Innovative Journal for Opportunities and Development in Science & Technology,
Volume 3, Issue 3,April 2023
Paper Id: – IJ2023V3I3 -8A-E,
ISSN 2582-6026

IOT BASED WEATHER MONITORING AND REPORTING SYSTEM

[1]Jadhav Chetan Ashok,[2] Vinayak Ashok Bhongale, [3]Pradyumn Kisan Neware, [4]Priya Patil

[1] UG Scholar Dept. Electrical Engineering, SRCOE, Lonikand, Pune
[2]UG Scholar Dept. Electrical Engineering, SRCOE, Lonikand, Pune
[3]UG Scholar Dept. Electrical Engineering, SRCOE, Lonikand, Pune
[4]Asst. Prof.. Electrical Engineering, SRCOE, Lonikand, Pune

ABSTRACT- The IOT based Weather Reporting System is proposed to get live reporting of weather conditions on agriculture used regions. Weather is the state of the atmosphere, to the degree that it is hot or cold, wet or dry, calm or stormy, clear or cloudy. Most weather phenomena occur in the troposphere, just below the stratosphere. Weather generally refers to day-to-day temperature and precipitation activity, whereas climate is the term for the average atmospheric conditions over longer periods of time. It has to monitor temperature, humidity, wind, light and rain level on large ground fields. The Internet of Things (IOT)technology behind the system is aimed to offer an economically efficient solution to monitor weather conditions. When used without qualification, weather, is understood to mean the weather of earth. Monitoring the weather conditions manually is difficult. This paper presents our work to develop an automated system which monitors the weather condition. The weather condition is driven by air pressure (temperature and moisture) differences between one and another location.The sun's angle at any given location can contribute to these pressure and temperature disp aritiesThe information is kept in a database, and using both the most recent and historical data, the system may display the results graphically.

Index Terms- Internet of Things (IOT), Climate control, Weather analysis, Temperature Moderation, Moisture Control, Humidity Control, Arduino, Esp 8266, Etc

I. INTRODUCTION

Advancement in science and technology has made it possible to predict the climatic condition for a particular location. A weather station is believed to be a scientific technique that permits measuring the parameters of meteorological conditions centered on the situations of the environment both on the land or on sea for a particular place with certain devices with the intention of comprehending forecasted weather states, and to analyse atmospheric properties. In this new era, weather monitoring is of immense importance and has found application in many fields of human endeavor varying from following the progress of farm ground weather conditions to industrial conditions monitoring. A self-regulating weather surveillance system is a device that is used for measuring and recording weather-related parameters by means of sensing devices devoid of human involvement. The parameters being measured can be to an isolated place by the use of a network connection. Weather monitoring assists in monitoring various factors that contributes to atmospheric conditions of a particular place such as temperature, humidity and light intensity. There is need to keep track of the weather situations so as to sustain bumper harvests of farm produce and to guarantee environmental safety in

ISSN 2582-6026

industries. Indigenous weather measurements are very critical to a large and varied range of vocations, from gardeners to fireman. It offers continuous monitoring of climatic conditions for various types of applications.

Weather monitoring system can be classified as using wired communication or wireless communication. For the wireless communication, the network will be easily accessible and user friendly and there will not be need for the user to be physically present at the site to keep track of the climatic condition. Wireless communication is a wide-ranging term that combines every techniques and practices of connection and communication between two or more devices by a wireless signal through wireless communication mechanisms and equipment.The Communication is established, and the data is transmitted using electromagnetic waves like radio waves, infrared light, or satellites.The involved distances can be little, like in a television remote control, or large, like in radio communications.The most practical and costeffective wireless communication technology currently in use is GSM.

II. OBJECTIVES

The main objective of this project is to originate electronic device or network that can capture and restore temperature and humidity and after that send data to the cloud or website for its analysis. Here we can use the Node MCU a microcontroller for the simple brain of the system. When we use the Node MCU as a microcontroller, we need a Wi-Fi module to establish your Internet connection. And the DHT sensor, which (digital humidity sensor) can detect differences in temperature, humidity and humidity at a certain location, must be integrated into the system. The sensor continuously monitors temperature changes and sends data to the microcontroller.The microcontroller sends the data to the cloud for storage and visualisation.We may also gather data into the cloud for analysis using IOT platforms like Blink App IoT.Once customised, this method can be used to generate entertaining animations, such as tweets or phone calls, or to turn on a gadget when the temperature, humidity, or other parameters fall below a specific level.

III. METHODOLOGY

3.1 Block Diagram: -

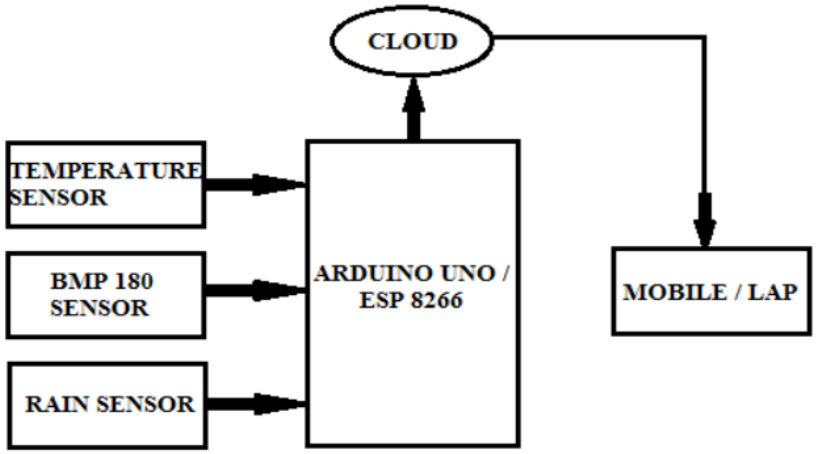

Fig.No. 1 Block Diagram for Proposed System

Innovative Journal for Opportunities and Development in Science & Technology,
Volume 3, Issue 3,April 2023
Paper Id: – IJ2023V3I3 -8A-E,
ISSN 2582-6026

There are a lot of high end systems available these days for round the clock weather monitoring. But these systems are implemented on a very large scale, for monitoring real time weather for a whole city or state. Implementing such system for a small area is not feasible, since they are not designed for it and the overhead for maintaining such systems for a small area is very high. Our proposed system makes use of 3 sensors to measure the weather/environment factors such as temperature, humidity, light intensity, dew point and heat index. The values read from the sensors are processed by the Arduino micro-controller and stored in a text file which can be processed upon to derive analysis. The readings are also displayed on an on board LCD for quick viewing. All these readings can be analyzed to get the weather characteristics of a particular area and record the weather pattern. These recorded parameters are essential and vary from places to places. All these requirements are fed into the database and these values are essentials and recorded over time. Using these values as input we can plot a weather chart of a particular area over time. Based on the present weather factors and preset values the set actions are done. The set action can include turning on the heating system when the temperature is colder than the set value and turning on the cooling system when the temperature is hot or humid beyond the set values. The serial output from the Arduino microcontroller which are the values read from the sensors can also be stored in a database. The database can be used as a source for data if we want to display values through a website or a standalone application

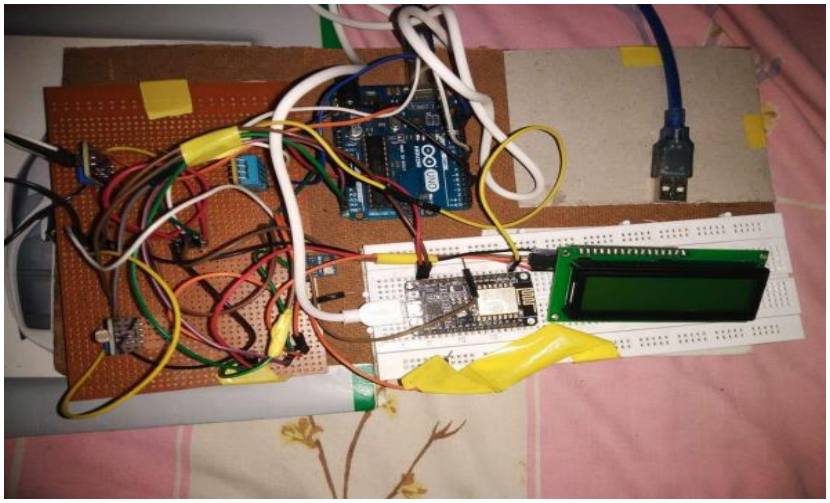

Fig.No. 2: Snapshot of Hardware Prototype

IV. CONCLUSIONS

The paper demonstrates a simple and low-cost system design to measure climate components in perfect competence. The availability of such system is extremely preferred particularly, with the establishments, companies that depend considerably on taking decisions based on inputs variations; consequently, weather prediction processes will be taken into considerations. In addition, the system is considered perfect for controlling the sites based on the change in weather conditions. The system works as a supervisor controller, which govern places depending on the fluctuations of the weather or other conditions via feedback operation principles. Hereby, we conclude that the proposed system can be separated in to two different parts. The first

ISSN 2582-6026

It is especially useful for businesses and other organisations tasked with scheduling and managing their tasks ba sed on weather conditions, such as transportation networks, airlines, and agriculture.These initiatives can help fa rmers adapt to uneven climate change and be applied in agriculture. Home and Market.

References

[1] N. Sabharwal, R. Kumar, A. Thakur, J. Sharma "A Low Cost Zigbee Based Automatic Wireless Weather Station With Gui And Web Hosting Facility" ICRTEDC, Vol. 1, Spl. Issue 2, May, 2014.

[2] N. Gahlot, V. Gundkal, S. Kothimbire, A. Thite, Zigbee based weather monitoring system. The International Journal of Engineering And Science (IJES), Volume 4, Issue 4, PP.61-66, 2015.

[3] D. V. Sose, A. D. Sayyad, “Weather Monitoring Station: A Review” Int. Journal of Engineering Research and Application, ISSN: 2248-9622, Vol. 6,Issue 6, (Part -1) June 2016, pp.55-60.

[4] International Journal of Advanced Research in Computer and Communication Engineering ISO 3297:2007 Certified Vol. 5,Issue9, September 2016

[5] International Journal of Engineering Trends and Technology (IJETT) – Volume 32 Number 2- February 2016

[6] F. Hahn, M. Pablo, J. Reyes “Solar Driven Wind Speed Monitoring System Using Wireless or Wired Sensors” SciRes, Energy and Power Engineering, Vol 6, PP.213-221, 2014.

[7] A. Katyal, R. Yadav, M. Pandey, " Wireless Arduino Based Weather Station" International Journal of Advanced Research in Computer and Communication Engineering Vol. 5, Issue 4, April, 2016.

[8] Kurschl. W, Beer W, “Combining cloud computing and wireless sensor networks”, International Conference on Information Integration and Web-based Applications and Services, pp.512-518, 2009.

[9] Zhengtong. Y, Wenfeng. Z, “The research of environmental pollution examination system based on the Cloud Computing”, International Conference on Communication Software and Networks, pp.514-516, 2011.