Motion Tracker Project Build Data



A Weyland-Yutani corp and Shed Tech joint build

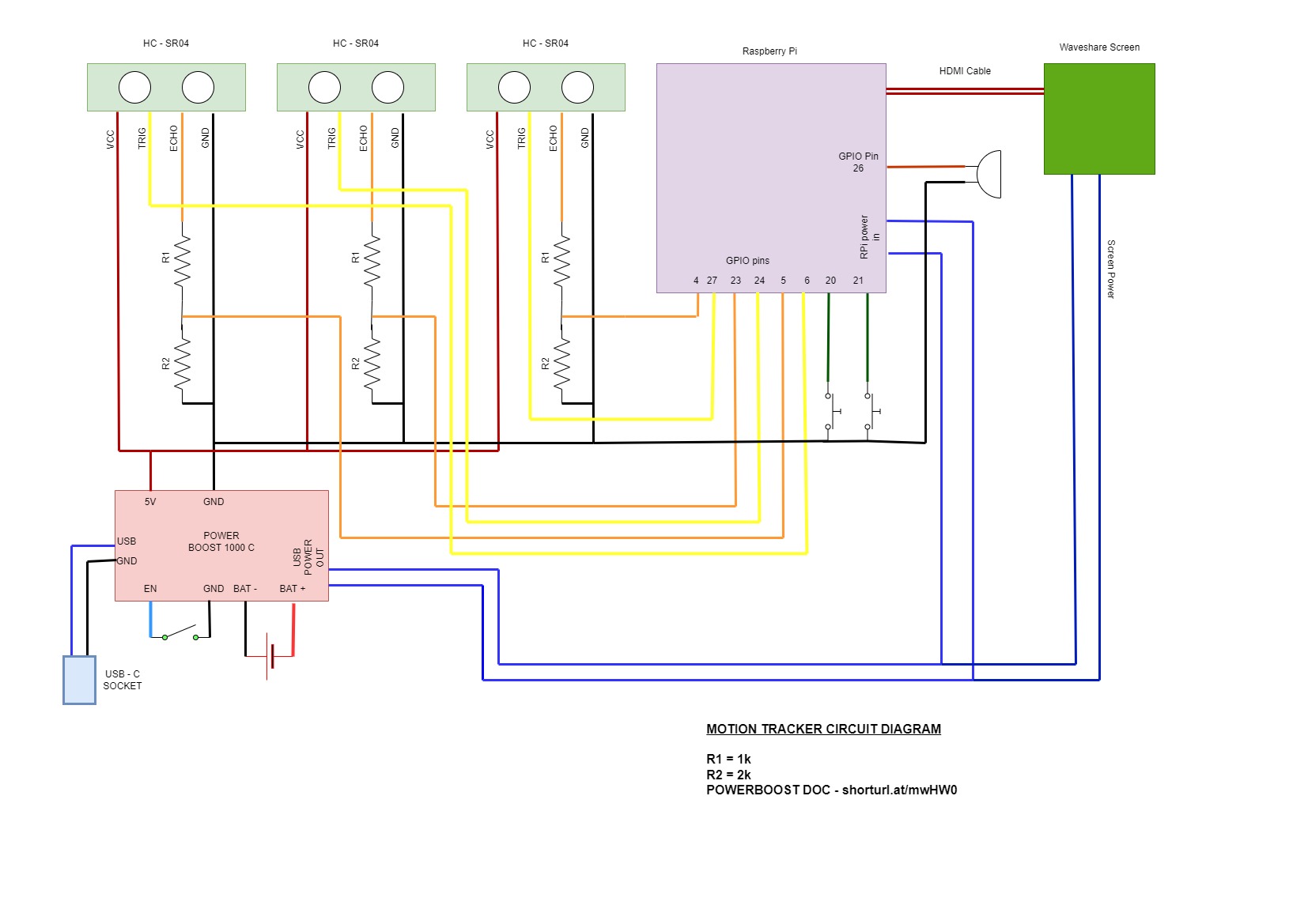
Parts list

1. Raspberry pi zero and micro SD card
2. Piezo electric buzzer (3 – 5 volt range)
3. Two push switches such as these - https://www.amazon.co.uk/RUNCCI-YUN-Normal-Momentary-Button-Pre-soldered/dp/B087V5VKKY/ref=sr\_1\_9?keywords=push+switches&qid=1658071006&sr=8-9
4. 4 inch square screen such as this - https://thepihut.com/products/4-ips-hdmi-square-capacitive-touchscreen-for-raspberry-pi-720x720?variant=41680422731971
5. Power switch such as this –

<https://www.amazon.co.uk/mxuteuk-Household-Appliances-Warranty-MXU3-101/dp/B07SBMXTJ7/ref=sr_1_32_sspa?crid=38JQTJJA9D0E7&keywords=switches&qid=1658070339&sprefix=switch%2Caps%2C460&sr=8-32-spons&psc=1&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUFHNkxESVhXN05VTU4mZW5jcnlwdGVkSWQ9QTEwMDgxNzlNTVlZNFdYUDczQ1EmZW5jcnlwdGVkQWRJZD1BMDU4MDI0MjI5NFpLWTJYVkhTTDMmd2lkZ2V0TmFtZT1zcF9tdGYmYWN0aW9uPWNsaWNrUmVkaXJlY3QmZG9Ob3RMb2dDbGljaz10cnVl>

1. HC-SR04 sensors x 3
2. 1K Ohm resistor x 3
3. 2K Ohm resistor x 3
4. PowerBoost 1000C
5. Battery compatible with the power boost
6. USB C socket (if you want to charg via USB-C)
7. Short HDMI to HDMI mini cable to connect screen to the Pi (note you can always cut a section out and splice the cable together if needed
8. Old USB micro cable that you can cut up to give power to the PI
9. Old USB C cable you can cut up to power up the screen
10. 3D printer and filament (I used Prusament black for anything I printed in black, and Prusament Mystic Green for the main body - <https://www.prusa3d.com/product/prusament-premium-pla-mystic-green-1kg-2/>)
11. Brass screw threads for M3 screws
12. M3 screws
13. Miscellaneous (wire, solder, flux, paint,glue, etc.)
14. STL’s available at
15. Code available at

Circuit Diagram

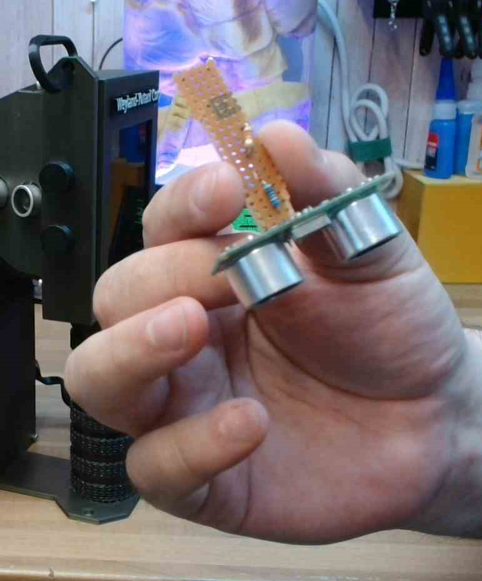


Instructions

1. Print off the STL’s and use a soldering iron to push brass inserts into the long 4.3mm receiver holes
2. Align the L piece with the front screen part via the two switch holes and glue together.



1. Pain the handle grip black (it is better to use a primer first)
2. Glue the flat large plate to the flat part of the handle grip. Align it so as the bottom is the same for both parts, and center the large plate on the flat part of the grip.
3. Attach the hdmi lead and usb c lead (the usb c lead should have lots of slack to connect to power later). Try and fit them in the front screen part. You will probably need to trim plastic off of the HDMI flex to make it fit.
4. Use hot glue to glue the screen to the front screen piece/bezel
5. Solder your sensors to some strip board like this –



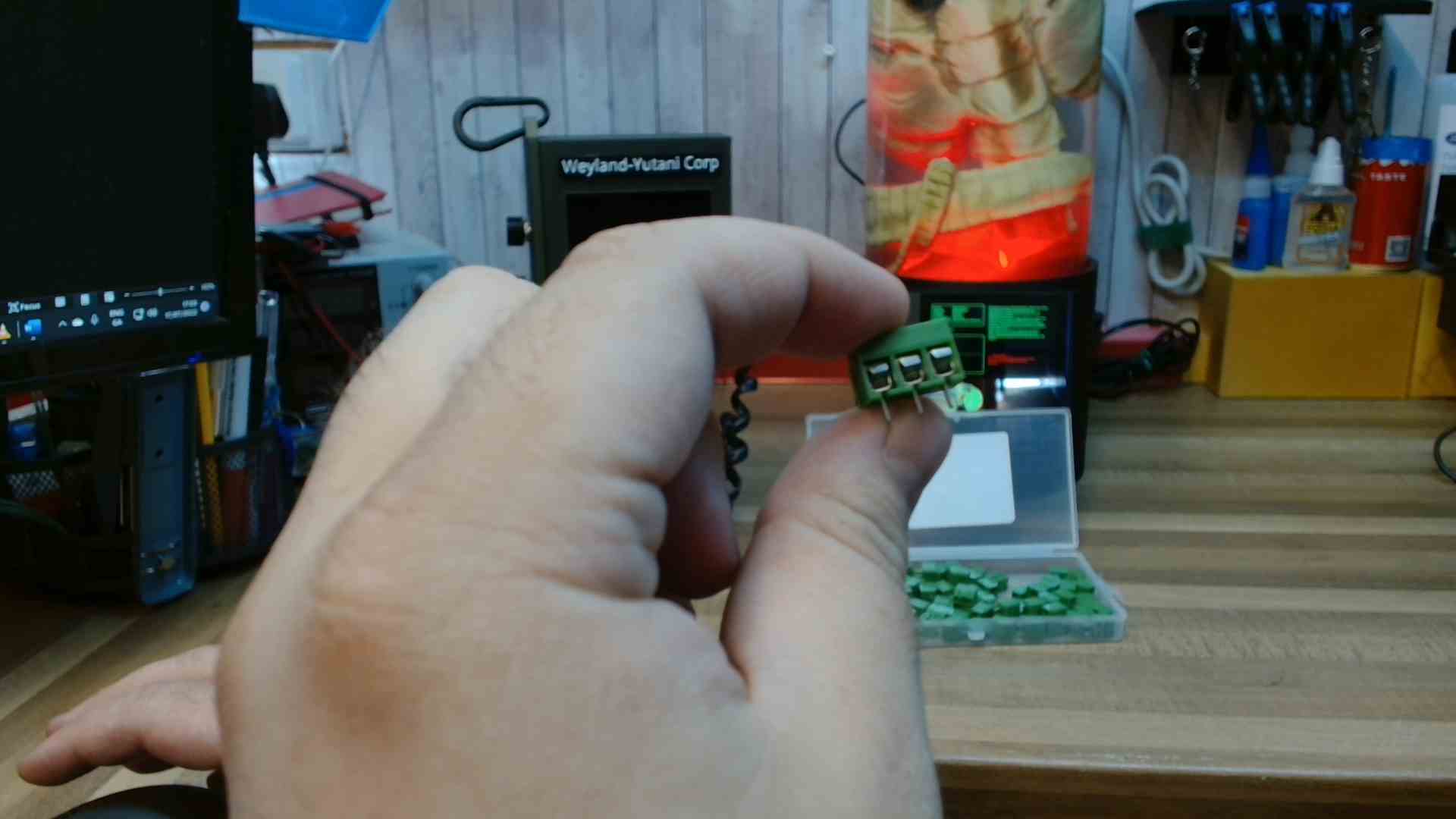
1. Solder on your trigger, echo ad power wires to the strip board (leave lots of slack, like 200mm, you can trim it back later)
2. Hot glue your sensors into the sockets on the back screen part



1. Solder cable onto your switches again with lots of slack
2. Screw the push buttons on the L pieces, push the rectangle power button to the rectangular hole
3. Screw the screen housing together
4. Glue the screen housing to the handle grip so it looks like this (minus the decal and carabiner)



1. Use the wiring diagram to complete your soldering (tip – using some of these screw terminals on strip board will allow you to easily add/remove hardware when needed)



1. Screw the back case on to the motion tracker
2. Print off the decals and caps that you want and paint them. Then glue them into place
3. Use SCP to transfer the python script onto the Pi
4. Run the script using VNC to remote desktop onto the device, or connect a radio keyboard fob to the pi to use a keyboard and mouse to run the script.

Operation

One push switch changes modes between live mode (which uses the sensors to get distance data) and demo mode (that just uses pre-programmed data to get distances).

The other button controls the buzzer sound.

Make sure to charge up the device before use!

