

# Wearable Device For Health State Monitoring System

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## ABSTRACT

The purpose of the project entitled "Health State Monitoring System" is the patient's body temperature, pulse rate, sweat. Nowadays wearable devices play's an important role in day to day life for monitoring their lifestyle and monitoring their health.

The lifestyle and fitness markets have provided the driving force for the development of a broad range of wearable technologies that can be adapted for use in health-care. Here we review existing technologies currently used for measurement of the primary vital signs: heart rate and respiration rate. We review the relevant physiology that defines the measurement needs and evaluate the different methods of signal transduction and measurement modalities for the use of wearable in health-care. In this model, we added some features like body temperature and sweat which means detect the amount of sweat that has been released by the body and pulse-rate of a patient, it is simple, fast, and cost-effective. The main function of the system is to measure the patient's health and store patient details and retrieve these details as and when required by using an android application, and the data can be retrieved easily. The data are well protected for personal use and makes the data processing very fast.

**Index Terms - Vital signs, Body temperature, Pulse rate.**

## 1 INTRODUCTION

The project Health State Monitoring System calculates patient's data, like Body temperature, sweat, and Pulse rate, and storing their details into the CLOUD.

The Health State Monitoring System can start calculating the user's data when it is mounted on the user's hand and by switching on the system. Data can be retrieved easily. The interface is built very user-friendly for understanding the given readings for users. Data is well protected on Google's Firebase and the only particular user has access over his data.

Health state monitoring products designed for the patients and can also be used by normal people to monitor their health state to check their body temperature, sweat, and pulse rate.

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## 2 PROBLEM DEFINITION

Implementation of Wearable Health State Monitoring System using IoT (internet of things) modules and sensors which calculates patient's health and saves data to cloud for monitoring user's health.

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## 3 METHODOLOGIES

- A. Calculate temperature.
- B. Calculate sweat.
- C. Calculate pulse.
- D. Upload report data on the cloud.
- E. Display sweat.

- F. Display pulse rate.
- G. Display temperature.
- H. Calculate Temperature: In this module Temperature will be sensed by sensor lm35 and data will be sent to the cloud (thing speak) through Arduino-nano and that data will be displayed on the user's android.
- I. Calculate Pulse Rate: In this module Pulse Rate of the body will be sensed by the sensor and data will be sent to the cloud.
- J. Calculate Sweat Exertion: In this module sweat released by the user's body is calculated and displayed on the application.

given API key and wife credentials which are given in code.

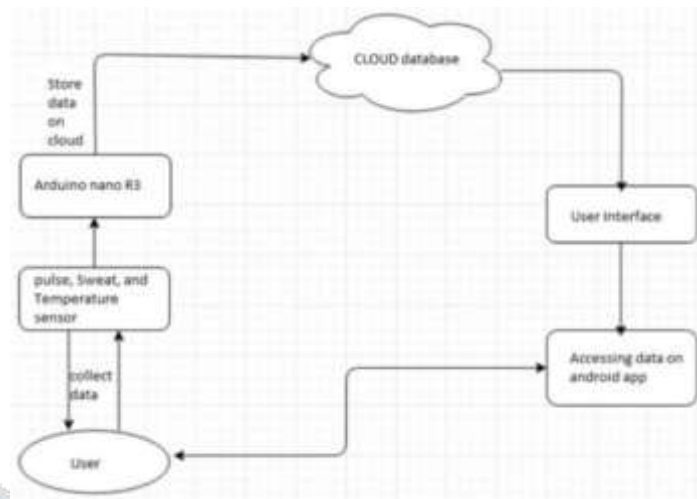


Fig.(4.1) System Architecture

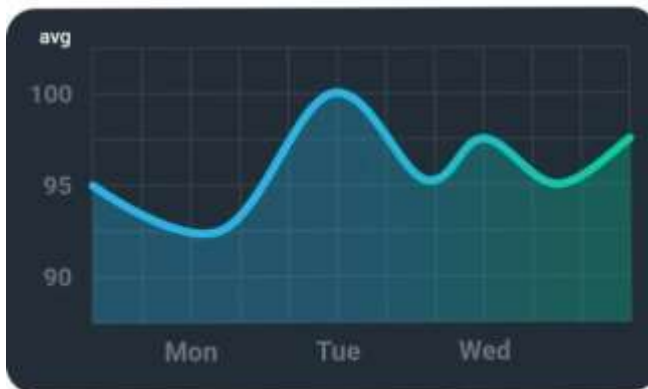
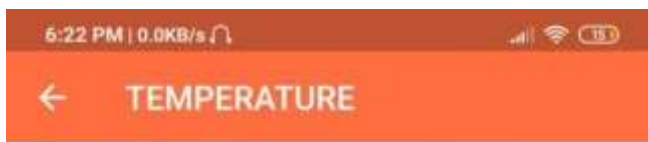
### 5 RESULT

Fig. (5.1) Result Analysis

Sr No.	Input	Output
1	Body Temperature	36.1 to 37.2°C
2	Heart rate	80 to 100 Beats/minute
3	Sweat Rate	27.4 to 47.3 oz

### 4 WORKING OF PROJECT

First, we decide which sensor we want to in our variable device, the sensors and micro-controller we decide to use in our project which is compact and helps in making our device small. We design our work which can calculate the temperature of the user’s body, pulse rate, and sweating with the help of an LM35 temperature sensor, pulse sensors, moisture sensor. Its compact and small size helped us to mount it on the wireless wearable device along with the Arduino-Nano micro-controller. We wrote code in Arduino IDE for all the sensors with which our micro-controller is connected by using jumping wires. Now micro-controller will get connected to CLOUD with



## 6 CONCLUSION

The wearable sensors into the healthcare market have been relatively slow, despite the rapid development of devices in the lifestyle and fitness markets. However, advances in wearable sensor technology provide tremendous opportunities for deployment in healthcare, particularly in precision medicine, where wearable can enable high-quality, real-time measurements of an individual's health state. Here we review the methods of signal transduction and measurement modalities that are the top candidates for on-body measurement of heart rate, sweating, temperature. We review the relevant physiology and discuss the technical issues associated with the measurement of these parameters.

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