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Weather monitoring station using LabVIEW

Akshayavarshini V[1], Geetharanjani G[2], Harini Banumathi N[3], Sandhya V[4*], Girirajkumar S M[5]

[1,2,3,4] *Student, Department of Instrumentation and Control Engineering, Saranathan College of Engineering, Tamil Nadu India.*

[5] *Professor, Department of Instrumentation and Control Engineering, Saranathan College of Engineering, Tamil Nadu India.*

[*]Corresponding author

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Abstract

In this paper we have designed a wireless monitoring system in which a microcontroller is interfaced with a sensor and LabVIEW. Data from DTH11 is fetched and fed to one of the pins of the microcontroller. Display the temperature and humidity in LabVIEW.

Keywords: Weather Monitoring, LabVIEW, Peripheral interface controller, DTH sensor, TTL.

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1. Introduction

Weather monitoring has a very high impact on the modern era; it has given thousand years of agriculture a new dimension and made it more efficient and productive, modern day aircrafts cannot takeoff or land without having weather information. The objective of this project is to develop a weather monitoring system and monitor the parameters like temperature, humidity, etc. in remote places.Today, automated weather stations are available as commercial products with a variety of facilities and options. Although automated weather stations can be built and implemented in remote parts of Sri Lanka to bring down the cost of maintaining weather stations, until recently, not

much emphasis has been given for building and using such instruments locally. Automated weather stations have been developed in universities by interfacing meteorological parameter monitoring sensors to microcomputer commercially available data loggers with communication devices or through serial and parallel ports to obtain hard copies of weather data.

2. Literature review

Weather Monitoring System using Internet of Things .

R.Kavin,K.Lakshmi. Design of real-time weather monitoring system based on mobile application using automatic weather station-Aris munandar.Low-cost IoT based weather monitoring system for smart community-K.Sai nikilesh.

Cloud

We have proposed an IOT and cloud based Weather Monitoring System.The aim of weather monitoring system is to detect,record and display various weather parameters such as temperature ,humidity.This system makes use of sensors for detecting and monitoring weather parameters and then this collected information is sent to the cloud which can be accessed using the internet.The data displayed as an output can be observed and forecasted.The system engages an Arduino UNO board,sensors,WIFI Module which sends data to cloud computing services. A webpage is also created which exhibits the data and displays it to users.

Temperature and Humidity Sensor

DHT11 module features a humidity and temperature complex with a calibrated digital signal output means the DHT11 sensor module is a combined module for sensing

humidity and temperature which gives a calibrated digital output signal. DHT11 gives us a very precise value of humidity and temperature and ensures high reliability and long term stability.

PIC16F877A

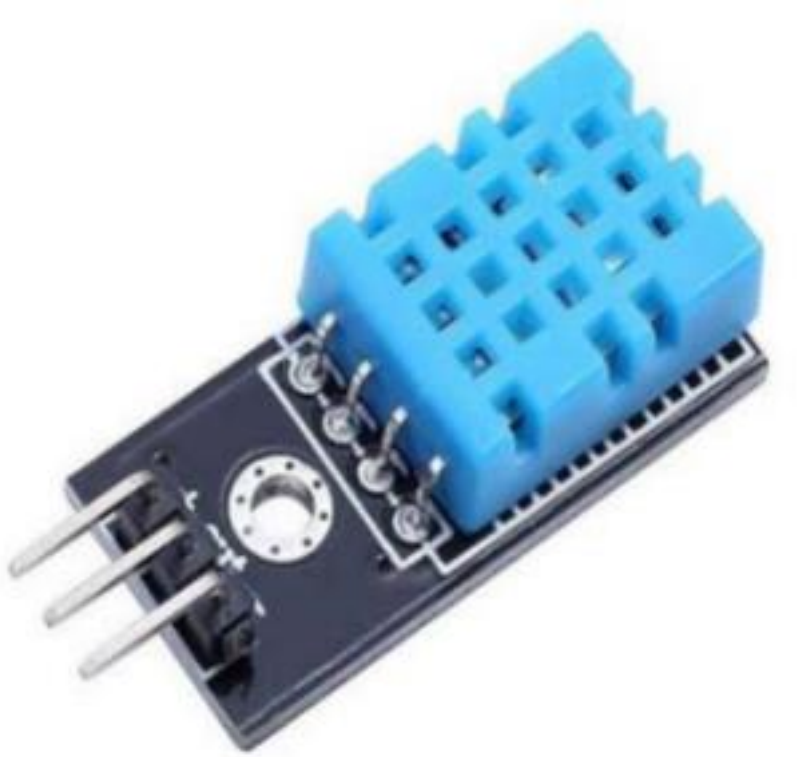

Figure.1. PIC Controller

The name PIC initially referred to "Peripheral Interface Controller". The microcontroller that has been used for this project is from the PIC series. PIC microcontroller is the first RISC based microcontroller fabricated in CMOS (complementary metal oxide semiconductor). The PIC16F877A microcontroller is used in our project. Technology that is used in PIC 168F77 is flash technology, so that data is retained even when the power is switched off. Easy programming and erasing are other features PIC16F877A.

Functional Diagram

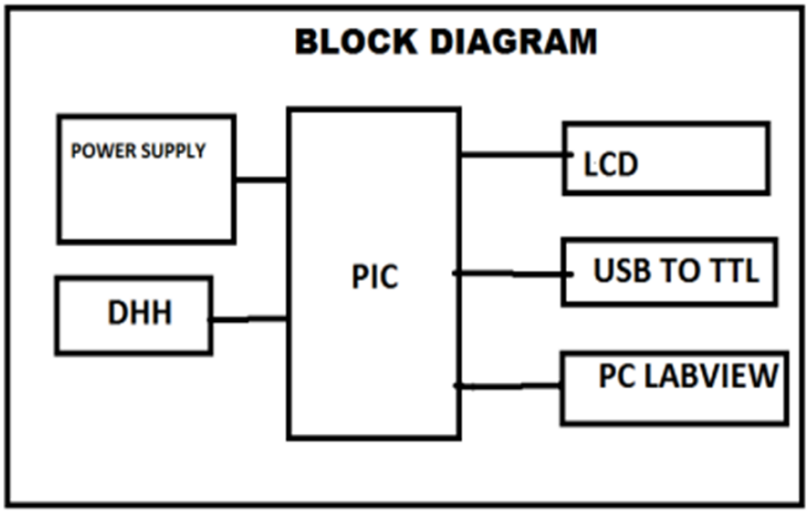

Figure.2. Block Diagram

VI diagrams

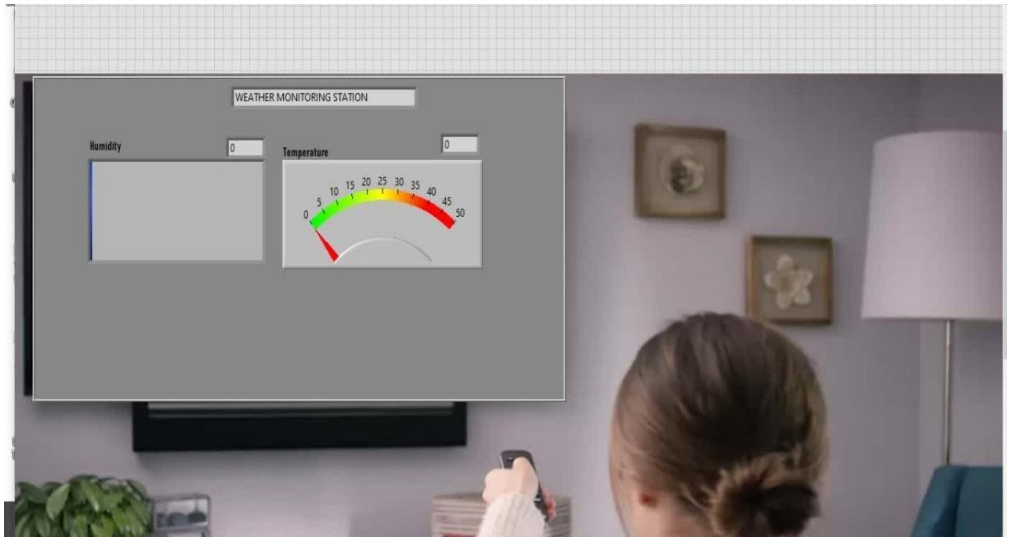

Figure.3. Front panel of VI

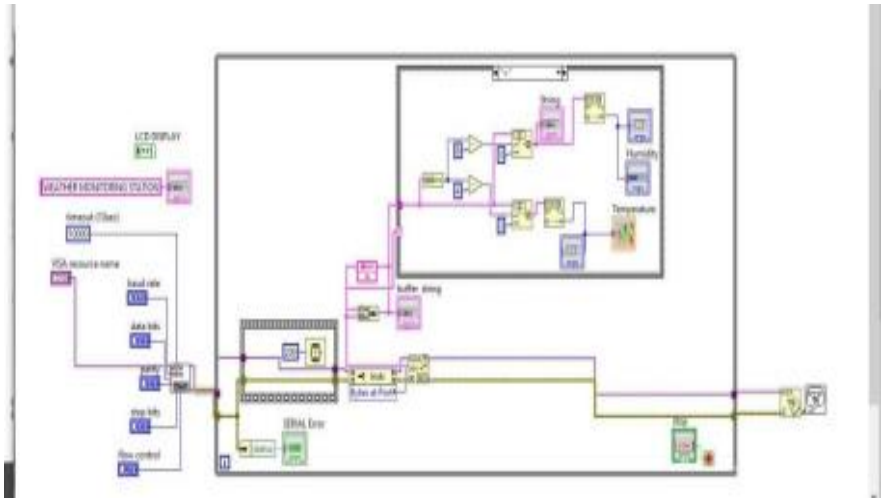

Figure. 4. Functional Block diagram of VI

Figure.5. Real Time testing system

3. Software Description

LabVIEW

LabVIEW is a programming environment in which you will be able to create programs using graphical notation. A graphical notation is nothing but a process where you will

be connecting functional nodes with wires which ultimately depicts how the data flows.Unlike traditional programming languages like C, C++, or Java, programming is executed in terms of text. LabView is not just a programming environment, it offers much more than a coding platform. It is an interactive program development system that is specifically designed for people like scientists and engineers.

4. Working

This project is all about LabVIEW based Live weather Station monitoring using microcontroller .We will interface DHT11 Humidity and temperature sensor with microcontroller. An USB to TTL converter is used for transmitting and receiving sensor information. The Microcontroller controls the entire weather Prediction system peripherals and status on a LabVIEW application.

This way, a secure, flexible, trust- able and economical system is developed to solve the above mentioned weather parameters. Also, you can check the weather data through LabVIEW on the PC .

5. Conclusion and Future Scope

By keeping the weather station in the environment for monitoring enables self protection (i.e., smart environment) to the environment. To implement this we need to use the sensor devices in the environment for collecting the data and analysis. By using sensor devices in the environment, we can bring the environment into real life. Then the collected data and analysis results will be available to the user through the Wi-Fi. The smart way to monitor an environment using an efficient, low cost embedded system is presented in this paper. It also sends the sensor parameters to the cloud. This data will be helpful for future analysis and it can be easily shared to other users also.

This model can be expanded to monitor the developing cities and industrial zones for pollution monitoring. To protect the public health from pollution, this model provides an efficient and low cost solution for continuous monitoring of the environment.

REFERENCES

[1]. Sagar J. S. T. , M. S. Balamurugan and J. A. Vivek, "A wireless framework for automotive monitoring systems," in Indian Journal of Science and Technology, Vol 8 August .
[2]. Munandaret all.(2018) proposed a weather monitoring system by using automatic weather stations.
[3]. Antony Jerome,et all.(2017) published a LABVIEW system using the NI myRIO module for Auto home application.
[4]. Khalid Isa 2017 IEEE 7thinternational conference on underwater system technology theory and application (USYS).
[5]. Ravi kiran varma p, An IOT application for environmental monitoring and control using raspberry-pi was proposed in July 2017.
[6]. Chaw Myat new, A smart weather monitoring system using internet of things was published in July 2018.