IoT Based Industrial Automation

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Abstract: Internet of Things (IoT) is rapidly increasing technology. IoT is the network of physical objects or things embedded with electronics, 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. IoT has given us a promising way to build powerful industrial systems and applications by using wireless devices, Android, and sensors. A main contribution of this review paper is that it summarizes uses of IoT in industries with Artificial Intelligence to monitor and control the Industry.

Keywords: Arduino, WiFimodule, GSM, Temperature sensor, IR sensor

I. INTRODUCTION

In recent years a wide range of industrial IoT applications have been developed and deployed. Evolution of this starts from RFID technology, which allows microchips to transmit the identification information to a reader through wireless communication. By using RFID readers, people can identify, track, and monitor any objects attached with RFID tags automatically. Another technology is the wireless sensor networks (WSNs), which mainly use interconnected intelligent sensors to sense and monitoring. Its applications include environmental monitoring, industrial monitoring, traffic monitoring. Both RFID and WSN are used to develop IoT. Then upcoming technology is IoT with Artificial Intelligent. In previous year, Industry was monitored manually, but this paper introduces Artificial Intelligent to monitor as well as control the Industry autonomously without human intervention.

II. LITERATURE REVIEW

Industrial automation using ZigBee describe the transmitter section, the Zigbee module is configured in such a way that it receives the data collected from the microcontroller and sends it to the remote receiver. In this system, the microcontroller is programmed to collect the data from an analog to digital converter that continuously monitors temperature, voltage and current parameters. At the receiver side, the Zigbee module receives all the sent data from a Zigbee transmitter within the range of communication. This data is further transferred to the microcontroller using an embedded circuitry wherein the microcontroller program compares all these data parameters with predefined set limits. If any parameter exceeds its limit, then the microcontroller sends command signals to a relay driver IC, which is responsible to operate different loads such as motors, relays, circuit breakers, etc. All these parameters' information is also displayed on LCD display as a Human machine interface. In this way, industrial parameters can be easily monitored and controlled through the short range low cost and low powered Zigbee communication technology. It supports two ways communication between transmitting devices and controllers at 10-100 meters distance.

Industrial automation using CAN protocol describe project is implemented to control the industrial loads that are run by DC motor based on the temperature variations of the process. Various process control systems are depends on the temperature.

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 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.

Industrial Temperature Monitoring And Control System Through Ethernet Lan This paper presents a PC based temperature monitoring and control system using virtual instrumentation, Lab VIEW. 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.

III. PROPOSED WORK

The industry alerts are based on manual intervention. To overcome this a new technology has been developed to control the machines automatically. Evolution of this starts from RFID technology, to transmit the identification to a reader through wireless communication.By using this people can identify, track and monitor any objects attached with RFID tags automatically.In our project we use various sensors for the safety purpose. By using these sensors it automatically stops the machine.Here we use temperature sensor, float sensor, IR sensor. There are also switches which will automatically OFF the machine if there is any occurance of over voltage, short circuit, under frequency.

GOALS AND OBJECTIVES

To develop a system which 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.

IV. EXISTING SYSTEM

No ways to detect un-even condition in industry. Manual intervention required for monitoring. CCTV used which only monitor but no Alert generation. Alert and their appropriate actions not present manually. Time consuming approach to detect and generate Alert Manually.
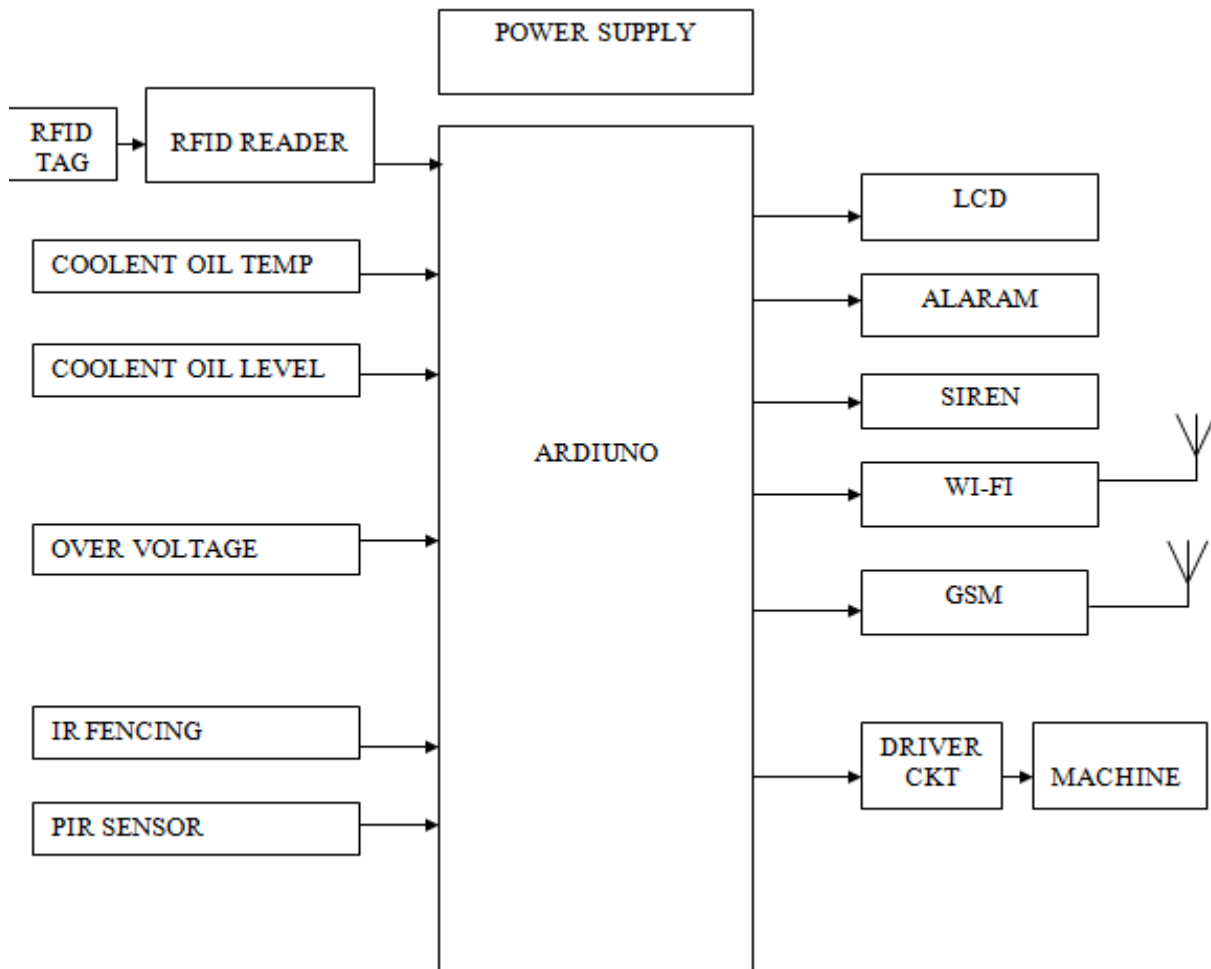
V. BLOCK DIAGRAM

Figure 1: Industrial Automation

VI. OVERVIEW OF SYSTEM

In this modern era of automation and advanced computing using IoT offer promising solutions towards the automation of Industry. In order to understand the development of IoT in industries, this paper reviews the current research of IoT, key enabling technologies, major IoT applications in industries, and identifies research trends and challenges. The Internet of Things allows objects to be sensed and controlled remotely across existing network infrastructure. Sensors (Temperature sensor, Float sensor, IR sensor) are used here. Analog signal are provided to android device produced by sensors. Admin set threshold to every sensors placed in Industry. Android check this threshold against incoming analog signal. When it encounter an uneven condition devices (Buzzer, Alarm) are use to take accurate measures such as Alarm/Alert are generated, it send messages and email to Admin

Applications

Industry and office:-We can implement sensors in wide area over the machines and instruments. Control and Monitor circumstances by using concept of IoT. Hospital and Labs: - We can plot sensors on patient's body and Doctor can check current status on his android phone and also take necessary actions and decisions. Home:-We can implement sensors to household appliances and monitor and control with the help of IoT.

CONCLUSION

Nowadays we need everything computerized. Earlier we can only monitor the situations with the help of cameras. In industries to reduce manual overhead we have implemented Internet of Things (IoT) in Industry to monitor as well as to inform the responsible person to take appropriate measures, but this will partially fulfill our requirement. As sometimes it will be late in this process and it will harm to property as well as life. For this purpose we are developing a system for Industrial Automation using IoT to make system automated which will take decision.

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