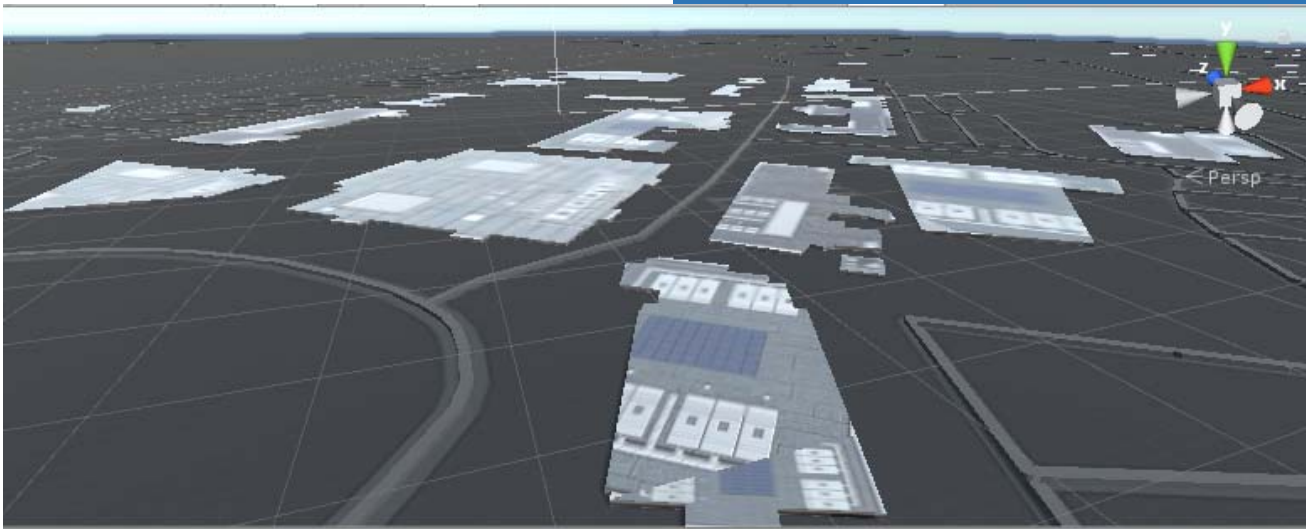# Fall 2019

# PKers Go

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## Goal and Objectives

The objective of this project is to create a game that felt like an RPG game. This means it has most of the core components of that would be found in a RPG. This was also meant to be an AR game to make the user feel like the virtual RPG elements were part of the real world. The actual game's goal is to kill more enemies than the other players in the game within a certain time limit.

The target audience is gamers, anime fans, and people who love mobile apps. The game was made to allow multiple players join each other in order to make a game have a feel like everything and everyone can participate in the game. To accomplish this, I used Unity3D and the Photon Network. The Photon Network is setup so that the first player to join is the master client. After connecting to the Photon Network, the player will be placed in a room. Below is the architecture of the networking used in the game.
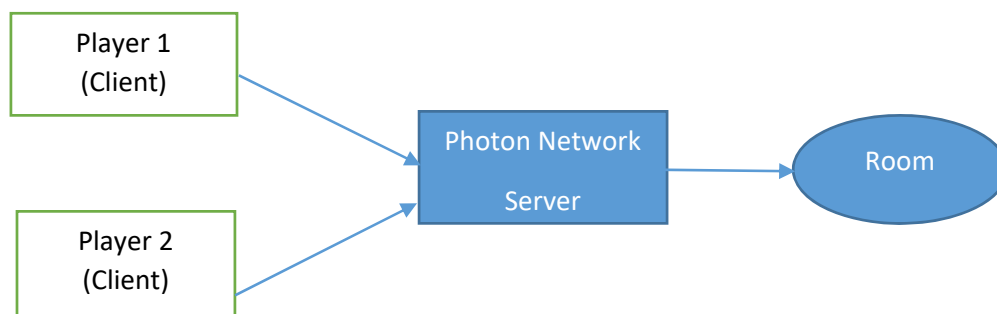


## Multi-User

The game allows multiple users to join and play. There are 2 characters that players can choose from, a Warrior and a Mage. These character function as different classes in RPGs which allow a different look and animations to the game. Users will spawn in the game and be placed on the map where the other users and enemies are. Multi-user functionality was created using Photon. When the game is started, the game will connect to the Photon servers and then place a player in a room that is built for a maximum of 3 people. If the room already has the maximum players, the new players will be placed into a new room.
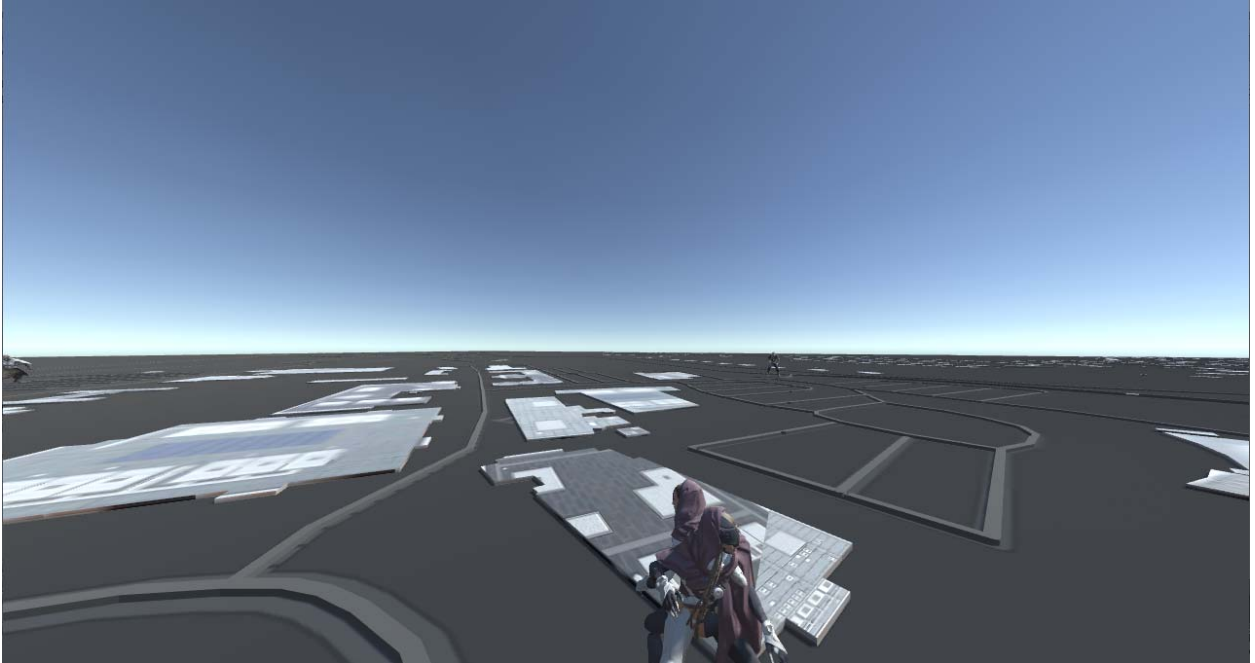
Figure 1: shows two mage classes in the environment getting ready to choose an enemy to fight.

## Modeling

There were many stages to the modeling. First was gathering the different playable characters and the different enemy types. The playable characters are a warrior and a mage. The warrior is a male character that is wearing a form of armor. The mage is a female character that is wearing a lighter armor set.
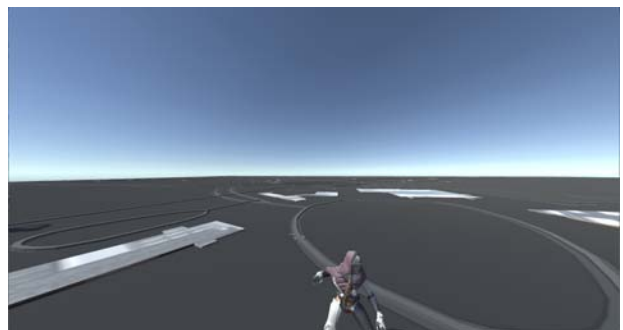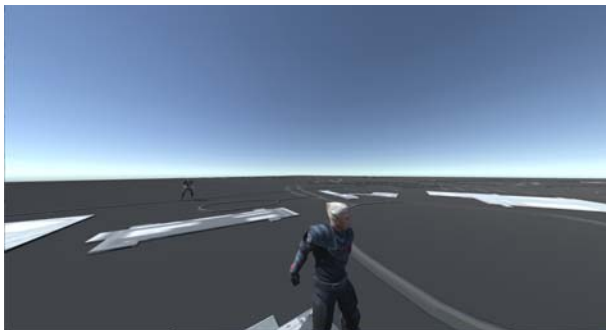


Figure 2: Pictures of the warrior and mage class in the game (respectively)

The next stage was modeling the enemies. There are two different types of enemies, an undead zombie and a goblin. The enemies appear within two different scenes which changes the enemies functions. The first scene is where the enemies have the ability to move and will try to put the players in the battle scene. The battle scene is where the player can fight the enemy that was chosen.
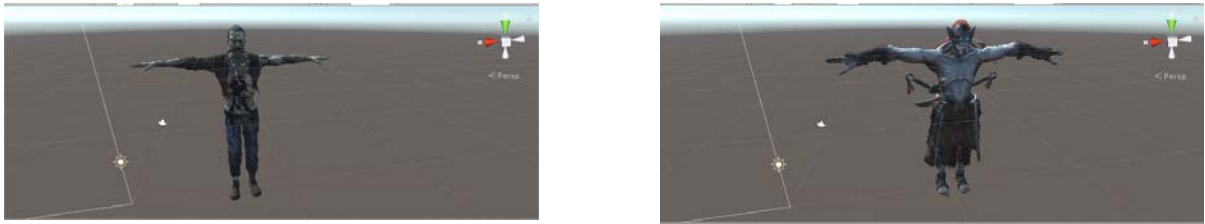


Figure 3: Images showing the undead and goblin enemies (respectively).

The last stages were modeling the environments and more character specific items. There are two different environments in the game. The first environment is a map of Bowie State University with the buildings being made smaller. The second environment is a world that uses the camera and enemies. The enemies will only appear when you are facing the proper way. The character specific items are a sword from the warrior class and a fireball for the mage class.
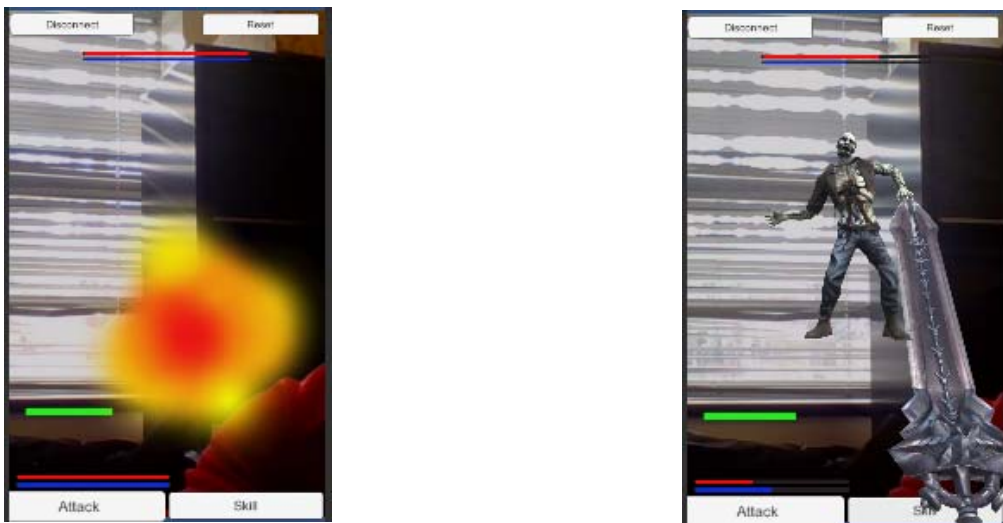


Figure 4: The battle scene which shows the AR world environment and the specific weapons for the mage class (on the Left) and the warrior class (on the right) during fights.

## Sensors

The game uses three different sensors in many different ways. The first sensor is a proximity sensor. The proximity function in a way that when the player is within a certain range of the enemy, the player and enemy will go to the battle scene. The next sensor is a touch sensor this functions similar to the proximity sensor except the player has full control over which is picked. The final sensor is the time sensor, there are two different time sensor in the game. The first time sensor is the controls the time in the game and ends the game when a certain time is reached. The other time sensor controls when the player and enemy can attack. There is a bar that within the battle screen that shows this.

## Animations

The animated objects in this game are the player, enemies, and the weapons that are used to fight. Every object has a different idle animation to differentiate all of the objects. Both enemy types have completely different animations. When the enemy does a regular attack, they will do an animation specific for that enemy. The same is done when the enemy does a special attack, but the animation is a complete different animation. The sword and fireball have different animations that are used in these same situations.

## Interactivity

The main forms of interactivity in the game deal interacting with the enemies and the buttons. There are a lot of buttons with different functions in the game. There are different buttons for attacking and using a skill. At the top of the screen, there is a button to disconnect from the server and (in the battle scene) a button to reset the gyroscope. Other forms of interactivity are choosing enemies to fight and the events that take place when attacking, being hit, and killing enemies.
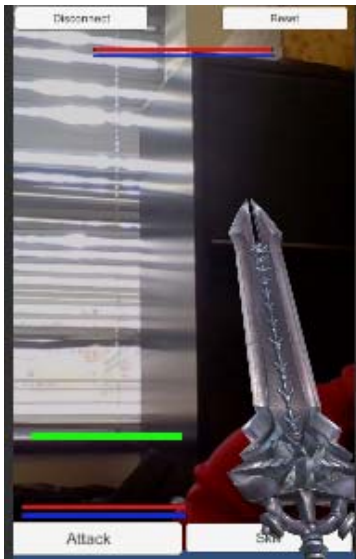
Figure 5: Images from the game that shows the different buttons in the battle scene and the start menu.

## Challenges

The hardest part of creating this game was working in the multi-user environment. Getting things to sync properly was a very hard challenge. Even now there are some wonky situations that occur during the game. Another challenge was trying to fit in as much things as I could. There were a lot of things that I wanted to add, but ended up leaving. One of those things was adding in player vs player. The game currently allows it, but it doesn't work how I would like.

## Why Virtual Reality and Why It is useful?

In games today, there are very few RPG games available today in virtual reality and augmented reality. This is something that many people want to see especially with media currently showing this exact thing. I wanted to create an AR game that would make players feel like they are part of the world because the game would feel more like it is a part of the real world. Augmented reality is perfect for that situation my combining the virtual world items into the real-world. That couldn't be done without augmented reality. The game serves as a way for everyone to fulfill their dreams of being part of an RPG.

## Hardware

The game requires a mobile device because it was made with that in mind. The game is functional on computers, but certain items will not fit properly. Currently, the game is only fully functional on an android device.

## Future Works

I plan on continuing to work on this game, but I will completely re-work the game from the ground up. The main things that will be added is GPS, player vs player. These are two features that I wanted to add in to this, but ran out of time or didn't make sense in terms of presentation purposes.

## Acknowledgements

Characters and animations are from Mixamo. Everything is mixed around to what I feel makes sense for the characters. The weapons and their animations were not from Mixamo. Those animations were made by me, but the sword was an asset found from Unity. The environment is a map from Mapbox which I focused on the area around the Bowie State campus. Finally, Youtube channels "InfoGamer" and "TheCGMaster" showed how to get certain things setup such as setting up the rooms in Photon. That code was used in the project to get things started.