



Section	name	Use	schematic
Figure 1.1	ESP32-S3-WROOM-1	The ESP32 is the brain of the system, processes al the information, and sends WiFi commands to the Raspberry pi	ESP
Figure 2.1	Buttons 1 & 2	May be removed in a later version, as all they are needed for is programming. Right now they are the default BOOT and RESET buttons	Buttons
Figure 3.1	PIR breakout	Breakout pins for the PIR motion sensor	Motion Sensor
Figure 4.1	AMS1117-3.3 LDO	Takes the higher voltage from the USB and brings it to a usable 3.3 volts	power
Figure 5.1	TP4056	This is the Battery management circuit. Makes sure the battery doesn't explode	Battery Management
Figure 6.1	LED	Useful for debugging and for giving status. Not much is planned	LED



## **ESP32-S3-WROOM-1 pins**

In this setup, the ESP has only 4 pins being used. In theory, the same layout can be used with different sensors having different pin sets to connect to. In future iterations, I think adding breakouts for a time of flight sensor, ultrasonic sensor, or lightweight camera module. This module could have the infrared filter removed as well, so the feed can see in the dark. Also, adding different options for batteries would be prudent, as cost and availability change. In all, the goal is to make easy to set, low-cost, easy to leave behind recon.

## **debug buttons**

The buttons that are currently on the board are strictly for debugging and making sure the system works. as every PCB I've made in the past has needed at least 3 changes for complete functionality.

## **18650 battery**

I think making a setup for different battlers to be added would make the setup easier to let go of if discovered or destroyed. I'd like to make a version that uses 2 AA batteries and compacts the whole system, hopefully. Also, making a way to use LiPo batteries isn't a bad idea. In the end, I went with the 18650 because of its rechargability in testing, availability, and the fact that I have WAY TO MANY.

## **inspiration**

This project was started by @makewithmax on TikTok. He started with an Arduino that connected to a Pi, the whole setup was very bulky. I've had people follow me a couple of times before while doing some urbex, and it's not very fun. So I thought how useful it would be if I could just make it a bit more compact. i got in contact with Max and got his blessing to work on this, and he's been very helpful the entire way.

