General objectives, tasks & plans

The objective of this project is to emulate a classic Tower Defense type game, utilizing a VR approach. The idea is to make the player feel like he/she is part of the game and create feelings that are much more intense.

Thus, the game will consist of a predefined level and will put the player up against waves of enemies who will try to get to the end of the maze. The player has to try and stop the enemies, by placing well-thought towers/turrets, which will shoot oncoming enemies.

**Tasks & Implementation Plan** :

1. Create a VR environment, using the Unity3D engine, which we will then build upon to create the rest of the game.
2. Design the level in such a way that it is easily understood by the user, but not too simple as it will make the game boring.
3. Find an efficient way to implement the map/maze into the project.
4. Implement a user-friendly VR interface/menu for accessing the game’s features.
5. Create the turret objects and develop their scripts, so that the behavior is correct.
6. Implement the “building” mechanic into the game (i.e. place turrets on the map’s walls).
7. Create the enemies/waves and develop their scripts. The waves must find their way into and through the maze and keep on moving until the end of the map.

Upon completing these basic tasks, outlining the main functionality of the game, we will attempt to find a way to implement a Machine Learning algorithm into the project.

**Testing Plan** :

For the game to function correctly, some basic requirements must be met, regarding the design and the mechanics of the project. The requirements must be checked by the game tester.

Following conditions must be met (sorted by their category) :

**Interface** :

* Buttons/selections must always be accessible through the VR interface;
* Buttons/selections must be responsive;
* Buttons/selections must correspond to the correct features;

**Turrets/towers** :

* Must be allowed to be placed on the maze walls;
* Their number is limited by the wave/round number;
* Must behave correctly regarding their specific range (i.e. shoot the enemies that are in range and not those that are out of range);
* Must respect their specific characteristic (i.e. rate of fire, damage etc.);

**Enemy Waves** :

* Must respect their difficulty regarding the number of wave (i.e. the longer the game, the harder it gets);
* Must always find their way through the maze, while not getting stuck;
* Enemies from the wave should not trip over each other (i.e. should arrange themselves correctly)