IOT INDUSTRY PROTECTION USING ARDUINO

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Abstract - *Today, smart grid, smart homes, smart water networks, intelligent transportation, are infrastructure systems that connect our world more than we ever thought possible.The common vision of such systems is usually associated with one single concept, the Internet of Things (IoT), where through the use of sensors, the entire physical infrastructure is closely coupled with information and communication technologies; where intelligent monitoring and management can be achieved via the usage of networked embedded devices. These devices will connect to internet to share different types of data. We have proposed an Industrial Monitoring System using WIFI module and sensing based applications for internet of things. By detecting the values of sensors it can easily find out the Temperature, humidity, and gas present in the industrial area.*

Key Words: IoT, Message Alert system, WIFI-Module,ETC...

1.INTRODUCTION

Now- a – days, the industrial monitoring field requires more manual power to monitor and control the industrial parameters such as temperature, humidity, gas etc. this is the most upcoming issues in the industrial sectors. if the parameters are not monitored and control properly, it leads to a harmful situation. Most of the industries are facing those kinds of situation because of some manual mistakes. To overcome manual mistakes we are using industrial automation with internet of things. WIRELESS SENSOR NETWORKS (WSN) has been employed to collect data about physical phenomena in various applications such as habitat monitoring, and ocean monitoring, and surveillance

1.1 EXISTING SYSTEM

Implementation of ZigBee-GSM based home security monitoring and remote control systemArbab Waheed Ahmad , Naeem Jan, Saeed Iqbal and Chankil Lee proposed Implementation of ZigBeeGSM based Home Security Monitoring and Remote Control system. Home security and control is one among the essential needs of mankind from youth. But today it's to be updated with the rapidly changing technology to make sure vast coverage, remote, reliability, and real time operation. Deploying wireless technologies

for security and control in home automation systems offers attractive benefits along side user friendly interface INDUSTRY BASED SECURITY SYSTEM USING GSM AND ARDUINO(Shubham Raut, Avinash Gaikwad , Mudaliyar Raghurajan , Pratiksha Patil)This paper describes the design of a simple low cost GSM based security monitoring system using GSM technique

1.2 PROPOSED SYSTEM

The IOT industry protection system using Arduino is a system designed to protect industries from losses due to accidents using Internet of things. Gas leakages may lead to fires leading to huge industrial losses, also instant fire detection is needed in case of furnace blasts or other conditions. Also low lighting in industries may create improper work conditions increasing the probability of accidents. The system makes use of Arduino to achieve this functionality. The system makes use of temperature sensing along with light and gas sensing to detect fire, gas leakage as well as low lighting to avoid any industrial accidents and prevent losses. The system consists of light, gas and temperature sensors interfaced with Arduino and LCD screen.

2. HARDWARE REQUIREMENTS

- ARDUINO UNO
- LCD DISPLAY
- WIFI MODULE
- LDR SENSOR
- GAS SENSOR
- TEMPERATURE SENSOR
- RELAY
- POWER SUPPLY

3.SOFTWARE REQUIREMENTS

- ARDUINO IDE
- EMBEDDED C

MODULE DESCRIPTION
The module is divided into three parts
- Power supply
- Hardware connections
- Software interfacing

POWER SUPPLY

The power supply mainly consists of four parts

- Electrical Transformer
- Rectifier Diode
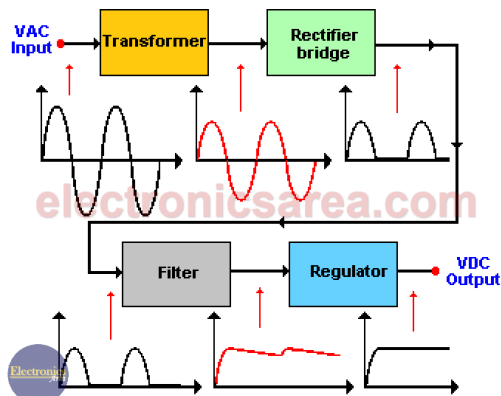- Electrolytic Capacitor
- LM8705 Voltage Regulator

Fig -1: power supply

ELECRTRICAL TRANSFORMER

The electrical transformer receives on the primary winding an AC voltage and delivers on the secondary winding a different AC voltage (a lower one). This AC output voltage must be according to the DC voltage we want to obtain at the end.

RECTIFIER DIODE

The rectifier bridge transforms the secondary winding AC voltage into a pulsating DC voltage. (look at the diagram). In our case, we use a ½ wave rectifier, then we eliminate the negative part of the wave

ELECTROLYTIC CAPACITOR

Filter are one or more electrolytic capacitors in parallel that flattens or smooths the previous wave eliminating the alternating current (AC) component delivered by the rectifier. These capacitors are charged to the maximum voltage value that the rectifier can deliver, and they are discharged when the pulsating signal disappears

LM8705 VOLTAGE REGULATOR

The voltage regulator receives the signal from the filter and delivers a constant voltage (let's say 12 DC volts) regardless of the variations on the load or the voltage supply. Voltage regulator can be implemented in several ways. It can be a transistorized voltage regulator or a monolithic voltage regulator. The image below shows the LM7805 voltage regulator (5VDC output). You can also find the LM7812 voltage regulator (12VDC output).

HARDWARE CONNECTONS

In this section, The system contains several sensors for measurement of parameters. The sensors used in this project is LDR(Light Dependent Resistor)sensor, GAS sensor, Fire sensor for calculating the values in the industry

THE MAJOR HARDWARE COMPONENTS ARE

- ARDUINO UNO
- LDR SENSOR
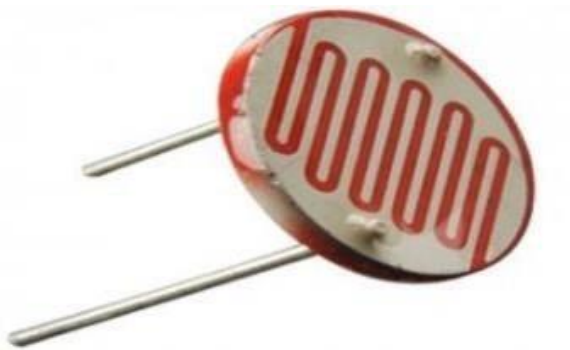- GAS SENSOR
- FIRE SENSOR

ARDUINO UNO

Arduino is a single-board microcontroller meant to make the application more accessible which are interactive objects and its surroundings. The hardware features with an open- source hardware board designed around an 8-bit Atmel AVR microcontroller or a 32-bit Atmel ARM. Current models consists a USB interface, 6 analog input pins and 14 digital I/O pins that allows the user to attach various extension boards

Arduino Uno Board

LDR SENSOR

The controlling of lights and home appliances is generally operated and maintained manually on several occasions. But the process of appliances controlling may cause wastage of power due to the carelessness of human beings or unusual circumstances. To overcome this problem we can use the light-dependent resistor circuit for controlling the loads based on the intensity of light

Light Dependent Resistor

GAS SENSOR

A Typical human nose has 400 types of scent receptors enabling us to smell about 1 trillion different odours. But still many of us do not have the capacity to identify the type or concentration of gas present in our atmosphere. This is where Sensors comes in, there are many types of sensors to measure different parameters and a Gas sensor is one which comes handy in applications where we have to detect the variation in the concentration of toxic gases in order to maintain the system safe and avoid/caution any unexpected threats.

FIRE SENSOR

This tiny Flame sensor infrared receiver module ignition source detection module is Arduino compatible can use to detect flame or wavelength of the light source within 760nm~1100nm also useful for Lighter flame detect at the distance 80cm Greater the flame, farther the test distance. It has the Detect angle of 60 and very sensitive to flame spectrum

SOFTWARE REQUIREMENTS

- ARDUINO IDE
- EMBEDDED C

ARDUINO IDE

The Arduino Integrated Development Environment - or Arduino Software (IDE) - contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus. It connects to the Arduino and Genuine hardware to upload programs and communicate with them

TOOLS

- ARCHIVE SKETCH
- FIX ENCODING AUTO FORMAT & RELOAD
- SERIAL MONITOR
- BOARD
- PORT
- BURN BOOTLOADER

BLOCK DIAGRAM
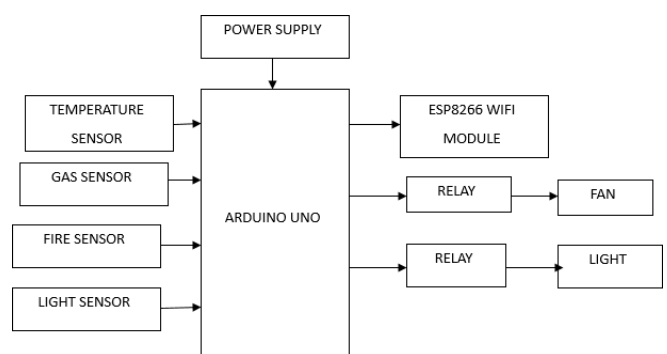
CONCLISION

This paper describes a IOT Based Reconfigurable smart WSN unit for industrial safety parameters monitoring. The system can collect sensor data intelligently. It was designed based on application of wireless communication. It is very suitable for real-time and effective requirements of the high-speed data acquisition system in IoT environment. The application of ARDUINO UNO greatly simplifies the design of peripheral circuit, and makes the whole system more flexible and extensible. Different types of sensors can be used as long as they are connected to the system. Main design method of the reconfigurable smart sensor interface device is described in this paper. Finally, by taking industrial safety parameters monitoring in IoT environment as an example, we verified that the system achieved good effects in practical application. Nevertheless, many interesting directions are remaining for further researches in the area of WSN in IoT environment.

RESULT
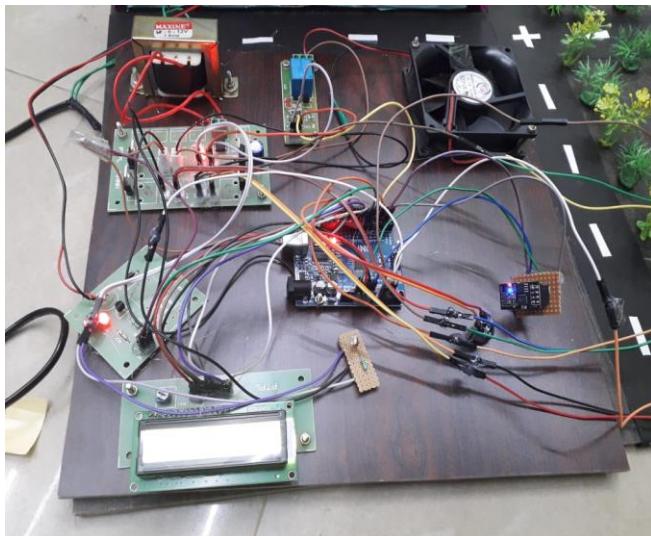
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