



## Abstract

Glove Plus is a novel device which smartly combines various standard medical instruments into one wearable device and provides a social media application for consultancy.

It uses a Raspberry Pi 3 Model B as the processing platform.

The peripherals include a 100K Thermistor, HC-SR04 Ultrasonic Sensor, HC-05 Bluetooth Module, SEN-11574 Pulse Sensor, and a few resistors and male to male jumper wires.

### **The Thermometer:**

The 100K Thermistor has a variable resistance which changes with temperature due to the presence of a sintered semiconductor. The Analog port on the Pi is connected along with a power supply of 5V alongside Ground. A 100 k $\Omega$  resistor provides enough fluctuation of current to maintain the ground temperature of the device, similar to that of the room temperature.

The GlovePlus interprets these variations in form of Degree measures in both Celsius/Fahrenheit scale.

### **The HC-SR04 Ultrasonic Sensor:**

The HC-SR04 ultra sound module works using an IO trigger which sends out eight 40 kHz sound waves. If these waves encounter any obstruction laterally they revert back on their path and then are picked up by the module.

The program then calculates the distance of the obstruction, using the time taken by the wave to come back.

The distance is then used as the displaced far point of the eye which is then used to find the focal length of the eye.

### **The SEN-11574 Pulse Sensor:**

The heart beat sensor is based on the principle of photo plethysmography. It measures the change in volume of blood through any organ of the body which causes a change in the light intensity through that organ. In case of applications where heart pulse rate is to be monitored, the timing of the pulses is more important.

The flow of the blood volume is decided by the rate of heart pulses and since light is absorbed by blood the signal pulses are equivalent to the heart beat pulses.

**Mobile Application (The MediSocial):**

Our application has been designed on Eclipse IDE. The HC-05 Bluetooth module compiles the information provided by the other constituents of the glove. This data can then be published on the “MediWall” of our application, which then can be used as a platform by your relatives and doctors to provide advice.