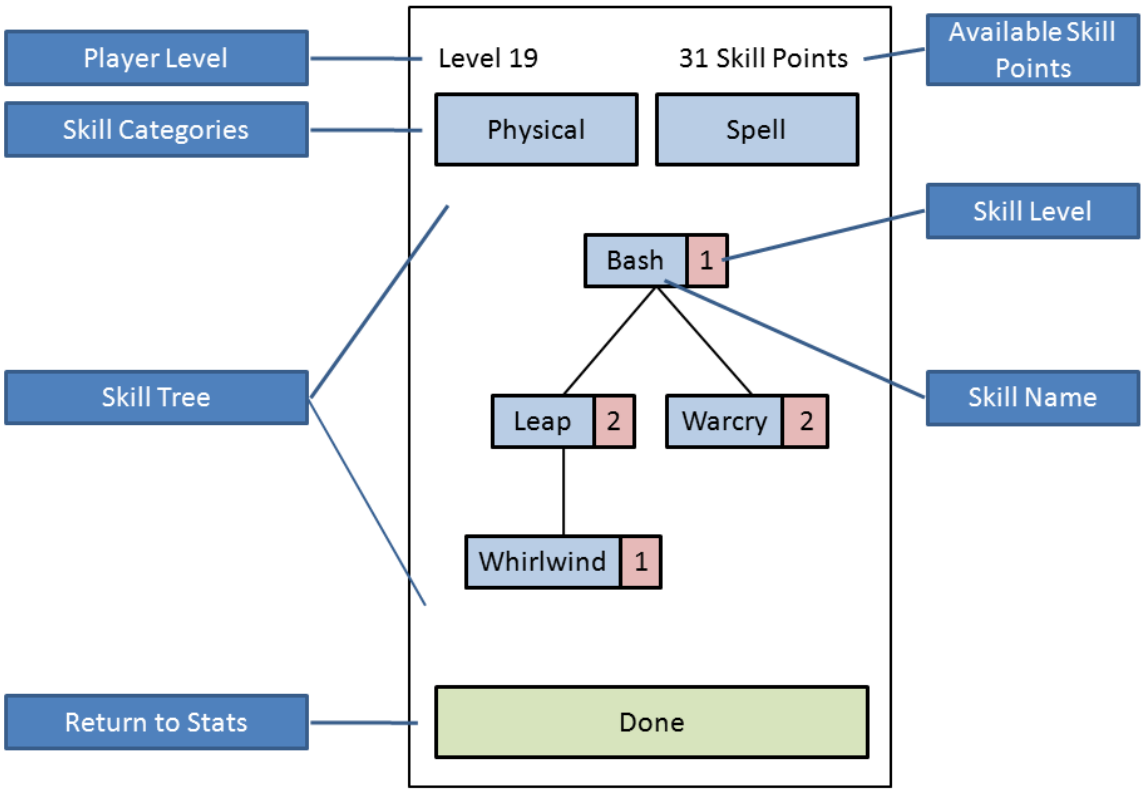
Clicking the icon in the top bar lists the key stats and attributes for the player. From the status display page, there will also be buttons to show the skill tree or player rankings. The skills view shows the hierarchy of skills separated into the types (physical and spell, for example), and allows you to apply your remaining skill points.



Player Rankings View:

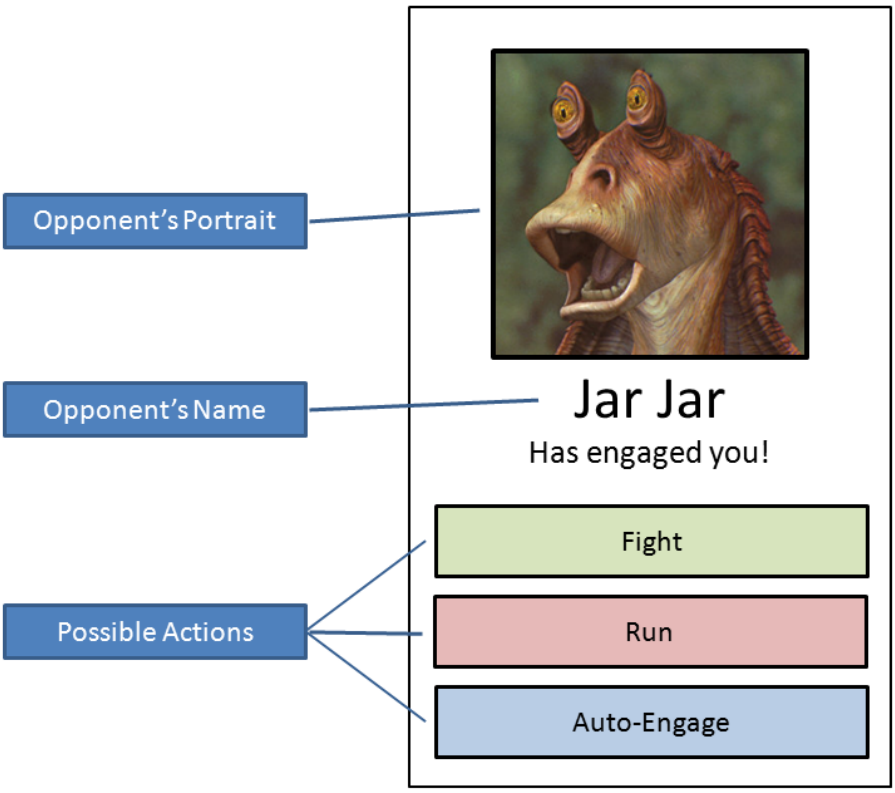


Skills View:

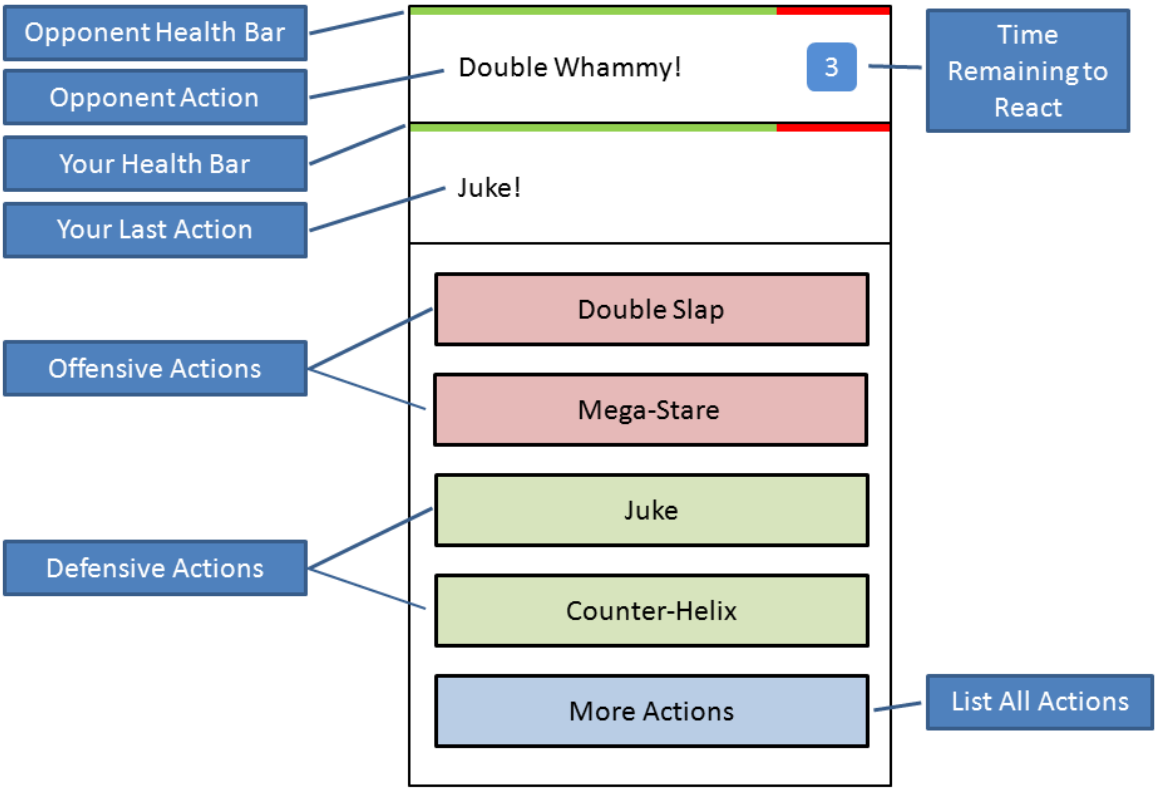


If a player attacks another player, that player will enter the combat screen. The defending player will be notified through a buzz or a sound that they are being attacked. If they do not respond or select not to respond, their AI will kick in. Otherwise, they will also go into the combat screen. In the combat screen, both sides will get a menu where they can select what skills or attacks to perform. They may also do gestures while in this screen, and the phone will do the corresponding action.

Battle Alert View



Battle Mode View



Data will be exchanged in packets to and from a central back-end server. This data will contain the GPS coordinates of the user, as well as altitude, and even compass orientation as a possibility. In addition, the data will carry with it extra information to represent player actions that must be relayed back to the server and information requests that the player wants to see. The server will take this information in, and update the user's location and information. It will then pull out the information the player requested, and send it back to player. This information will then be rendered on the appropriate game interface portion, whether it's the map, a player's information box, or a battle screen.

System Requirements

Server backend

- Functions:
    - Storing user character data.
    - Storing user locations.
    - Able to return location of nearby players.
    - Allows players to interact with each other through server.
- Implementation:
    - Rails application MySQL database.
    - Hosting on Dreamhost (at least pre-release).
    - Load balancing is handled by the host.
- Latency of requests will be important:
- Lag time longer than a few seconds may begin to severely affect gameplay.
    - With a large number of users, a server upgrade may be needed.
- Interface with phone:
    - Probably send information encapsulated in XML, or some Android-preferred form.

Periodic GPS location pinging

- Taxing on battery life.
- Some alternate mode may be necessary for dead spots (e.g., the proposed AI mode).

Periodic server pinging

- Some alternate mode may be necessary for dead spots (e.g., the proposed AI mode).

Network Speed

- Need to have reasonable latency for enjoyable gameplay.
- Need to have reasonable server response time.

Specification

Selections mentioned below are done by touching the object to be selected on the screen. To see what the views described below look like, see the images in the "User Interface Requirements" section.

When the application is started for the first time, the user is taken to a SelectClass View, which shows images of various characters available in the game. A message at the top says to "select a character class." If the player selects a character image, a information about that character shows up at the bottom portion of the screen, including its strengths and weaknesses. After selecting a character, the player can select the "create" button, which can only be clickable when a character is selected. When the "create" button is selected, a pop-up asking for confirmation shows up, allowing the user to select "continue" or "back." Selecting back brings the player back to the SelectClass View, and selecting "continue" leads to the character creation. When the player selects "continue", the data about the player and the character is sent to the server and saved. The view then changes to the Google-Maps style view, which is the home view. Interactions can occur as described below.

Note: in future iterations the player will first be brought to the account creation view first when the application is started for the first time, and he/she needs to set up log-in information and log-in to play.

When application is started, the user is taken to the home screen, which is a Google-Maps style view showing the current location via GPS. The user is shown as an image in the middle of the screen. If there are other players nearby, they will show up as images on the screen. If the user moves to a different location, the map changes so that it reflects the user's changing location. The top of the screen shows the player's level and health. There is a View Stats button at the top right corner and a List Players below that.

If the user selects the View Stats button at the top right corner, a new view shows up. The player's name is shown at the top left, and player stats are listed, showing the player's health, level, experience, and class. If the player selects the Back button, the view will return to the

home screen. If the user selects the Rankings button, a new view shows up, where the top 3 players with the highest level are listed. A Show Top 100 button, a Most Wins button, and the rank of the user are shown below the list. There is also a Back button which takes the user back to the View Stats view. Show Top 100 shows a list of the players with the top 100 levels, and Most Wins lists the top 100 players with the highest number of wins in fights.

The View Stats view also has a Skills button. If selected, a new view shows up. The top shows the level of the player and how many skill points the player can use to level up certain skills. Below is a skill tree, showing the skills that the player can level up, and beside each skill is the current level of the skill. To level up a skill, the player can select that skill, and the number beside that skill is incremented by one, indicating that the skill is leveled up. The player has multiple skill trees classified by "Physical" or "Spell" skills. Selecting the Spell button changes the skill tree to be all the magical skills the player can acquire, and selecting the Physical button changes the skill tree to be all the physical skills the player can have. If the player is already at the skill tree, then nothing happens when selecting that skill tree's button. The user can select the Done button, which returns the view to View Stats.

Back in the home screen (Google Maps view), if the user selects another player on the screen, buttons appear at the bottom of the screen. The selected player is highlighted to differentiate from the others. When a player is selected, the Message, Fight, and Inspect buttons appear at the bottom of the screen. The user can change targets by selecting another target. A target can also be deselected by selecting a map region without any targets or selecting a different target. If no player is selected anymore, then the Message, Fight, and Inspect buttons disappear.

If the Message button is selected, a chat box appears at the bottom of the home screen and says "waiting for a reply". If the selected player is in offline mode, then the sender receives a "player is not available" message in the chat box and the chat box disappears. If the selected player is online and in the game, then she gets a pop-up saying "(name) would like to chat with you." and there is a Reply and a Close button. If the selected player selects Close, then her pop-up disappears and the sender's chat box says "chat request denied" and the chat box disappears. If the selected player selects Reply, then her pop-up disappears and a chat box appears on her screen. The sender's chat box says "chat request accepted". The Android keyboard shows up on the screen for typing. Both users can now type into the chat box text field and select enter to exchange messages back and forth. Messages appear at the top portion of the chat box and the text field is at the bottom of the chat box. The chat box has a Cancel button, and if a user selects it then her chat box disappears. The other user gets a "chat closed" message and the chat box stays that like until she selects Cancel as well.

If the Fight button is selected, then the view is changed to the Battle Mode View. Let's say

the user is Player 1 and the target (selected) player is Player 2. Player 2 receives a pop-up notification showing Player 1's profile picture, name, "Has engaged you!" message, and 3 buttons, Fight, Run, and Auto-Engage. If Player 2 selects Run, then both players' view returns to the home screen and a pop-up shows up. For Player 2, the pop-up says "You have fled from battle and lost 100 experience." For Player 1, the pop-up says, "Your opponent has fled from battle. You gain 100 experience." If Player 2 selects Fight, then Player 2 also enters Battle Mode View.

In the Battle Mode View, both players' health bars are shown. A timer is shown indicating how much time a player has left to make a move. A player's timer gets reset when he/she makes a move. A list of actions is shown, and More Actions is shown at the bottom. If the player selects More Actions, the list extends to show all possible actions and the player can scroll up and down the list. To make a move, a player selects an action and makes a gesture specific to that action. If an attack hits successfully, then the opponent's health decreases according to the attack. If a defensive move is successful, the opponent's attack has no effect. The view also shows the player's last move and the opponent's action. The fight continues until a player runs out of health, when the battle ends. One of the actions is Run, and if a player selects that, then the battle ends and a pop-up shows up with the messages as described above, except that the messages for Player 1 and Player 2 may be switched if Player 1 is the one that selected Run.
After a battle ends, along with mentioning how much experience the player gains with a pop-up, if the player reaches a certain experience threshold then the player levels up. Also, for every 300 experience gained the player gets a skill point. This information is expressed in the same pop-up as a message after saying how much experience the player gains. The players' experience, level, and skill points are incremented or decremented accordingly.

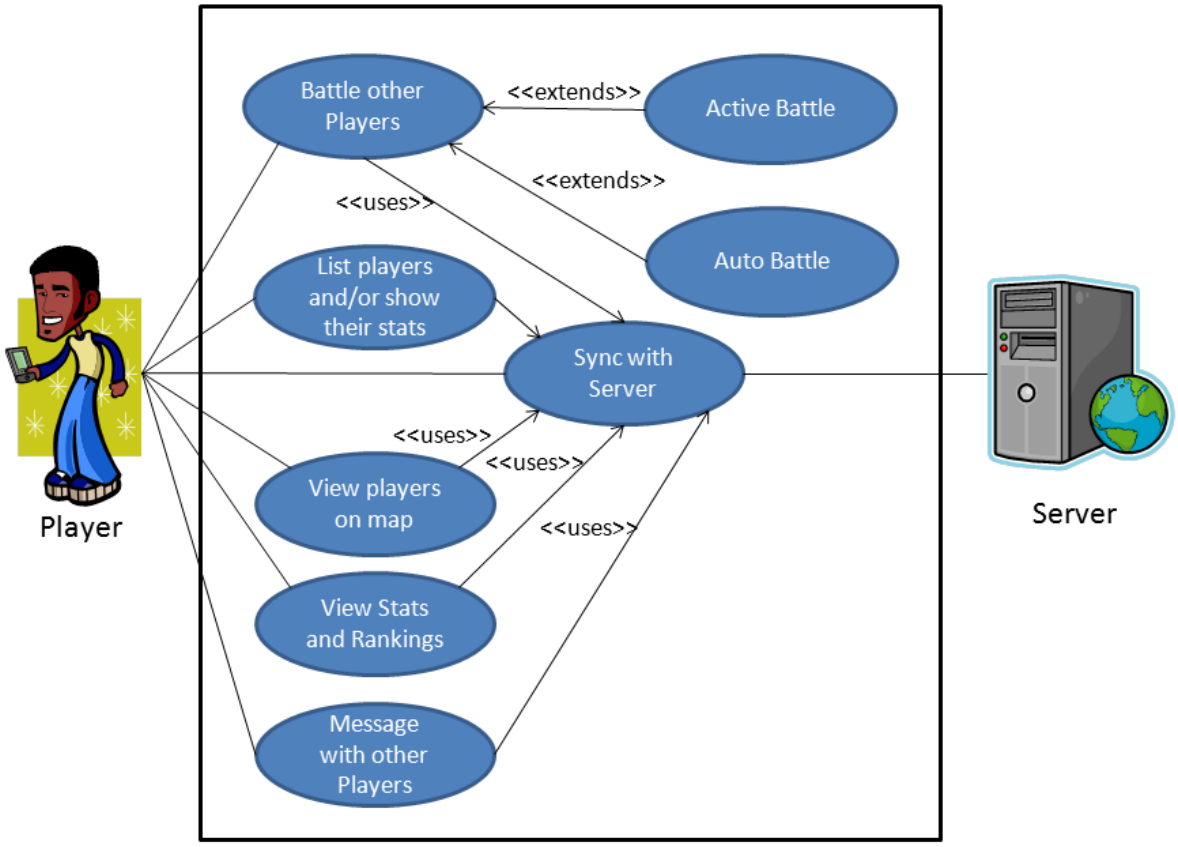
If Player 2 selects Auto-Engage, then Player 2's screen returns back to the home screen and there is a message at the bottom saying "Currently in battle." until the fight ends. Player 1's screen stays in Battle Mode and acts as described above. Player 2 still gets a pop-up when the fight ends as described above.

If the Inspect button is selected, a new view appears. This shows the player's profile picture, name, health, level, class, and rank. There is a Back button for returning to the previous view. The same Message, Fight, and Inspect buttons are at the bottom of the screen. Selecting Inspect will cause the view to return to the previous one. The Message and Fight buttons are similar to as described above, except that selecting these buttons returns the user back to the home screen and then does as previously described.

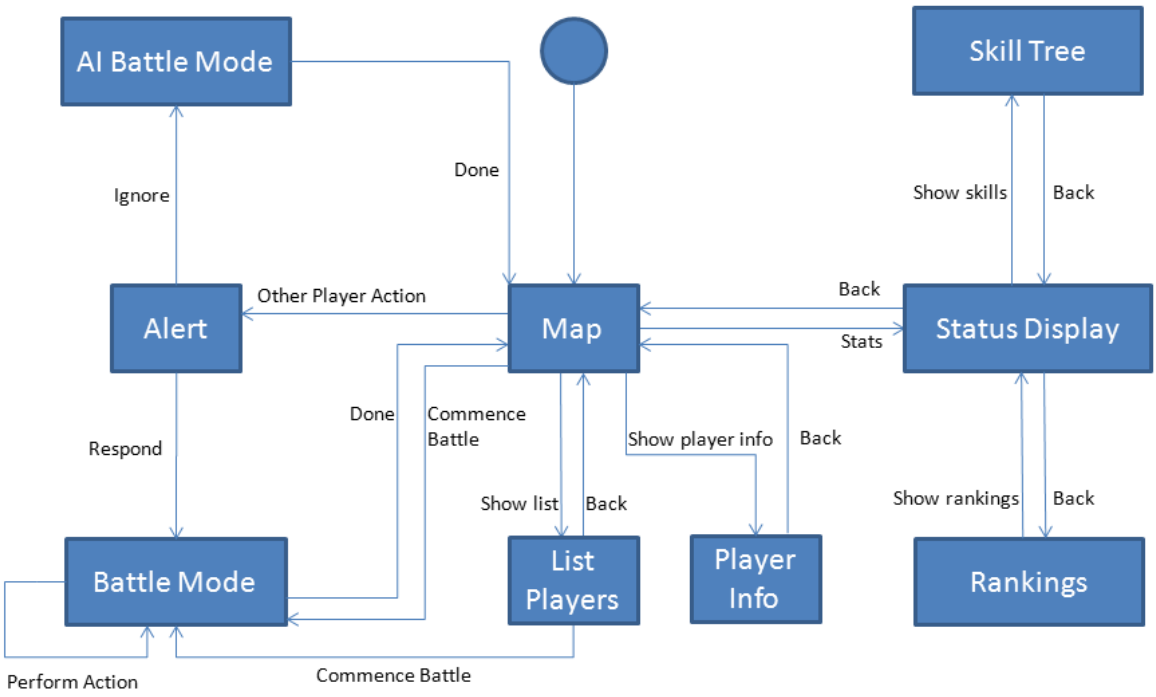
Back in the home screen (Google Maps view), if the user selects the List Players button, which is below the View Stats button, a new view shows up. This new view still has the level and health of the player and the View Stats button. Below shows the list of all the players within a 200 feet radius (this number can be changed according to how well GPS works) along with their respective levels next to their names. If the player selects a name, then the Message, Fight, and Inspect buttons appear at the bottom of the screen. The selected name is also highlighted. Users can change selections by selecting another player name. Selecting these buttons do almost the same things as described previously, except that selecting these buttons returns the user back to the home screen and then does as described above. The List Player view also has a Back button for returning to the home screen.

A settings option will be added to View Stats in later iterations. Using this, the player will be able to change the mode to offline and back to online, and also to build an AI. These are less important at this stage and do not need to be implemented yet.

Use Case Diagram



Finite State Machine Diagram


AI Battle Mode
Skill Tree
Done
Ignore
Show skills
Back
Alert
Other Player Action
Map
Back
Stats
Status Display
Done
Commence Battle
Respond
Show player info
Back
Show list
Back
Show rankings
Back
Battle Mode
List Players
Player Info
Rankings
Perform Action
Commence Battle