

Human Body Posture Correction System

Uma Maheshwari.P¹, Dhanya.U¹, Gurutheep.M³,
Dharaneshwaran.S⁴,Ranjith.R⁵

¹ Ug Students , Department of Electronics and Communication Engineering
SNS College of Technology

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ABSTRACT

The data is physically and meticulously analysed. The device features an accelerometer sensor that can detect the user's inclination. The angle at which posture is calculated has decreased in this technological world that is becoming increasingly digital. Since we are all so preoccupied with our phones, laptops, computers, TVs, and other digital devices, we are not as focused on our health as we should be. These usages allowed for the development of several health issues. One such issue is the spinal injury. Our idea seeks to correct people's posture so they can enjoy a fulfilling and healthy online experience. To assess the user's posture and evaluate the data in order to identify and correct the posture, we developed a wearable garment integrated device.

I. INTRODUCTION

The artwork has been modernised for the digital age just like the modern world. For instance, software engineers frequently use their laptops and desktop PCs. This produced the craniovertebral angle, scapular index, and peak expiratory flow, depending on how long it was operated for. A survey found that using computers and telephones for long periods of time can negatively affect posture and respiratory health.

A posture detection and warning system keeps track of users' posture and alerts them when it needs to be adjusted. Our posture refers to how our bodies are held while we are standing, sitting, or lying down. Good posture is defined as proper body alignment maintained by the proper amount of muscular tension in opposition to gravity. Good posture aids in maintaining the right alignment of our bones and joints, allowing us to use our muscles properly. Additionally, it lessens the stress placed on the ligaments that bind our spinal joints, lowering the possibility of injury.

The goal of the proposed project is to develop a wearable monitoring system that continuously tracks the user's posture using an accelerometer and transmits the collected data to a

server through the internet. Internet of Things (IoT) is a broad category of technologies and use cases with no single, agreed-upon definition. It involves analysing data remotely on a system, alerting the user via a buzzer, and also analysing data gathered in the server and producing a detailed report on the user posture. The use of network-connected devices embedded in the physical world to enhance an already-existing process or to enable a novel situation that was not previously conceivable is one viable definition of the Internet of Things (IoT).

II. EXISTING TECHNIQUE

Posture Corrector Robot is a popular existing product available in today's market. As they use robotics, this is not cost-effective. Installation is also quite difficult. These problems can be overcome by our human body position correction system. But these systems do not have a posture monitoring tracker to track their posture



III. SYSTEM HARDWARE

3.1. ESP8266 NODE MCU

Both the open source firmware for the Allows Node MCU and the open source designs for prototyping boards are available. The acronym "nodeMCU" is made up of the words "node" and "MCU" (micro-controller unit). The firmware is

actually referred to as "NodeMCU" in this context rather than the associated development kits.

Additionally open source are the firmware and prototyping board designs. Due to resource restrictions, users must select the components required for their project and develop a firmware unique to their requirements. ESP32 has 32-bit support..

A circuit board acting as a dual in-line package (DIP) that incorporates a USB controller with a smaller surface-mounted board holding the MCU and antenna is the prototyping hardware that is frequently utilised. the selection of the DIP format for quick breadboard prototyping. The ESP-12 module of the ESP8266, which is a Wi-Fi SoC combined with a Tensilica Xtensa LX106 core and is widely used in IoT applications (see related projects), served as the design's initial foundation.

In order to make it relatively simple to change the Arduino IDE to support alternative toolchains so that Arduino C/C++ could be compiled for these new processors, Arduino.cc had to modify the Arduino IDE as they started creating new MCU boards based on non-AVR processors, such as the ARM/SAM MCU used in the Arduino Due. They accomplished this by introducing the SAM Core and the Board Manager. An Arduino C/C++ source file must have a "core" in order for the Board Manager and the Arduino IDE to translate it into the machine language of the target MCU. The "ESP8266 Core for the Arduino IDE" was created by some ESP8266 enthusiasts as an Arduino core for the ESP8266 WiFi SoC.[18] This has emerged as a top platform for software development.



3.2. GYROSCOPE MPU 6050

Three in one sensor :

- Temperature sensor
- Gyrometer
- Accelerometer

A comprehensive 6-axis motion tracking device is the MPU6050 sensor module. In a compact size, it includes a 3-axis gyroscope, 3-axis accelerometer, and a digital motion processor. Additionally, it has an on-chip temperature sensor as an extra feature. In order to connect with the microcontrollers, it has an I2C bus interface. To interface with other sensor devices like a 3-axis magnetometer, a pressure sensor, etc., it features an auxiliary I2C bus. A full 9-axis Motion Fusion output can be provided by MPU6050 if a 3-axis Magnetometer is attached to an additional I2C connection. Check out the MPU6050 in the sensors..



- AD0: LSB pin for the I2C slave address. This is the 0th bit in the device's 7-bit slave address.
- Auxiliary Serial Clock Pin: XCL. Other I2C interface-capable sensors' SCL pins are connected to MPU-6050 using this pin.
- Auxiliary Serial Data pin: XDA. Other I2C interface-capable sensors' SDA pins are connected to MPU-6050 using this pin.
- Serial Clock Pin (SCL). Connect this pin to the SCL of a microcontroller.
- pin.Serial Data Pin (SDA). Connect this pin to the SDA of a microcontroller.
- pin.Ground pin, or GND. Connect the ground connection to this pin.
- Power supply pin: VCC. Connect this pin to a supply of +5V DC.

3.3. OLED DISPLAY 64 * 128

A light-emitting diode (LED) with an organic compound film as the emissive electroluminescent layer that emits light in response to an electric current is referred to as an organic light-emitting diode. This organic layer is sandwiched between two electrodes, with at least one transparent electrode. OLEDs are utilised to make digital displays in gadgets like televisions, computer monitors, and portable gaming systems like smartphones. The creation of white OLED components for use in solid-state lighting systems is a crucial field of research.

The SSD1306 is a potent single-chip CMOS OLED driver controller that powers the module. Through I2C and SPI, it can communicate with the microcontroller. The good thing is that all of these displays can be switched out.

Unlike a character LCD panel, an OLED display does not require

3.4. VIBRATOR

When given enough power, a motor can vibrate and is known as a vibrating motor. It literally shakes like a motor. It works fantastically with vibrating items. It is incredibly useful and may be incorporated into many other gadgets. Cell phones, which vibrate when called when set to vibration mode, are among the most often vibrating objects. One such example of an electrical gadget with a vibration motor is a cell phone. Another illustration is a game controller with a rumble pack that shakes to mimic game motions. The Nintendo 64 came with rumble packs so that the controller would shake to simulate gameplay, making it one controller to which a rumble pack could be attached as an accessory.



3.5. BATTERY



An electric battery that provides a nominal voltage of 9 volts is known as a nine-volt battery or 9-volt battery. Depending on the battery chemistry, the actual voltage ranges from 7.2 to 9.6 volts. Batteries of all shapes and sizes are produced; one popular size is PP3, which was first used in early transistor radios. The PP3 features two polarised snap connections on the top and is shaped like a rectangular prism with rounded sides. This kind is frequently employed in a wide range of applications, including toys, clocks, and domestic items like smoke and gas detectors.

3.6. HEART RATE SENCNER



If you're creating an exercise routine, researching your activity or anxiety levels, or simply want your shirt to blink in time with your heartbeat, heart rate data can be very helpful. The issue is that it can be challenging to measure heart

rate. Fortunately, that issue can be resolved by the Pulse Sensor Amped!

A heart-rate sensor for Arduino that is plug-and-play is called the Pulse Sensor Amped. Students, artists, athletes, makers, game developers, and mobile app developers can all use it to quickly incorporate real-time heart rate data into their works. It simply combines a straightforward optical heart rate sensor with electronics for noise reduction and amplification, making it quick and simple to obtain accurate pulse readings. Additionally, it consumes little power, drawing only 4mA at 5V, making it ideal for mobile use.

SOFTWARE REQUIREMENTS

3.7. BLYNK SOFTWARE

Using HBlynk, you can make smartphone apps that make it simple to communicate with microcontrollers or even complete computers like the Raspberry Pi. The Blynk platform's main goal is to make creating mobile phone applications incredibly simple. You'll learn in this course that creating a mobile application that can communicate with your Arduino is as simple as dragging a widget and setting up a pin. With Blynk, you can operate an LED or a motor with essentially no programming from your smartphone. Actually, the first experiment I'll show you in this course is this one.

However, don't let this ease of use fool you into thinking that Blynk is only appropriate for simple tasks.



3.8. BLYNK SMARTPHONE APP

Actually, the Blynk app is an app editor. You can make one or many projects with it. Each

project is capable of containing graphical widgets that can communicate with one or more devices, such as buttons, virtual LEDs, value displays, and even text terminals. Without writing any code at all, you may use the Blynk library to directly control Arduino or ESP32 pins from your phone. A project can also be shared with friends or even clients so that they can access the linked devices but cannot edit the project itself. Consider creating a smartphone app that allows users to adjust the temperature, window coverings, and lighting from their device. You may exchange.

IV. WORKING OF PROPOSED METHOD

- A gyroscope is used to record the position of the user.
- The gyroscope sends the signal change to Node MCU
- Node MCU makes the vibrator alert the user.
- Temperature sensors and OLED displays are additional advancements.
- Temperature sensor records the temperature and OLED display record the live position of the user.
- The entire setup is fixed in the ID tag or can be clipped in shirts as per convenience.

V. RESULT

- As a result of this, Posture can be monitored and alerted.
- Healthy and happy work life can be created.
- Easy to implement and cost effective.





VI. CONCLUSION

- As a result of this, Posture can be monitored and alerted.
- This reduces the risk of health issues.
- Healthy and happy work life can be created.
- Easy to implement and cost-effective

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