Industrial Automation using IoT

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Abstract: Internet of things(ioT) is rapidly incresasing technology.IOT is the network of physical objects or things embeded with electronic software, sensors, and network connectivity which enables these objects to collect and exchange data. In this paper, we are developing a system which will automatically monitor the industrial applications and generate Alerts/Alarms or take intelligent decisions using concept of IoT.

Safety from leaking of raw gas and fire are the most important requirements of home and industries security system for people. A traditional security system gives the signals in terms of alarm.

Keywords: (Arduino UNO R3, Sensor, DC motor driver, DC Motor, WiFi module ESP8266).

1. INTRODUCTION

Automation is one of the incerasing need with in industries as well as for domsatic applications.Automatio reduces the human effords by replacing the human effords by system which are self operated,

The Intenet is one way of he growing platfrom for automation,through which new advancedment are made through which on easily monitor as well control the system using internet.As we are making use of Internet the system becomes secured and live data monitoring is also possible using IoT sysytem.

Within industries the various hazardous gas are being processed, hence to provide security to those employ working within those industreis, it becomes important issue to work on their security,If leakage of gas takes place then these system alerts by turning ON alram which notifies the employers.

This system also helps us take some crucial decision from any point of the world within internet network.Wifi shield is being used to act as service point between network and connecting network.

1.1 Problem Statement

To build the system which can monitor the sensor data and upload it over internet and also capable of taking some curical decision within industries using the IoT.

Literature Survey

Industrial Automation Using Internet of Things (IOT) In this paper, they are developing a system which will automatically monitor the industrial applications and generate Alerts/Alarms or take intelligent decisions using concept of IoT. [1]. RASPBERRY PI AND IOT BASED INDUSTRIAL AUTOMATION . IOT is achieved by using local networking standards and remotely controlling and monitoring industrial device parameters by using Raspberry Pi and Embedded web server Technology. Raspberry Pi module consists of ARM11 processor and Real Time Operating system whereas embedded web server technology is the combination of embedded device and Internet

technology .Using embedded web server along with raspberry pi it is possible to monitor and control industrial devices remotely by using local internet browser.[2] A REVIEW ON INDUSTRIAL AUTOMATION USING IOT.They have developed new technologies that have allowed us to move from the First generation of the Internet into the current transition into the Fourth generation. This generation has been propelled by the concept of the Internet of Things (IoT). [3] IOT BASED AUTOMATED TEMPERATURE AND HUMIDITY MONITORING AND CONTROL In this paper, a raspberry pi running with Linux OS coded with C++ program that retrieves the temperature as well as humidity readings and these values are sensed and sent to the internet. [4] I NDUSTRIAL TEMPERATURE MONITORING AND CONTROL SYSTEM THROUGH ETHERNET LAN This paper presents a PC based temperature monitoring and control system using virtual instrumentation, LabVIEW. Data acquisition is an important role in industry in order to ensure the quality of service. Temperature sensor measures the temperature and produce corresponding analog signal which is further processed by the microcontroller. The simulator acquires data from the microcontroller through Ethernet port. The data will be displayed on the LCD in microcontroller and PC monitor. Automation and control can be done with the help of control circuitry. [5].

2.1. BLOCK DIAGRAM

The system is consist of ardunio board UNO R3 which use controller.To acess the internet network we requier the internet connectivity which provided by WiFi module ESP8266.To sense gas leakage with in industries we used the MQ-6 gas sensor. For alerting we used the Buzzer, to monitor the temperature the LM35 tempreature sensor also used along with it.To monitor the live data we used the application called ardunio and thing speak server. To monitor the data the values of sensor are uploaded over the thing speak server through which the controlling of various devices is also possibl. The common Acess point like router is used to provide the internet connetivity for system as well for user is used like router.

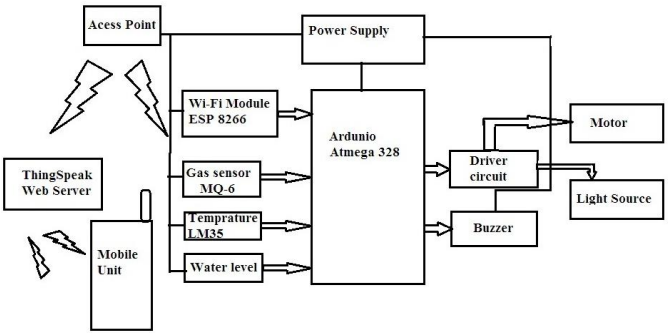


Fig-Block Diagram

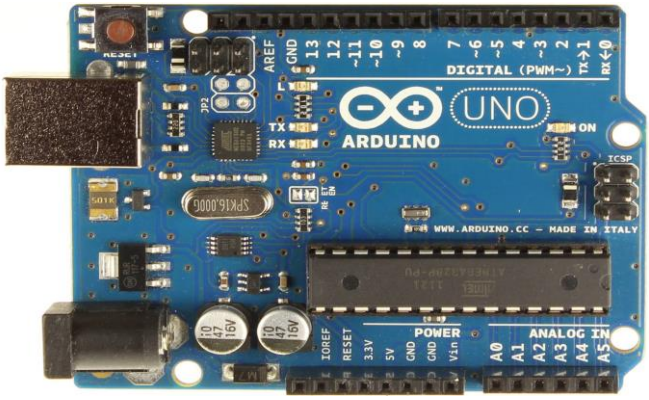
2.2. WORKING

Intiailly the values of Thing speak server are being cleared so that previous values does not required to be stored after each restart.Then the vitriuno app is started and simultaneously the wifi module is powered and connection is established between Wifi module and acess ponit through whch can upload and acess the sensor value over internet.

The control taken throgh the user are send by virtuino application and uploaded over the Thing Speak server then from thing srever thecontroller retrives the data through WiFI module and performs the requied action, depending on the control signal provided by the user.

3. HARDWARE COMPONENTS

3.1.Ardunio UNOR3



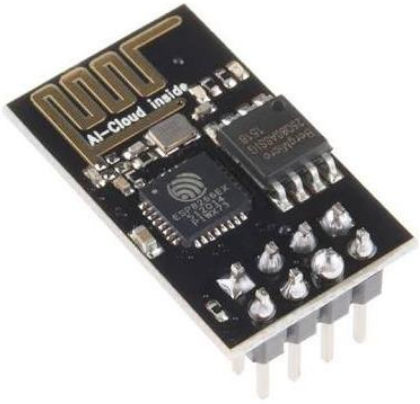
- The Ardunio UNO is a microcontroller board based on ATmega328. It has 14 digital input/output pins(of which 6 can be used as PWM outputs),6 analog inputs.
- .A 16MHz ceramic resonator,a USb connection a power jack, an ICSP header and a reset button.
- It consist everything needed to support connect it to a computer with a USB cable or power it with a AC to DC adapter or battery to get started.

3.2 DRIVER CIRCUIT

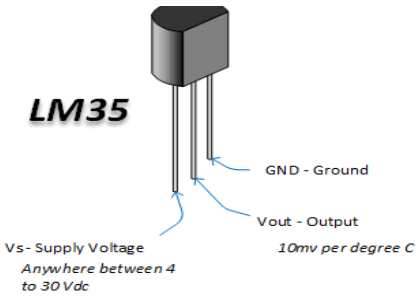
- The driver circuit will help us to ON and OFF the switch which ultimately start or stop the motor.
- The driver circuit will get input from ardunio UNO board and it will act on device driver circuit which will operate on 230V AC supply.

3.3. WIi-Fi Module (ESP8266)

- .The WiFi module used in our system will help us to operate the web page for a customer.
- The customer can set a particular threshold vaue to limit the meter reading through these which will be interfaced with the help of MAX232 to ardunio UNO board.



3.4 TEMPRATURE SENSOR

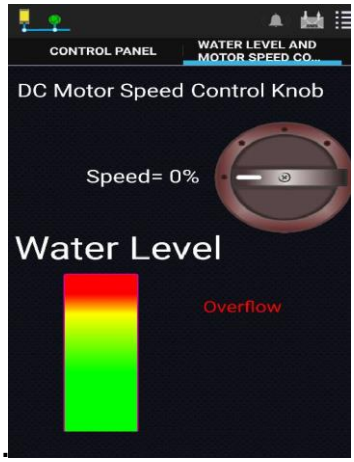


The LM35 datasheet specifies that this IC is precision integrated circuit temperature sensor whose output voltage is linearily proportional to the Celsius(centrigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in ^{0}Kelvin , as the user is not required to substract a large constant voltage from its output to obtain convienet Ceni-grade scallin.The LM35 does not require any external calibration or trimming to provide

typical accuracy of +1/^{0}C at room temperature and +3/4/^{0}C over a full -55^{0}C to +150^{0}C temperature range.

4.VIRTINUO APPLICATION IMAGES

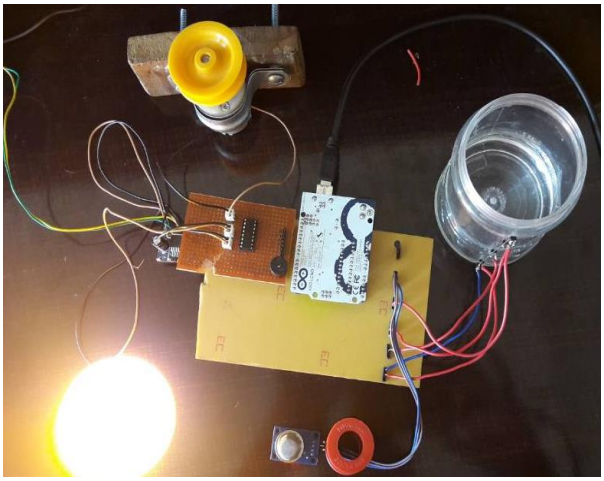
4.1.Control of DC motor and displaying water level-



4.2.Control of Blub and display for temprature

5. CONCLUSION

We conclude that by implenting these system we can acess the live data and also control the device interdaced with our system.



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