List of components

|  |  |  |  |
| --- | --- | --- | --- |
| # | MCU (M) | Sensors (S) | Communication Module © |
| 1 | Arduino Uno R3 | HC-SR04 ultrasonic | ESP32 Wroom 32D (With Arduino) |
| 2 | Bluno Nano | GP2Y0A02YK0F IR | Bluetooth Module HC-05 |
| 3 | Arduino Nano | MPU-6050 3 Axis gyroscope | ESP8266 WiFi |
| 4 | WEMOS D1 mini ESP8266 | LSM9DS1 9 Axis gyro |  |

Datasheet :

<https://docs.arduino.cc/hardware/uno-rev3>

<https://www.dfrobot.com/product-1122.html>

<https://store.arduino.cc/products/arduino-nano>

<https://www.wemos.cc/en/latest/d1/d1_mini.html>

<https://cdn.sparkfun.com/datasheets/Sensors/Proximity/HCSR04.pdf>

<https://www.sparkfun.com/datasheets/Sensors/Infrared/gp2y0a02yk_e.pdf>

<https://components101.com/sensors/mpu6050-module>

<https://www.sparkfun.com/products/retired/13284>

<https://www.espressif.com/sites/default/files/documentation/esp32-wroom-32d_esp32-wroom-32u_datasheet_en.pdf>

<https://howtomechatronics.com/tutorials/arduino/arduino-and-hc-05-bluetooth-module-tutorial/>

<https://www.sparkfun.com/products/17146#:~:text=The%20ESP8266%20WiFi%20Module%20is,functions%20from%20another%20application%20processor>.

Solution:

Task: Unidirectional movement sensor. Must have precise movement difference or constant distance value.

Tested combinations:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| M | S | C | Voltage | Dimension | Description |
| 1 | 1 | N/A | 7~12V | Not measured | Valid reading range 5cm < x < 150cm |
| 1 | 3 | N/A |  | Not measured | Not fixed position, only relative. Values are not intuitive |
| 1 | 4 | N/A | (chip itself 2.4~3.6v) | Not measured | Unable to initialize (could be useful on dumbbell with the rotation) |

Issues: Logged in Issues.txt

Startup Information: Under 1.6 IDE development info.docx

Current Testing Machine:

Stacked weight.

Relative Research:

1. Wifi communication

<https://microcontrollerslab.com/esp8266-wi-fi-module-interfacing-arduino/>

1. Bluetooth communication

https://www.instructables.com/Arduino-Reading-Sensor-Data-Using-Bluetooth/