

Human Posture Recognition System using MPU6050 and Arduino UNO

<https://www.youtube.com/watch?v=Zs3kWxgCdqY>

The main aim of this project is to design a wearable sensor based human postures (sitting, standing, falling and walking) recognition system using arduino uno and mpu6050 **Gyroscope sensor**.

Human posture recognition has a wide range of application for elderly care. The real problem occurs when an elderly person who is living alone get severally sick or in a worst-case fall and get injured making him or her unable to ask for help. In some unfortunate situations, after they fall or got sick, they might even have to live through that agony and physical pain until their final breath without any sort of help. To overcome this problem, we design a wearable sensor based human postures recognition system.

In this project we are using Mpu6050 Gyroscope sensor which can measure and maintain the orientation and angular velocity of the person. These are more advanced than accelerometers. These can measure the tilt and lateral orientation of the body whereas accelerometer can only measure the linear motion.

The controlling device of the whole system is aarduino uno. Microcontroller acts an intermediate between input and output modules and acts accordingly on the output modules from the input received as in the way it is programmed. Here, the Microcontroller gets input from mpu5060 module. Based on that microcontroller displays the human activity on LCD module. The Microcontroller is programmed in Embedded C language.

Objectives:

1. To develop a wearable human posture recognition system using Arduino UNO and MPU6050.
2. To detect common human activities such as sitting, standing, walking, and falling.
3. To measure changes in acceleration, tilt, and angular movement using the MPU6050 sensor.
4. To process the sensor data using the Arduino UNO microcontroller.
5. To display the detected human posture/activity on an LCD.
6. To provide a simple and reliable system for elderly monitoring and fall detection.
7. To enable quick identification of abnormal movements or falls for improved safety and assistance.

The main blocks of this project are:

- Battery Power Supply.
- Arduino uno.
- Three Mpu6050 gyroscope sensors.
- LCD display.
- Buzzer.

Software's used:

- Arduino IDE for compiling and dumping code into Microcontroller
- Express SCH for Circuit design.

