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IoT Based Weather Monitoring System

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ABSTRACT: This system can be used to monitor and update weather conditions over the internet. The system monitors following below parameters namely temperature, humidity and rainfall and smoke sensor and pressure sensor values these values are then displayed on LCD and also updated over the IOT thing speak cloud. By readings, the user can get a fair idea of the weather of a particular area on the monitor. This system proves to be useful for temperature increases the value gets updated. The user can observe the weather status of a particular area from any remote location.

KEYWORDS: Internet of Things (IoT), Raspberry Pi, Thing speak, Sensors.

I. INTRODUCTION

A weather station is a device that collects data related to the weather and environment using many different sensors. Weather station is also a facility that can use for measuring atmospheric conditions to provide information for weather forecasts and to study the weather and climate. Therefore, Weather station using Internet of Thing is proposed to help user access data about weather anywhere in real-time.

II. LITERATURE SERVEY

Effective and cheap methods to monitor the quality of the air and prevent it from a potential hazard. The author collects the data from the app and analyzes the Air Quality Index (AQI) at different time intervals. They correlate CO and NO₂ levels against humidity and temperature. Created a wi-fi network by the client to get access the cloud services and microcontroller. The data is uploaded on the Thing speak. The system used by the author is cost effective as it cannot use the DHT11 sensor which reduces the cost at a lesser extent. The author displays the result in the LCD display. Developed a pressure monitoring system using BMP085 launch pad. The result obtained is compared with commercial thermometer and barometer. The sensors used are BMP085 (Pressure Sensor), CC3200 and AT&TM2 (cloud Technology). The average error in pressure measurement is 0.035%. In temperature measurement, the average error is 2.02%. The measured parameters are sent to the cloud services. The author works on Raspberry Pi which is also combined with different sensors like temperature, humidity, pressure Gas and rain. The main advantage of this work is that it is low cost and less power consumption. It is installed anywhere to monitor the climatic changes. The system helps the user to select the best suitable environment. It uses various sensors like temperature, humidity, Pressure, and gas detector. Moreover, the data to be monitored on the website.

It uses repetitive data management to handle repeated data in IoT. RDMA algorithm is applied to data collected from different sensors like DHT11, pressure sensor, Smoke sensor and rain detecting sensor. In this work, comparison between the repeated data and non-repeated data is presented successfully. The proposed algorithm reduces the 44.83% network load and eliminates the data processing overhead due to repeated data generated by different sensors in IoT. It uses various sensors like BMP180 pressure sensor, DHT 11 temperature and humidity sensor, rain module. This device is used for a particular place or surrounding. Whenever the value is exceeding the threshold limit, it directly sends the alert SMS and emails to the owner about the alert that the level of the sensors is either above or below the predefined level.

It uses various python libraries like pip, python-dev, python-eeml, RPI.GPIO and so forth. In this paper, the author provides monitoring and controlling the services in the remote areas and ad-hoc application which are usually not

provided for the large system. It is an earth quake detection sensor which can save many lives. It takes information from the surrounding environment through the sensor and sends it to the internet. The system deals with monitoring weather and climate changes like temperature, humidity, wind speed, moisture, light intensity, UV radiation and even carbon monoxide levels in the air; using multiple sensors The development in embedded system has proved to be a reliable solution in monitoring and controlling the environment monitoring system

III. METHODOLOGY

2. Block Diagram

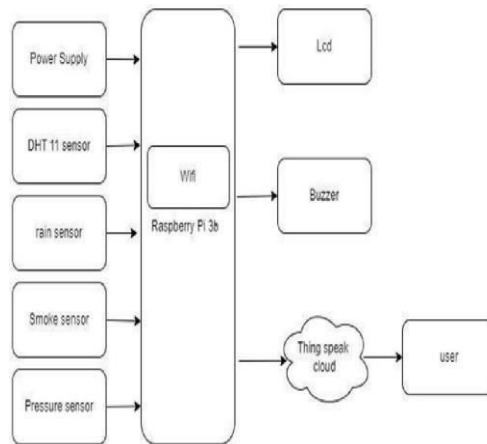
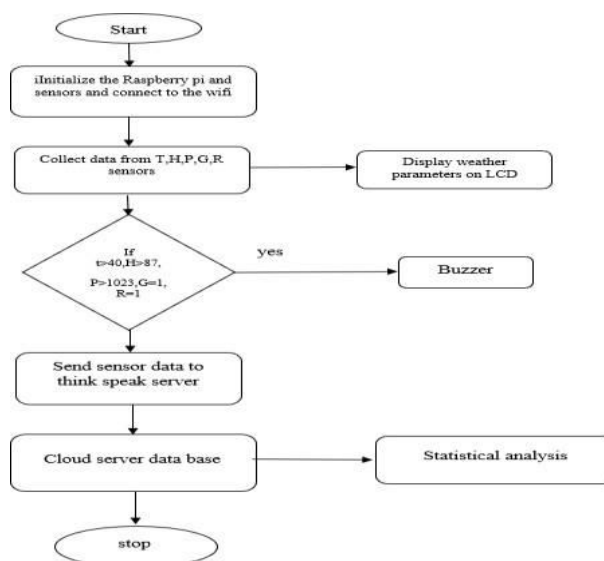


Fig..1: Block diagram

Raspberry PI (Small powerful CPU) is installed with the night vision camera which help the system to go for the automation and help to find the human involving in any problem detected using the sound using sound sensor and according to the sound produced it automatically goes to that area and capture the image and send it to user email using IoT technology.

Flow Chart



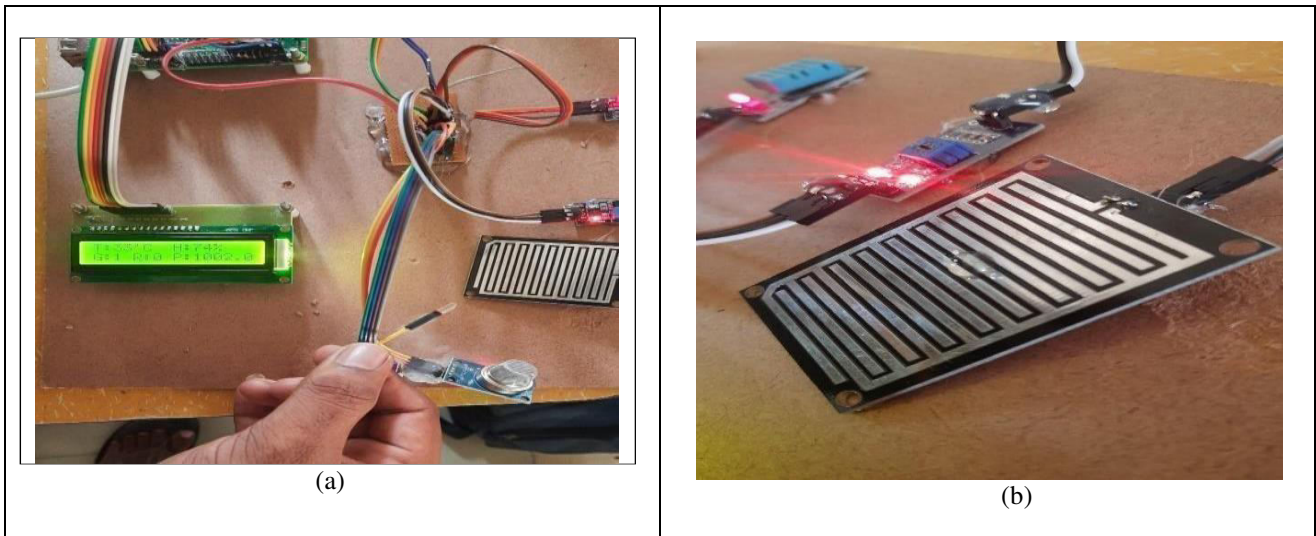
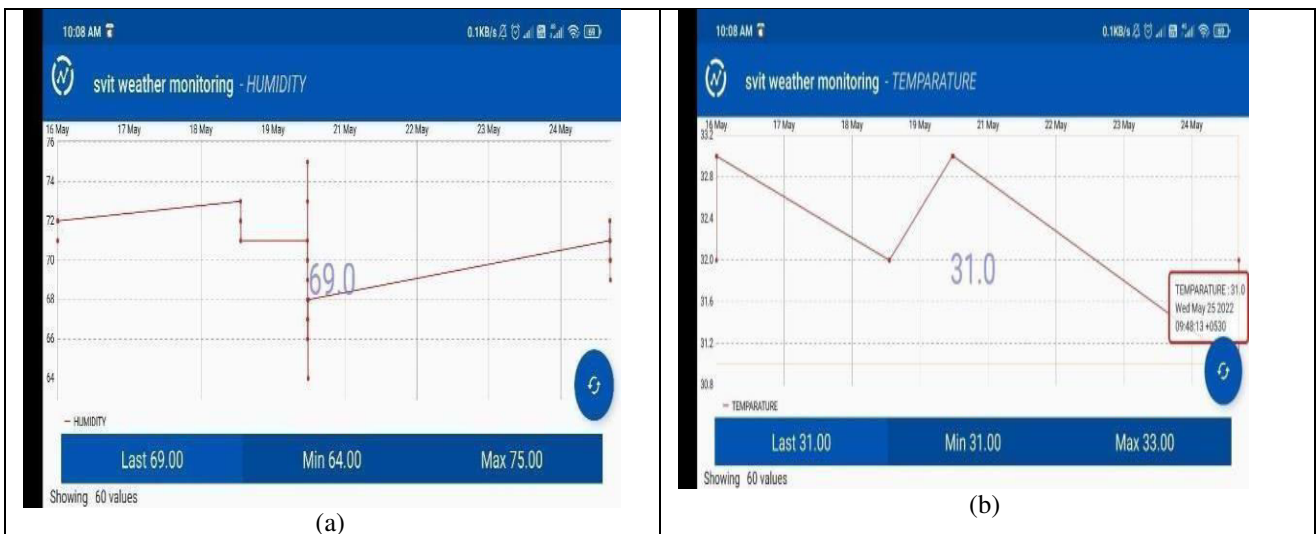


Fig.2. (a).gas Sensor detection (b)Rain Sensor detection

The sensed data with raspberry pi is placed in internet cloud using open source cloud is called thing speaks.The sensed data is updated in cloud periodically.We can visualize the data as follows.



Drowsy driving or sleep-deprived driving occurs when a person operating the wheel is too tired to remain fully conscious and handle the wheel. This could lead to slower reaction timing and the driver might fall asleep.



Fig.2. (a).Humidity (b) Temperature (c) Gas (d) Rain Sensor detection

Sensors are interfaced with raspberry pi to monitor the parameters like temperature, humidity, gas and rain value using IDE(integrated development environment) received data and result analysis will be send to end user through Wi-Fi. Raspberry pi used to control the all the sensors, and it receives the data from the sensors, and send it to end users through cloud.

V. CONCLUSION AND FUTURE SCOPE

According This type of model can be used for industrial & domestic for(weather monitoring or humidity monitoring) etc... alert message can be send to users from time to time.

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