Industrial Monitoring and Control System Using IOT

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ABSTRACT
All running technologies have been on the verge of getting replaced by a great system that provides very specific, efficient and quick access and controlling for the devices as per user demand. That is nothing but IoT that stands for 'Internet of Things'. It deals with bringing control of devices over internet. The internet of things (IoT) is the network of physical devices, vehicles, buildings& items embedded with electronics, software, sensors, actuators, and network connectivity that enable these objects to collect and exchange data. Our project aims at connecting the unconnected, evolving the machine to machine communication.

Key words: Sensors, Internet of Things
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INTRODUCTION
Industrial Internet of Things (IoT) is the best way of connecting industrial machineries and sensors, to each other, over the internet, allowing the authorized user of the industry to use information from these connected devices to process the obtained data in a useful way. IoT-connected applications typically support data acquisition, aggregation, analysis, and visualization. The IoT architecture includes latest technologies such as computers, intelligent devices, wired and wireless communication and cloud computing Previously Bluetooth and RF (Radio Frequency) technologies were used to control and monitor the industrial applications but were limited to short distance. The operator had to be in the range of the Bluetooth connectivity or in the Radio Frequency area
Solution to the short distance communication is the IoT based industry automation. Here we can have controlling as well as monitoring from anywhere in the world. The following Fig 1 illustrates IoT based Industrial Automation

LITERATURE SURVEY
The concept of the internet of things was presented by the individuals of the radio frequency identification improvement community in 1999.This concept is exceptionally popular because of development of portable gadgets, inserted and genuine time communication, cloud computing and information analytics The internet of things is a network of physical objects are embedded with electronics, software and sensors having the ability to collect data from the world around us and share data across the internet. The future M2M market will be fuelled by the wide variety of applications that this technology enables. Within the proposed framework the communication between screen and mechanical plant is accomplished utilizing GPRS, the separate boundary is disposed of and robotization is accomplished from any portion of the world.

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GOALS AND OBJECTIVES

To develop a system this will automatically monitor the industrial applications and generate Alerts/Alarms or take intelligent Decision using concept of IoT and also design the system to Take Intelligent Decision and Control Devices.

INTERNET OF THINGS (IOT)
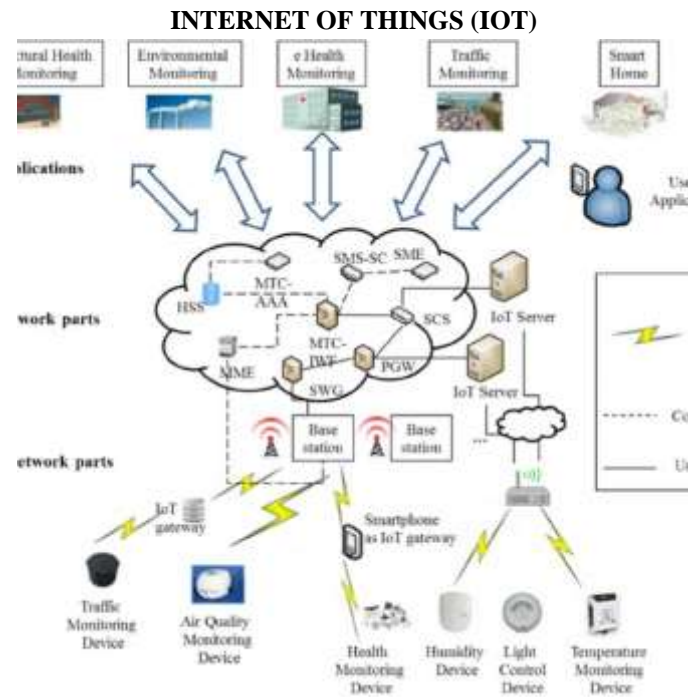
Fig. 1

The Internet of things (IoT) is the organize of physical gadgets, vehicles, buildings and other items—embedded with hardware, computer program, sensors, actuators, and arrange network that empower these objects to gather and trade information.The IoT allows Objects to be sensed and controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit. When IoT is augmented with sensors and actuators, the technology becomes an instance of the more general class of hyperphysical systems, which also encompasses technologies such as smart grids, smart homes, intelligent transportation and smart cities. Each thing is extraordinarily identifiable through its implanted computing framework but is able to interoperate inside the existing Web framework

BLOCK DIAGRAM
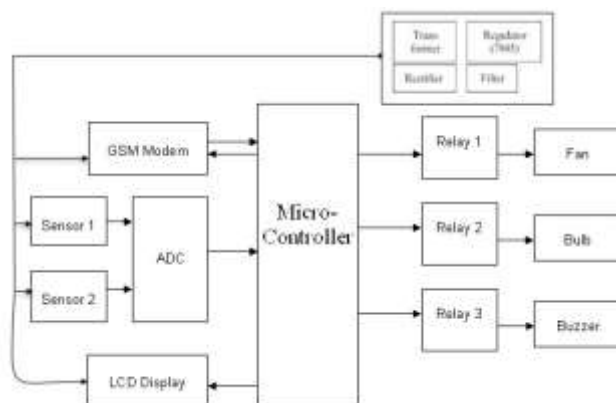
Fig. 2 Block Diagram

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HARDWARE COMPONENTS:

1) Arduino UNOR3

Fig. 3

The Ardunio UNO could be a microcontroller board based on ATmega328. It has 14 advanced input/output pins (of which 6 can be utilized as PWM outputs),6 analog inputs. A 16MHz ceramic resonator, a USb association a control jack, an ICSP header and a reset button. It comprises everything required to back interface it to a computer with a USB cable or control it with AC to DC connector or battery to urge begun.

2) WIi-Fi Module (ESP8266)

The WiFi module utilized in our framework will offer assistance us to function the internet page for a client. The client can set a specific threshold vaue to restrain the meter reading through these which is able be interfaces with the assistance of MAX232 to ardunio.
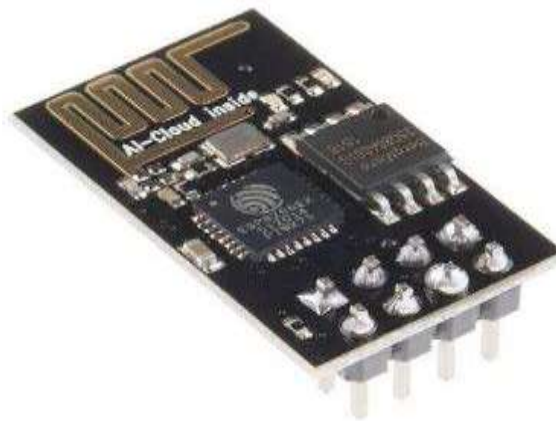
Fig. 4

3) Switch

A switch could be a component which controls the openness or closeness of an electric circuit. They permit control over current stream in a circuit (without having to really get in there and physically cut or graft the wires). Switches are critical components in any circuit which needs user interaction or control circuit.
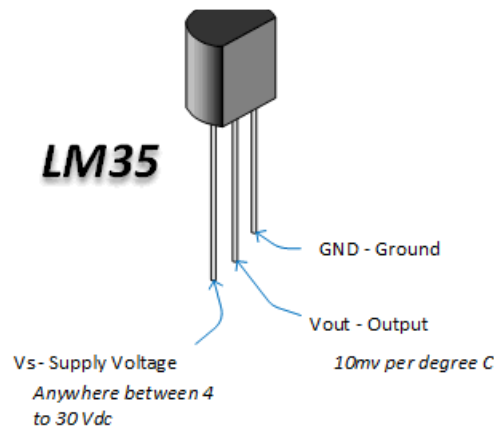
Fig. 5

4) Temprature sensor

Fig. 6

SOFTWARE REQUIREMENTS

1. ARDUINO IDE
2. THINGSPEAK
3. FUSION 360
4. MATTERCNTROL 3D DESIGN
5. PROTEUS
6. FRITZING

APPLICATIONS

1) Smart Medical:

An associated healthcare environment advances the speedy flow of data and empowers simple get to to it. Progressed home care offices and standard wellbeing overhauls to clinicians reduce the chances of excess or improper care, improve patient care and security, and decrease by and large costs of care. Connected health solutions can also be used to track lifestylediseases such as hypertension, diabetics and asthma whichcontinuous monitoring. The IoT-MD provides an environment where a patient's vital parameters get transmitted by medical devices via a gateway onto secure cloud based platforms where it is stored, aggregated and analysed. It helps store data for millions of patients and perform analysis in real time, ultimately promoting an evidence-based medicine system

2) Machine to Machine:

M2M communication is something that includes a large number of brilliantly machines that share data and make collaborative choices without coordinate human intervention. This possibly leads to accomplishing improved cost productivity. M2M offers the media transmission industry a great opportunity because it needs a parcel of communication systems via different innovation families, such as IP, RFID, sensor networks, keen metering, etc.

3) Smart Grid:

The information created in a savvy network is more than that generated in a conventional network due to the persistent two way communication between the parent utility and the shrewd meter at the customer's domestic or trade setup. In case the infrastructure isn't prepared for such communication, it can be a obstruction to smart framework sending. Here, IoT innovation plays an important part. It can offer assistance streamline the exchange of high volume information over a web convention. The IoT is additionally needed to build up consistent and compelling communication between context

mindful sensors and the shrewd meter introduced at the user location for naturally exchanging the gadgets on or off based on stack patterns.

CONCLUSION

Prior we utilized to screen the things by utilizing RFID framework where it was as it were utilized for brief remove communication. To decrease the manual overhead, the thing which we are presenting is computerization of businesses utilizing web of things which can overcome the RFID shorter separate issue.

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