**MPU 6050**

To find how much mpu 6050 is titled

**COMPONENTS :**

1. MPU 6050
2. ARDUINO UNO

**CONNECTIONS :**

* MPU6050 VCC -> Arduino 5V [ OR 3V SOMETIMES ]
* MPU6050 GND -> Arduino GND
* MPU6050 SDA -> Arduino A4
* MPU6050 SCL -> Arduino A5

**CODE :**

**#include <Wire.h>**

**#include <MPU6050.h>**

**MPU6050 mpu;**

**void setup() {**

**Serial.begin(9600);**

**Wire.begin();**

**mpu.initialize();**

**// Verify connection**

**if (mpu.testConnection()) {**

**Serial.println("MPU6050 connection successful");**

**} else {**

**Serial.println("MPU6050 connection failed");**

**while (1);**

**}**

**}**

**void loop() {**

**// Read raw accelerometer and gyroscope values**

**int16\_t ax, ay, az, gx, gy, gz;**

**mpu.getMotion6(&ax, &ay, &az, &gx, &gy, &gz);**

**// Convert raw values to degrees per second for gyroscope**

**float gx\_deg = gx / 131.0;**

**float gy\_deg = gy / 131.0;**

**float gz\_deg = gz / 131.0;**

**// Convert raw values to G for accelerometer**

**float ax\_g = ax / 16384.0;**

**float ay\_g = ay / 16384.0;**

**float az\_g = az / 16384.0;**

**// Calculate tilt angles using accelerometer data**

**float roll = atan2(-ay\_g, az\_g) \* 180.0 / PI;**

**float pitch = atan2(ax\_g, sqrt(ay\_g \* ay\_g + az\_g \* az\_g)) \* 180.0 / PI;**

**// Normalize angles to the range [-180, 180)**

**roll = fmod(roll + 180, 360) - 180;**

**pitch = fmod(pitch + 180, 360) - 180;**

**// Reverse the direction of rotation for the roll angle**

**roll \*= -1;**

**// Print the results**

**Serial.print("Roll: ");**

**Serial.print(roll, 2); // Display two decimal places**

**Serial.print("° Pitch: ");**

**Serial.print(pitch, 2); // Display two decimal places**

**Serial.println("°");**

**delay(100); // Adjust the delay based on your application**

**}**

GIVES HOW MUCH ANGLE IT TITLED (SEE THE DIAGRAM IN MPU 6050 )

ROLL - GIVES CHANGE IN ANGLE IN Y DIRECTION

PITCH - GIVES CHANGE IN ANGLE IN X DIRECTION