DESIGN OF REAL TIME HEAT SYSTEM AUTOMATION CONTROL USING INTERNET OF THINGS

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Abstract- In real time we have seen many heat transfer application which not automated, but this prototype proposal of model will implement a cloud data retrieval with heat element sensor called LM35. So parallel it controls the application to android and control the automation on the device itself. This sensor can take the reading from external environment and send the data to Node-MCU which is IOT Module, this iot module control the fan speed and acts like coolant and activates the fan which is attached to small transistor as a Switch

Keywords-Blynk app, Home automation ,Internet of Things,Node MCU,DC fan, device, Temparature.

I. INTRODUCTION

In day to day life, there are various necessities of common man. Internet of Things is going to play a vital role in applications such as smart home, smart cities, Industrial internet, healthcare systems etc. Almost all the activities surrounding us have impact on temperature. An accurate calculation of temperature and humidity is a important factor in many fields and industries of science. The constant observation of temperature is crucial in lot of applications like food industry, manufacturing factory and pharmaceutical industry.

For commercial purpose of temperature sensing we have analog and digital and temperatures sensors. Temperature sensor which have temperature and dependent functions can be measured using resistors, semiconductors like diodes, thermocouples and thermistors. The main objective of the project is oversee the live temperature and humidity and control them according to the favourable environment conditions in a less cost. The observational node is Arduino; the programming language used for Arduino is Embedded c. A microcontroller is used to make a thing smart. A microcontroller called NodeMCU is used to control and automate processes via Arduino. It is a single chip that executes code. This paper displays the one of the output which is the speed of fan using Pulse Width Modulation (PWM) on 16x2 LCD. A sensor called LM35 is used to sense the temperature so as to vary the fan speed. To sense temperature from a particular place connect the ESP8266 Wi-Fi module to the Arduino board. So the sensed temperature will be stored in cloud and can be viewed from some other place

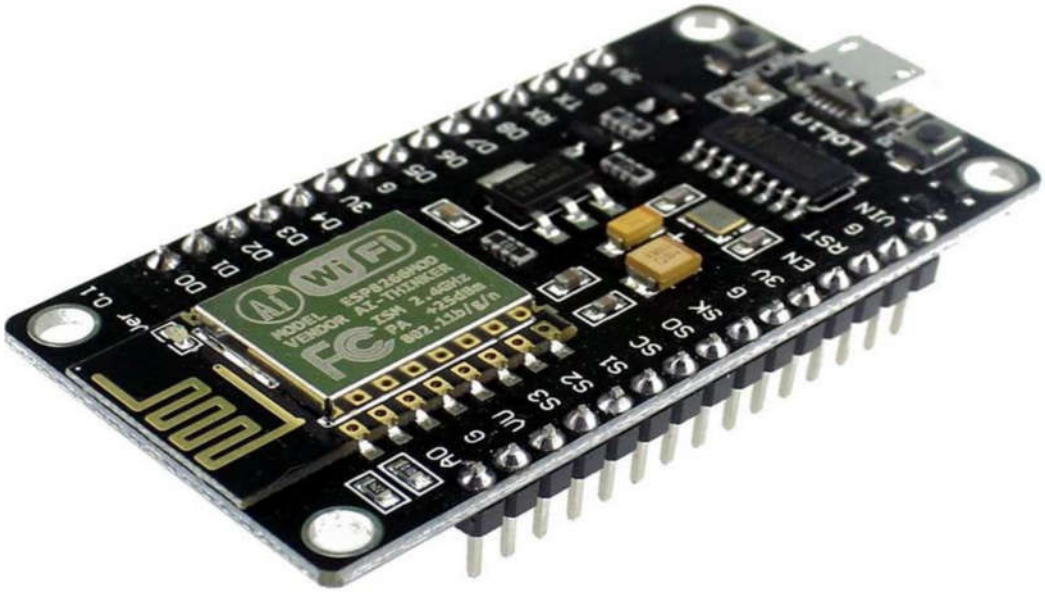
II. PROBLEM STATEMENT AND SIGNIFICANCE

Machine condition monitoring is gaining importance in industry because of the need to increase reliability and to decrease the possibility of production loss due to machine breakdown. The use of vibration and acoustic emission (AE) signals is quite common in the field of condition

monitoring of rotating machinery. By comparing the signals of a machine running in normal and faulty conditions, detection of faults like mass unbalance, rotor rub, shaft misalignment, gear failures, and bearing defects is possible. These signals can also be used to detect the incipient failures of the machine components, through the online monitoring system, reducing the possibility of catastrophic damage and the downtime. Although often the visual inspection of the frequency domain features of the measured signals is adequate to identify the faults, there is a need for a reliable, fast, and automated procedure of diagnostics.

1. NODE MCU

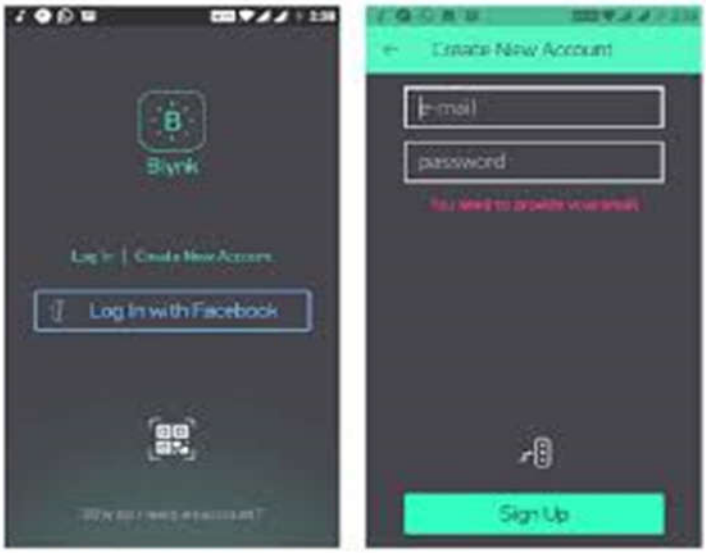
The ESP8266 is the name of a micro controller designed by Espressif Systems. The ESP8266 itself is a self-contained WiFi networking solution offering as a bridge from existing micro controller to WiFi and is also capable of running self-contained applications. This module comes with a built in USB connector and a rich assortment of pin-outs. With a micro USB cable, you can connect NodeMCU devkit to your laptop and flash it without any trouble, just like Arduino. It is also immediately breadboard friendly.



2. BLYNK APP

Blynk is a Platform with iOS and Android apps to control Arduino, Raspberry Pi and the likes over the Internet. It's a digital dashboard where you can build a graphic interface for your project by simply dragging and dropping widgets. It's really simple to set everything up and you'll start tinkering in less than 5 mints. Blynk is not tied to some specific board or shield. Instead, it's supporting hardware of your choice. Whether your Arduino or Raspberry Pi is linked to the Internet over Wi-Fi, Ethernet or this new ESP8266 chip, Blynk will get you online and ready for the Internet of Your Things**.**

Fig- Blynk App



3. BLYNK SERVER

Blynk Server is an Open-Source Netty based Java server, responsible for forwarding messages between Blynk mobile application and various microcontroller boards (i.e. Arduino, Raspberry Pi. Etc).Blynk Cloud is software written on Java using plain TCP/IP sockets and running on our server. Blynk iOS and Android apps connect to Blynk Cloud by default. Access is free for every Blynk user. To run Blynk Server, all we need is Java Runtime Environment.

4. DESIGN'S

The design consists of two main part hardware and software. The hardware contains micro-processor, microcontroller, different sensors, actuator's etc. Software consists of different programming concept which are used in our project. With the help of IoT this hardware and software can link to each other.

5. IOT ARCHITECTURE

The Internet of thinks (IOT) is a rapid explained technology that is shaping up to bring the next revolution in computing and information technology. IOT system has application across industries through their unique flexible and ability to be suitable in any environment.

The physical layer consists of the devices that are to be controlled. The sensors to sense the surrounding environmental conditions are also connected to this layer. The data link layer consists of IoT gateway router (here, we have used Node MCU as router gateway), device manager and various communication protocols. This layer links the home appliances to the web-

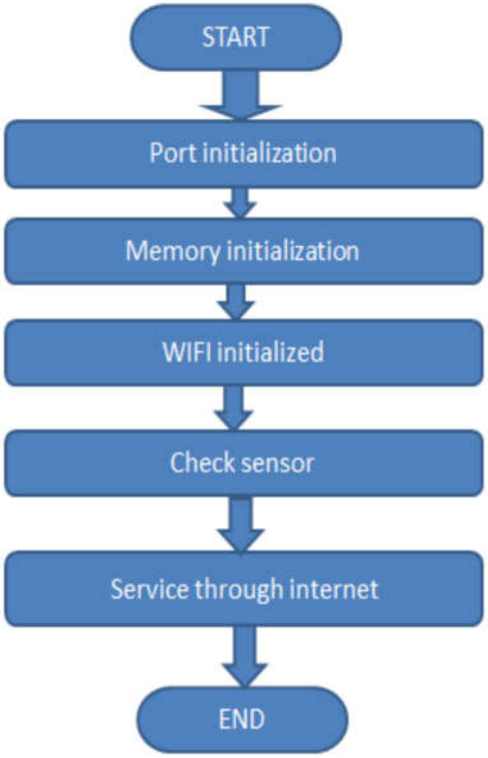
server or cloud via Wi-Fi communication. The application and presentation layer consist of web protocol. This layer constitute either designing of a webpage for accessing the devices connected to the perception layer via PC or laptop computer, or building an android or iOS mobile application if the devices are to be controlled and monitored via smart phones.

6. SENSOR UNITS

The different sensors are been used in this project, such as IR sensor which is been used for motion detection. Gas leakage sensor is used to check whether the gas in home on which we cook food is leaked or not this sensor plays virtual role as its used for safety purpose. Fire detection sensor as its use is to dected fire in shelter. Temperature sensors which detect temperature of shelter. The main moto is safety so all sensors plays their duty towards safety.

7. PROPOSED WORKING

When all sensors are connected to node MCU will use blynk app its used as third party app. Blynk app is open source for all . Creating an app is tough think so we take help of blynk app . With help of WIFI Node MCU will be connected to blynk app. When will on it will get messages on our screen which ever sensor will act we will get report on our screen. For e.g. When in home fire will take place then fire sensor will work on with the help on internet we will get all information on our screen



8. RESULTS

It has been observed that smooth output has been seen , when sensors play their role its been observe onscreen easily and hence proper calculation are been done. Below shown figure seems that how application works on screen and gives us proposed results.

III CONCLUSION

An efficient fan controller based on room temperature by using NODEMUCU has been developed. Output was checked by setting the temperature at different levels and it was found that the fan speed changes accordingly. It is very useful to the people who are disabled. There is much future scope for this work. The designed circuit can be used in many practical applications, where the circuit can be connected to a device whose temperature has to be controlled at a particular value. For example, a water tank with heater whose temperature can set to a desired value. In future the designed circuit can be connected to a GSM module so that it can be used in industrial areas when a machine crosses its desired temperature. We can send a message to the control room so that the damage of the machine can be avoided.

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