Zombie Shooter

User Manual

Anchal Sinha
Jordan Combitsis
Huaijin Ruan
Xingyu Ren

Installation/Usage

If Executable is provided, simply Download and Launch to start the game. Otherwise, the project must be launched and run in Unity.

NOTE: In order to use the **IMU** for Weapon Swap/Shooting controls (see Controls below), the game must be run from within Unity Editor (executable will not work). See IMU sections in Controls for details.

How To Play

Overview

Zombie Shooter is a competitive multiplayer first person shooter video game in which players battle to kill the most total zombies throughout multiple levels. Up to 4 players can attempt to shoot and kill enemies as fast as possible to gain the highest score and be declared the winner!

Controls

The Control Scheme can be changed in Settings from the Main Menu. You can choose between 2 methods of Aiming (Mouse, CV) and 2 methods of Weapon Swap and Shooting (Keyboard, IMU). The default selections are Mouse and Keyboard.

Aiming - CV
For CV Aiming, a solid green object must be used. Your webcam will linearly track the object and map it to your crosshair's location on the game screen.

Weapons/Shooting - IMU
About
The IMU detects 5 different gestures, each with a unique purpose in-game: Up, Down, Left, Right, and Twist.
Twist is used for activating your weapon. Twist the IMU 90 degrees in either counterclockwise or clockwise (like you're turning a key) to start shooting, and do the same gesture again to stop shooting.
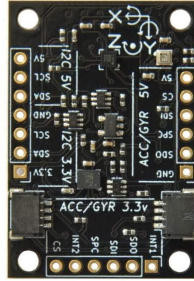
The rest of swiping gestures are simple linear motions that each swap to a different weapon. Players should hold IMU by this given figure to gain best gesture detection results. Left swipe is a movement towards X direction. Right swipe is a movement towards -X direction. Up swipe is a movement towards Z direction. Down swipe is a movement towards -Z direction. A clean and soft swipe would be appropriate as hard swipes would ruin the detection results. Also, it is highly recommended that players use a low rate of switching weapon playstyle and soft swipes to have more successful gesture detection results.

Setup

1. In Unity Editor, find the **Raspberry Pi Input** section of the **Input Manager** script under the GameManager object, and under **IP Address**, input the IP Address of your Raspberry Pi (your RPi must be able to connect to WiFi).
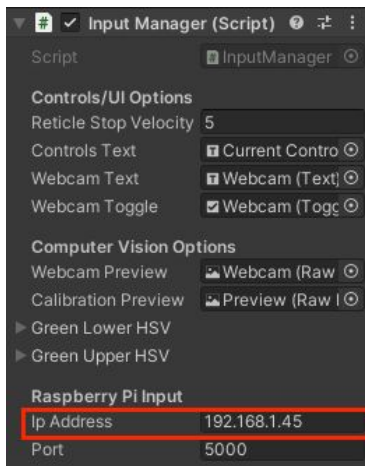
2. With your IMU connected to your RPi, hold the IMU flat in the "rest position" shown above, and run the calibrateBerryIMU.py script. This script calculates offsets necessary for the calibration of your IMU.
3. Run calibration for several seconds (5-10 sec) and then stop execution (Ctrl+C or Cmd+C).
4. Copy the 6 lines printed out at the end of execution (starting with magXmin and ending with magZmax) and paste them into the berryIMU_4.py script around line 74. They should be placed directly before the line `if __name__ == "__main__":` and either below or replacing the current calibration values.
5. Now run the berryIMU_4.py script and confirm that the Terminal reads "Waiting for connection…".

6. Run the Zombie Shooter game from Unity Editor, and select IMU in the Settings menu. After a few seconds, if the Terminal reads that your IMU has been connected, you are good to go!
7. If your IMU disconnects or fails to connect, stop execution of both the Python script and the Unity Editor game, and repeat Steps 5 and 6.

Speech

Speech commands can also be used to navigate menus as well as reload the current weapon. Any menu button that can be clicked can also be activated via voice command be saying the command exactly as it appears on the button. In-game, a "reload" command can be used to instantly reload your current weapon. This is most useful when used to reload your weapon during a cutscene on the way to the next level. To use speech recognition, press [Space] to start an audio clip, speak your command, then press [Space] again to end the clip.

Default Controls

	Keyboard	**IMU**
Shoot	A	Twist
Assault Rifle	Left Key	Left Swipe
Pistol	Right Key	Right Swipe
RPG	Up Key	Up Swipe
Shotgun	Down Key	Down Swipe
Speech	Space Key	Space Key