Zombie Land 360 VR FPS Game Report

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Unique Aspect of the Game

One unique feature of the VR 360 Zombie Attack Game is the progressive weapon upgrade system. The player starts off with a pistol but gets upgraded to a machine gun after 75 seconds of gameplay. This provides a sense of urgency and excitement as the player has to survive long enough to get the upgraded weapons. Additionally, the 360-degree VR environment contributes to the immersion as the player has to be defensive in all directions.

Gradual Increase in Difficulty

The game features a gradual difficulty increase by:

Speed Progression: Zombies are slow at first but become faster after 60 seconds.

Ammo Capacity: The player begins with 10 bullets per clip but receives 20 bullets per clip after 60 seconds, balancing the zombie speed increase.

Weapon Upgrade: The player receives a machine gun after 75 seconds, enabling continuous fire, but zombies remain challenging due to their increased speed now.

Randomization Across Runs

To ensure varied experiences in several playthroughs, the game includes:

Randomized Zombie Spawns: Zombies spawn at different locations around the player for every wave.

Randomized Zombie Speeds: Some zombies are faster than others, which makes them unpredictable.

Item Drop Variability: Ammo pickups and health packs (if any) spawn at random intervals.

Scripts and Custom Methods

PlayerController.cs - Controls movement, aiming, and shooting functionality.

Shoot() - Fires bullets and reduces ammo count.

Reload() - Contains a 1.5-second reload time.

ZombieAI.cs - Controls zombie movement and attack behavior.
MoveTowardPlayer() - Moves zombies towards the player.

AttackPlayer() - Triggers an attack animation and reduces player health.

GameManager.cs - Manages game progression, difficulty level adjustments, and UI updates.
IncreaseDifficulty() - Raises zombie speed and player ammo after 60 seconds.

UpgradeWeapon() - Rewards the machine gun at 75 seconds.

SpawnManager.cs - Controls zombie spawn points and frequency.

SpawnZombie() - Spawns zombies randomly from predetermined spawn points.

WeaponSystem.cs - Manages weapon upgrading and bullet physics.
SwitchToMachineGun() - Upgrades the player's weapon at the right time.

Created Assets

- Zombie Models (custom online resource)
- Gun Models – Turret, Trees, Floor
- VR UI Elements (Ammo count, timer, weapon HUD)
- Audio Clips (Gunshots, zombie groans background)

External Assets Used

- **Unity Asset Store:** Free zombie animations and sound effects
- **Oculus SDK:** Integrated VR head tracking and controller input
- **Unity Standard Assets:** Used for basic environment objects
- **Online 3D assets:** Used for Zombie, trees and floor.
- **AI Generated Splash Screen:** Used Generative AI prompts for generating the image.

Challenges and Solutions

Challenge 1: Smooth VR Performance

Problem: Too many zombies and bullets caused FPS drops

Solution: Implemented destroy.object after 3 seconds so the clone won't hurt the game.

Challenge 2: Accurate Bullet Collision Detection in VR

Problem: Bullets sometimes went through zombies without registering a hit.

Solution: Fixed bugs in the code to accurately detect collisions.

Challenge 3: Balancing Difficulty

Problem: Early game too easy, late game too hard.

Solution: Introduced gradual difficulty scaling with affordable upgrades.

Future Improvements

Multiplayer Co-op Mode - Players join together to fight against hordes of zombies as a team.

New Zombie Types - Include boss zombies, explosive zombies, and faster mini-bosses.

Enhanced AI - Create smarter zombies that will avoid gunfire or lay traps for the play