SURVEILLANCE OF INUNDATION AND CUSTOMIZING SYSTEM BASED ON IOT

M. Sreedevi[1], A.Malathi[2], B.Lavanya[3], Ch.Sivaiah[4], G.Prathyusha[5], G.Ramakrishna[6]

[1]Asst. Professor, [2, 3,4,5,6]UG Students

From Dept. of Electronics and Communication Engineering, Sree Vahini institute of Science and Technology, Tiruvuru, AP, 521235

ABSTRACT

The system proposed in this paper is an advanced solution for monitoring the flood and weather conditions at a particular place and make the information visible anywhere in the world. The technology behind this is Internet of Things (IOT), which is an advanced and efficient solution for connecting the things to the internet and to connect the entire world of things in a network. Here things might be whatever like electronic gadgets, sensors and automotive electronic equipment. The system deals with monitoring and controlling the environmental conditions like temperature, relative humidity and earthquake with sensors and sends the information to the web page and then plot the sensor data as graphical statistics. The data updated from the implemented system can be accessible in the internet from anywhere in the world.

Keywords: Dht11,Rain sensor, Voice module,Pico,Wi-Fi & Internet of Things.

I.INTRODUCTION

The IOT idea, consequently, goes for making the Internet much more immersive and unavoidable. Moreover, by empowering simple get to and association with a wide assortment of gadgets, for example, for example, home apparatuses, reconnaissance cameras, checking sensors, actuators, showcases, vehicles, et cetera, the IoT will encourage the advancement of various applications that make utilization of the possibly gigantic sum and assortment of information created by such questions give new administrations to subjects, organizations, and open organizations. Present innovations in technology mainly focus on controlling and monitoring of different activities. These are increasingly emerging to reach the human needs. Most of this technology is focused on efficient monitoring and controlling different activities.

II.LITERATURE SURVEY

Through weather monitoring system we can collect the information about humidity and temperature and according to current and previous data we can produce the results in graphical manner in the system. After reviewing many articles, there are presently no papers that mention monitoring the combination of temperature, lighting and humidity in one integrated system and have actuators to modify these settings. In addition to this, there is one research paper that has discussed monitoring these three environmental conditions; however, there has been no mention about having actuators to modify. So our main idea was to coin a system that can sense the main components that formulates the weather and can be able to forecast the weather without human error. Ancient weather forecasting methods usually relied on observed patterns of events, also termed pattern recognition. For example, it might be observed that if the sunset was particularly red, the following day often brought fair weather. This experience accumulated over the generations to produce weather lore. However, not all of these predictions prove reliable, and many of them have since been found not to stand up to rigorous statistical testing. The simplest method of forecasting the weather, persistence, relies upon today's conditions to forecast the conditions tomorrow. This can be a valid way of forecasting the weather when it is in a steady state, such as during the summer season in the tropics. This method of forecasting strongly depends upon the presence of a stagnant weather pattern. It can be useful in both short range forecasts and long range forecasts. Measurements of barometric pressure and the pressure tendency (the change of pressure over time) have been used in forecasting since the late 19th century.

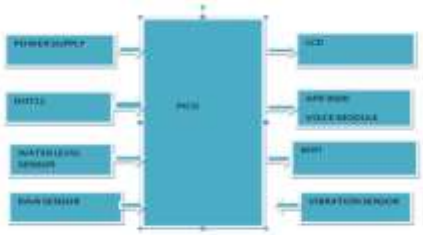
III. EXISTING SYSTEM

The existing weather monitoring systems generally use weather stations that use multiple instruments such as thermometers, barometers, wind vanes, rain gauge etc. to measure weather and climate changes. Most of these instruments use simple analog technology which is later physically recorded and stored in a data base. This information is later sent to news reporting stations and radio stations where the weather report is given.

IV. PROPOSED SYSTEM

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 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 Pico 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.

BLOCK DIAGRAM



RASPBERRY PI PICO

A Raspberry Pi Pico is a low-cost microcontroller device. Microcontrollers are tiny computers, but they tend to lack large volume storage and peripheral devices that you can plug in (for example, keyboards or monitors).

Board Specifications

Raspberry Pi Pico is a low-cost, high-performance microcontroller board with flexible digital interfaces, built on silicon designed at Raspberry Pi. Key features include:

- RP2040 microcontroller chip designed by Raspberry Pi in the United Kingdom
- Dual-core ARM Cortex M0+ processor, flexible clock running up to 133 MHz
- 264kB of SRAM, and 2MB of on-board Flash memory
- Castellated module allows soldering direct to carrier boards
- USB 1.1 Host and Device support
- Drag & drop programming using mass storage over USB
- 26 multi-function GPIO pins
- 2×SPI, 2×I2C, 2×UART, 3×12-bit ADC, 16×controllable PWM channels

WIFI MODULE ESP8266

The ESP8266 WiFi Module is a self contained SOC with integrated TCP/IP protocol stack that can give any microcontroller access to your WiFi network. The ESP8266 is capable of either hosting an application or offloading all Wi-Fi networking functions from another application processor. Each ESP8266 module comes pre-programmed with an AT command set firmware, meaning, you can simply hook this up to your lpc 2148 device and get about as much WiFi-ability as a WiFi Shield offers (and that's just out of the box).The ESP8266 module is an extremely cost effective board with a huge, and ever growing, community.

This module has a powerful enough on-board processing and storage capability that allows it to be integrated with the sensors and other application specific devices through its GPIOs with minimal development up-front and minimal loading during runtime. Its high degree of on-chip integration allows for minimal external circuitry, including the front-end module, is designed to occupy minimal PCB area. The ESP8266 supports APSD for VoIP applications and Bluetooth co-existence interfaces; it contains a self-calibrated RF allowing it to work under all operating conditions, and requires no external RF part.

HUMIDITY SENSOR

DHT11 sensor consists of a capacitive humidity sensing element and a thermistor for sensing temperature. The humidity sensing capacitor has two electrodes with a moisture holding substrate as a dielectric between them. Change in the capacitance value occurs with the change in humidity levels. The IC measure, process this changed resistance values and change them into digital form.

RAIN SENSOR

Rain sensors measure the water content in soil. The Rain sensor is used as a tool to optimize irrigation and to warn of plant stress at the dry or wet ends of the scale.

Applications

- Irrigation and sprinkler systems.
- Moisture monitoring of bulk foods.
- Rain and weather monitoring.
- Environmental monitoring.
- Water conservation applications.
- Fluid level measurements.

WATER LEVEL SENSOR

Level sensors detect the level of substances that flow, including liquids, slurries, granular materials, and powders. Fluids and fluidized solids flow to become essentially level in their containers (or other physical boundaries) because of gravity whereas most bulk solids pile at an angle of repose to a peak. The substance to be measured can be inside a container or can be in its natural form (e.g., a river or a lake). The level measurement can be either continuous or point values. Continuous level sensors measure level within a specified range and determine the exact amount of substance in a certain place, while point-level sensors only indicate whether the substance is above or below the sensing point. Generally the latter detect levels that are excessively high or low.

VIBRATIONSENSOR

This sensor buffers a piezoelectric transducer. As the transducer is displaced from the mechanical neutral axis, bending creates strain within the piezoelectric element and generates voltages.

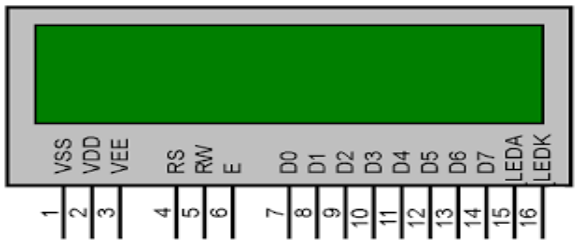
Specifications:

The Vibration Sensor Detector is designed for the security practice When Vibration Sensor Alarm recognizes movement or vibration, it sends a signal to either control panel Developed a new type of omni-directional high sensitivity Security Vibration Detector with omni-directional detection

VOICE CHIP (APR9600)

APR9600 is a low-cost high performance sound record/replay IC incorporating flash analogue storage technique. Recorded sound is retained even after power supply is removed from the module. The replayed sound exhibits high quality with a low noise level. Sampling rate for a 60second recording period is 4.2 kHz that gives a sound record/replay bandwidth of 20Hz to 2.1 kHz. However, by changing an oscillation resistor, a sampling rate as high as 8.0 kHz can be achieved. This shortens the total length of sound recording to 32 seconds. Total sound recording time can be varied from 32 seconds to 60 seconds by changing the value of a single resistor. The IC can operate in one of two modes: serial mode and parallel mode. In serial access mode, sound can be recorded in 256 sections. In parallel access mode, sound can be recorded in 2, 4 or 8 sections. The IC can be controlled simply using push button keys. It is also possible to control the IC using external digital circuitry such as micro-controllers and computers.

LCD



It is called Liquid Crystal Display. We are going to use 16x2 characters LCD. This will be connected to microcontroller. The job of LCD will be to display all the system generated messages coming from the controller. LCD will provide interactive user interface. This unit requires +5VDC for it proper operation. This module is used for display the present status of the system.

V.EXPERIMENTAL RESULT

After detecting the data from different sensor devices, which are positioned in particular area of interest. The sensed data will be automatically sent to the web server, when a proper connection is recognized with sever device. The web server page which will allow us to monitor and control the system. By entering IP address of server which is placed for monitoring we will get the equivalent web page. The web page gives the information of the weather parameters in that particular region, where the embedded monitoring system is placed. The idea above shared and can be implemented in agricultural difficulties of accurately measuring dry soil and water fields in future to promote agriculture to next level. The Volumes, volumetric water contents are not usually output from moisture sensor and level system plays major determined directly. Role in producing the output.

VIII. CONCLUSION

Here we learnt that how present system is better and also more efficient than the other systems. It is exceptionally compatible. It reduces human efforts. This terminate that present project work is a huge success and will provide a considerable way for saving weather parameters of real time and will help farmers, industries, normal people as well as others whose daily life is related with weather and its parameters. It can be used to get required information about for each or particular area for many years. The collected information will used to determine the best conditions required for plants to grow if we talk about agriculture and the farmer can modify the environment conditions which are more suitable for the plan growth

IX. FUTURESCOPE

Present model can be updated to monitor the cities and industries for pollution related data gathering. To shield the public health from pollution, model will provide an efficient and very cheaper solution for constant monitoring of environment and its conditions. We can do lots of additions in this system such as adding pressure sensor, gas sensor like CO, soil and moisture retrieving sensor which will able to tell us water content present in soil etc.

REFERENCES

[1] George Mois, Member, IEEE, Teodora Sanislav, Member, IEEE, and Silviu C. Folea, Member, IEEE,” A Cyber-Physical System for Environmental Monitoring”, IEEE transactions on instrumentation and measurement, vol. 65, no. 6, june 2016.

[2] Nisha Gahlot, Varsha Gundkal, Sonali Kothimbire, Archana Thite, " Zigbee based weather monitoring system." The International Journal Of Engineering And Science (IJES) Volume 4, Issue 4, Pages PP.61-66, 2015.

[3] Internet of Things (IOT) Based Weather Monitoring system . AUTHOR : Bulipe Srinivas Rao, Prof. Dr. K. Srinivasa Rao, Mr. N. Ome

[4] IOT BASED ENVIRONMENT MONITORING SYSTEM . AUTHOR : Snehal R. Shinde , A. H. Karode, Dr S. R. Suralkar

[5] Mobile APP & IoT Based Station Weather Station. AUTHOR : K. N. V. SATYANARAYANA , S. R. N. REDDY , K. N. V. SURESH VARMA & P. KANAKA RAJU

[6] Arduino Based Weather Monitoring System . AUTHOR : Karthik Krishnamurthi, Suraj Thapa, Lokesh Kothari, Arun Prakash