

Weather Parameter Monitoring HTML Page Using Raspberry Pi

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Abstract: Weather monitoring plays an important role in human life, so the collection of information about the temporal dynamics of weather changes is very important. In any industry it is very important to monitor weather. The aim of this paper is to design a weather monitoring system which enables the monitoring of weather parameters in an industry. Such a system contains pair of sensors like temperature, Gas and light will be monitored and Raspberry Pi. The data from the sensors are collected by the raspberry pi and also raspberry pi sends the sensors data in to the Apache server by using the Serial Communication and this module will keep the data in HTML page. User can find out the data saved by the system anytime as per the request.

Index Terms: Raspberry Pi, Client server, Temperature sensor, Gas sensor, MCP 3008 IC (ADC)

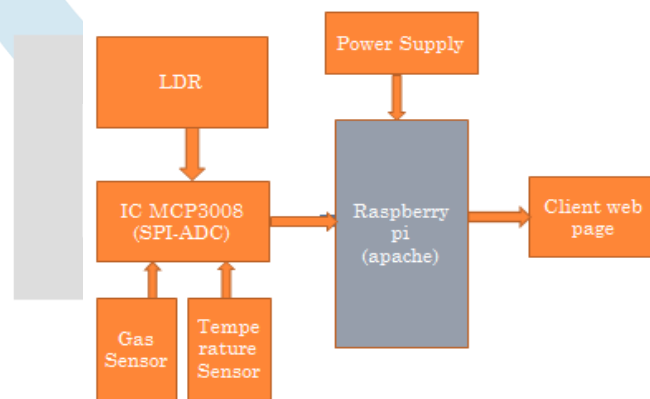
I. INTRODUCTION (HEADING 1)

Today in the world of high end technology, where people expect everything at their fingertips. They have personal gadgets which enable them to remain connected and updated in real time.

Taking the above account we have developed the web enabled weather monitoring system which can be accessed from any corner of the world .It can be deployed in system to monitor greenhouse mechanism as well as in industries to keep track of environmental parameters.

II. BLOCK DIAGRAM

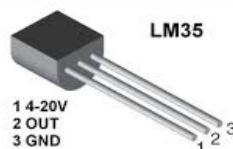
The system is divided into two parts, data Acquisition and online data logging. The Raspberry Pi is the heart of the system with ARM Cortex A7 core Processor with raspbian Jessie operating system .the data acquisition part ,consisting of MCP3008 SPI ADC IC, collects temperature ,light intensity and Air quality sensor data via SPI communication protocol



III. HARDWARE IMPLEMENTATION

Temperature Sensor (LM 35):

LM 35 is a thermistor type sensor .the output of the sensor is in order of mv .The sensor resolution is 10mV per degree centigrade..



Air Quality Sensor (TGS 2600):

TGS 2600 is used for detection of air contaminants in ppm range .It have ability to detect methane carbon monoxide, hydrogen gases Low operating voltage sensor used for pollution parameter measurement.



LDR:

LDR is a light dependent resistor .It is dependent on light intensity .In darkness sensitivity of LDR is several mega ohm and in brightness its sensitivity only few mega ohm.



Raspberry Pi Processor (2B+):

Raspberry Pi 2 Model B+ is the second generation of its own .Raspberry Pi has 900 MHz quad –core Processor.

I/O devices. The data is processed inside the processor using the Python Script and is uploaded on the web through Ethernet connection.



IV. EXPERIMENTAL SETUP AND WORKING

The system uses two sensors for measurement of Temperature and Air quality ,viz. LM 35 and TGS 2600.Raspberry pi does not have an inbuilt ADC , these sensors are connected to 10 bit resolution MCP3008 ADC IC using SPI protocol .Readings of sensors obtained by python script ,to store the database use SQLite 3 module.These readings updated in the HTML page , which is located at the Apache server .The obtained data is uploaded on College website and is available for morning from any corner of the world.

V. CONCLUSION

The system has been successfully designed to monitor the temperature and air quality of the environment. The reading are monitored using Raspberry Pi and it is updated on the college website using Python Programming Language .Real time reading are available for further analysis..

REFERENCES

- [1] G. Urban, "An attempt to assess the results of air temperature measurements from automatic weather stations in comparison to glass thermometer measurements in the context of weather types", Bulletin of Geography Series, no. 9, pp. 67-79, 2015.
- [2] M. Ashraf, J. C. Loftis, K.G. Hubbard, "Application of geostatistics to evaluate partial weather station networks", Agricultural and Forest Meteorology, vol. 84, pp. 255-271, 1997.