Controller Doc for Vacuum War

Welcome to the world of embedded programming!

Originally, the alt controller of this project used an Arduino Mega 2560 board, and we utilized a MFRC522 RFID Sensor to read the UID information of various RFID cards. That’s the magic which allows you to stick the head on the paper model, and have the gun head switched in the game world simultaneously. This version communicates with PC/Mac through wired serial ports, which is not ideal for connecting with a gun-like controller.

The current solution is an ESP32 CP2102 board, which has both Wi-Fi and Bluetooth modules inside the board. This feature provides not only the convenience of a rapid wireless solution, but also a lot of potential for future improvement. Now the way hardware connects with PCs is through Bluetooth Serial Ports. The chip writes the UID information in the Byte stream immediately after getting informed by the RFID Sensor.

On the game side, the Package *Ardity* helps us read all bytes. The theory background is the .NET *SerialPort* Library, works well with both physical & wireless serial ports. We also developed an external .NET exe to automatically discover the correct port ID to connect, reducing the effort users need to set up this system. Enjoy your game, as well as discoveries!

Setup:

1. Plug in a power supply to the internal USB port, both PC, AC adapter or external battery are ok.
2. Once the red led turns on, try add Bluetooth device on your PC, then connect to “*ESP32Test*”.
3. Open the game and you should be ready to play! Don’t forget to insert a VR controller to the slot on the vacuum gun.
4. Pick up the Vacuum gun, and try to stretch off heads from the side and stab them on the front. You would hear some nice sounds.
5. In the game, press A to start the count score. Press the trigger to suck in ammo / shoot bullets. More actions would be introduced soon!
6. You may need to set up the SteamVR / Open XR /Oculus environment prior to all steps listed. Go to their official website to find more information.

Lei, 02/08/2022