Course: CS-UY 4523

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Advisor: Professor Strauss

Project Name: MOBA Matchmaking

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**Project Motivation**

The MOBA (Multiplayer Online Battle Arena), genre has seen widespread popularity in the recent years. As the popularity rose, many MOBA genre games have been developed such as Dota 2, League of Legends, Smite, Heroes of the Storm, etc. A typical MOBA session requires five players on each team and lasts twenty to sixty minutes. These teams face each other on a square symmetrical map, divided diagonally representing each side. The bottom left and top right corners are typically where each team’s base is located. The map consists of three lanes: top, middle, bottom. In between the top and middle and middle and bottom lanes is a fogged area called the jungle. Each team must work together to gain economic and strategic advantages over the enemy team and use these tools to win team fights, capture objectives, and ultimately win the game by destroying the enemy base. Each MOBA game has a high skill floor and requires a significant time investment. As a result, each game’s player base has a large amount of players with varying skill levels. These skill levels are calculated based on winning or losing ranked games.

The most important aspect in the MOBA genre is the requirement of five players on each team. For some players, they do not have the option of starting a game with the optimal amount of players and thus have to rely on the game client’s matchmaking system. The problem centers around the fact that the matchmaking system relies solely on an arbitrary matchmaking rating (MMR) and disregards other factors with respect to human interaction. Teams win more when every player is on the same page and the team is working in unison. In some cases, such as non-ranked games, matchmaking does a surprisingly poor job of matching players with similar skill level. Players of different tier levels can be matched onto the same team or opposing team, thus creating an imbalance. As a result, this can be frustrating for people who do not have companions to play with or have limited time to play. Our motivation for this project is to create matchmaking system with respect to behavior, preferred role and complimentary play styles. The goal is to reduce queue time by creating premade teams and improve match quality.

Games are much more fun to play in a group and communication between players often improves their experience. A major component of a MOBA is team strategy and coordination which is unlikely as a team of five randomly selected players, that usually does not provide constructive criticism or communication.. The product will allow people find other players of similar skill and playstyle to allow them to play games as teams; hosting matchmaking on a social media platform will allow players to develop a rapport with others that have similar interests relative to the game. The product will not only improve the quality of an individual’s experience, but also foster more growth in the community by providing a positive environment.

**Proposed Project**

Create an application where users can register and link their in game profiles to their accounts. Users will input their own preferences for the type of players they expect to be matched with. Our algorithm will take into account each user’s preferences and information supplied by the game’s API, including past match history, kill, death and assist ratios, etc. to appropriately match players. Matchingmaking does not have to be a just single person looking for four other individuals to play with. You can start matchingmaking with an initial party of two, three, or four and the system will match the rest. Our application will display potential candidates similar to how Tinder present potential candidates to their users. The user is presented with another person’s profile and can see their in-game statistics, their preferred play style, their favorite characters or anything else the other user wants to make public. This allows us to differentiate our matchmaking system from other currently implemented systems by offering users choice over the strangers they play with. Swiping left on that profile equates to declining to party with that candidate. If both users swipe right, then they can communicate with each other and organize a time to play. Users can only search in rankings similar to theirs but can filter out players by preferred role on the team or other factors. If they agree to play with each other they are required to invite each other in the game’s client in order to form a premade queue. To avoid problems common to Tinder, such as providing falsified information, each user will rate other players matched into their party after each game is completed. These player ratings will only be used internally to improve matchmaking and will not be made public. Ratings will be calculated after a small number of calibration games since it is natural for people to have bad games and perform or behave worse than they normally would. Our app will contain a report option for users who display toxic behavior such as insulting other users or providing false information. These players will receive a warning to correct their behavior. If further inappropriate behavior is shown the user will result in a ban. Players can also give merits out to players or write comments to whoever they find to be particularly friendly or helpful. These can be displayed on their profile and can help people assess who they want to play with.

Users can also create partners on the app. If they’ve found people they enjoy playing with they can establish themselves in a group. They can keep adding people they find in the app to their team until they have five teammates. Then the team can enter a separate search for other teams on the app and play in a team matchmaking queue. Part of the appeal of MOBAS is developing strategies over several matches which is difficult to do when the game matches you with different opponents every game. This allows teams to enjoy higher level strategy play without needing to be professional players. There will be a leaderboard of teams at different ranking brackets. Teams can move up the bracket by being the top team at the end of the month in their bracket or move down at the bottom. They can also choose to form a ranked team in game and test their skills against other ranked teams.

**Deliverables**

A website where players can go for immediate matching.

An app where people can find people and then coordinate times to play.