IoT Based Food Storage Atmosphere Monitoring System

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ABSTRACT:

This paper describes the design of a simple low cost WIFI based security monitoring system using WIFI technique. The security monitoring system using WIFI undergoes analog to digital converter and with WIFI Modem the message is send to mobile. ADC is used because Arduino works with digital inputs. WIFI modem can be used at the transmitter side, the user sends an SMS to the WIFI modem using. The fire sensor is an integrated circuit sensor that can be used to detect the fire. The fire sensor is connected to Arduino and varying fire condition is sent to WIFI modem, which is simultaneously performs the operation of sending message to a particular SIM number. WIFI technology provides users with high quality signal, giving them access to high quality digital communication. WIFI network operators can provide their customers with cheaper text messing options. The approach to industrial automation and security system design is almost standardized nowadays. We have tried to increase these standards by combining new design techniques and developed a low cost industrial automated security systems. Everyone wants to be as much as secure as possible. The design of simple hardware circuit enables every user to use this wireless industrial security system with vibration sensor, Motion sensor, Fire sensor, Door sensor and Main fuse Failure Detector at Industries.

 Keywords:WIFI, GPS, Switch, Buzzer.

1. INTRODUCTION:

Security is the main concern for every industry. Every industry wants to work in safe and secured that are beneficial for the Employs and specially for their production process say for raw materials in the industry. Every industry want their workers to keep safe and secured from various incidents like accidents caused due to Fire detector or accidents due to fire in their go down or their machinery department [1]. Industry security is the most significant one for every industry owner. To get the absolute peace of mind whether you are at industry or out of industry you must ensure that your industry is installed with the perfect industry security monitoring system. This WIFI Bases industrial security system can be used to provide security system for home, industrial, office, School, Collages using WIFI technique [2]. Security systems are certain electronic devices which are used to detect intrusions in industry. The basic components of a industry automation security system are motion detectors, fire detectors and motion detector. It is cheaper and maintained easily than any other security device. All the sensors are activated on the Security system. Whenever systems experiences a abnormal condition in the industry like any fire/smoke occurs in the industry and any intrusion into the industry the Security system alerts the security personnel as well as the owner of the industry by sending SMS alerts to the users of the industry. The system operates with the help of sensors installed in this system.

2. LITERATURE SURVEY

Rozita Teymourzadeh, Salah Addin Ahmed, Kok Wai Chan, and Mok Vee Hoong suggested Smart WIFI Based Home Automation System.This research work investigates the potential of 'Full Home Control', which is the aim of the house Automation Systems in near future. The implementation of the house automation technology using Global System for Mobile Communication (WIFI) modem to manage home appliances like security system via SMS, light conditional system. The proposed research work is targeting functionality of the WIFI protocol, which allows the user to manage the target system faraway from residential using frequency bandwidths. The concept of AT commands Nd serial communication has been applied towards development of the smart WIFI-based home automation system [3]. Home owners are going to be ready to receive feedback status of any home appliances in check whether switched on or off remotely from their mobile phones. PIC16F887 microcontroller with the mixing of WIFI provides the smart automated house system with the specified baud of 9600 bps. The proposed prototype of WIFI based home automation system was implemented and tested with maximum of 4 loads and shows the accuracy of ≥98%

Author proposed Implementation of Zig Bee WIFI based Home Security Monitoring and Remote Control system [4]. 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 [5]. Deploying wireless technologies for security and control in home automation systems offers attractive benefits alongside user friendly interface. In this paper, implementation of a completely unique security and system for home automation is presented. The proposed system consists of an impact console interfaced with different sensors using ZigBee. Suspected activities are conveyed to user through SMS or Call using WIFI technology. Upon reply, the user can control his premises again through WIFI-ZigBee combination [6]. Besides, traditional burglar alarm enhances security just in case of no acknowledgment from remote user. This system offers a coffee cost, low power consumption and user friendly way of a reliable portable monitoring and control of the secured environment. Using the concept of Serial communication and mobile phone AT commands the software is programmed using C language. The design has been implemented within the hardware using ZigBee EM357 Module, Atmega128 MCU (microcontroller unit) and Sony Ericsson T290i mobile set. Index Terms: ZigBee, MCU (Microcontroller), WIFI, Home Security and Automation [7].

Author proposed Photosensitive Security System for Theft Detection and Control using WIFI technology. The proposed system consists of an LDR sensor which acts as an electronic eye for detecting the theft, and signaling procedure supported SMS using WIFI (Global Systems for Mobile communications) technology. The WIFI based communication helps the owner and anxious authorities to require necessary and timely action so as to stop the theft [8]. The LDR (Light Dependent Resistor) circuit is interfaced employing a relay circuit with an Arduino microcontroller board [9]. Efficacy of the proposed system are often seen in its immediate intimation regarding the incident. The proposed designed system is very effective and inexpensive [10]. Index Terms—Arduino microcontroller, LDR, WIFI module 300, Security system, Photosensitive. A. Alheraish are designed by Design and Implementation of Home Automation System [11]. M2M Wireless communication of varied machines and devices in mobile networks could even be a fast growing business and application area in industry, customer services, maintenance business, and security and banking areas[12][13]. This paper presents design and implementation of remote system by means of WIFI cellular communication network. The design integrates the device to be controlled, the microcontroller, and therefore the WIFI module in order that it are often used for a good range of applications.

Detailed description and implementation of every design element are presented [14]. To verify the operation of the M2M design, two home applications are practically tested using PC-based environment.

3. METHODOLOGY

This work is focused on, utilizing the interdisciplinary advances in different engineering fields, to suggest a new design form with modified capabilities of an efficient, real time, reliable and realizable, at low cost, industrial environment monitoring system. The suggested design is intended to monitor, track, assess and register pollution's sources parameters and conditions in industrial manufacturing factory, to result in ensuring acceptable quality of factory's environment, maintain safety of personnel, Material and Machinery and finally to result in more optimized factory operation. The system design is developed by utilizing commonly available hardware and specially designed modules [4]. The state and value of various environmental pollution sources and conditions, in real time, are continuously read and monitored. The acquired data are broadcasted wirelessly from all sensor modules, to main control unit, which will process the acquired data, calculate the climatic indices, and take correction actions.

The majority applications of pollution monitoring systems are in industries. The control of the parameters which causes pollution and deteriorates the industrial and natural environment pattern is a great challenge and has received interest from industries especially in Petro chemical industries, Paper making industries, Water treatment industries and Sugar manufacturing industries. The main objective of our project is to design an efficient and robust system to control the parameters causing pollution and to minimize the effect of these parameters without affecting the plant or natural environment. The proposed methodology is to model a system to read and monitor pollution parameters and to inform pollution control authorities when any of these factors goes higher than industry standards.

Results Explanation:

We are using voltage convert adapter to convert 230 voltage AC supply to 12V DC supply and it is used for Relay. Further we have used IC LM2576D2TR4-5g for converting 12 voltage DC to 5 Voltage. Which is used for WIFI Model, 5 voltage conversion 3.3 voltage for Arduino using IC LN1117.

Fire Sensor (Smoke Detector):- We are using 2351e smoke sensor. It is connected to Arduino Pin no 27.In fire Sensor pin no 3 is an output pin. **Required supply:-**12 volt. When a fire accident occurs the two resistors which are in serial detects the smoke and the signal is passed to arduino (pin no 27). Arduino activates all three relay which are further connected to buzzer (Pin no 26), LED (Pin no 25) ,DC Pump (Pin no 24). Arduino sends the signal to WIFI model through Pin no 9 and Pin 10 and sends a messages to end user.

Motion Sensor :- We have used Dual element PIR motion sensor.

Detection Range: - 15mtr. Detection Angle: - 110 Degree.

Power supply: - 10 -15 voltage. Motion sensor is connected to pin no: 28 of Arduino. Motion sensor is basically used for security purpose in industry level sensors can be used under almost all environmental and climatic conditions. Motion detect

the motion and pass the signal to arduino. Arduino activates the relay which are further connected to buzzer Pin no 26, LED Pin no 25, Arduino Pin 2&3 send the signal to WIFI model through Pin no 9 and Pin 10 and send a messages to end user.

Door Sensor:- Door Sensor work by using magnets and a magnetic sensitive switch. A magnet is placed in the top corner of the door and the switch is placed in the door frame, exactly opposite to the magnet .When the door is closed, the switch takes rest i.e., switch and the magnet path vies open, When the door opens, this unstable magnetic field is disrupted, closing the switch and at that instant the signal is passes to arduino. Arduino activates the relay which are further connected to buzzer Pin no 26, LED Pin no 25, Arduino Pin 2&3 sends the signal to WIFI model through Pin no 9 and Pin 10 and sends a messages to end user.

Vibration sensor:- In industry level every machine is placed in plane platform for smooth and balance working. There may be a situation occur when the platform becomes unstable and the machine starts vibrating. If the situation continues. These vibration may damage, the internal parts of the machine. To avoid these problem vibration sensor are used. Vibration sensor sense the vibration, which are out of limit and sends the signal to arduino through pin no 5. Arduino activates the relays which are further connected to buzzer Pin no 26, LED Pin no 25, Arduino Pin 2&3 sends the signal
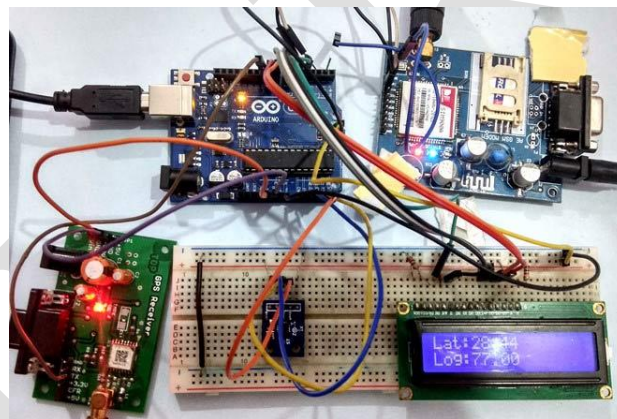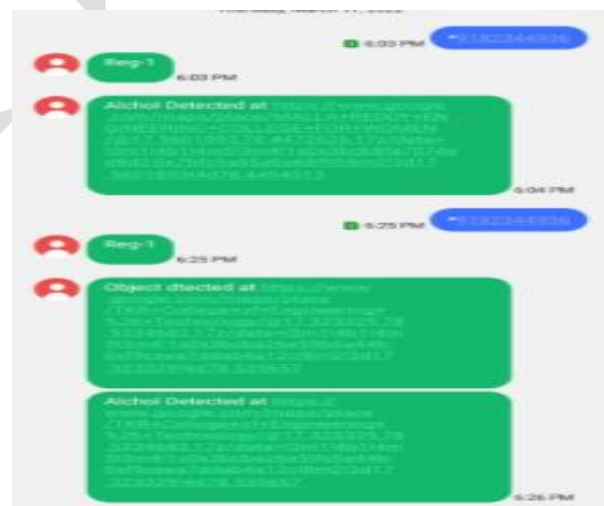

Fig.1. Hardware kit image

Fig.2. Output results with location

The main agenda of our project was to provide a safe environment for the workers several industrial accident like fire and vibration and the incidents of unauthorized access can be resolved using our system A simple system to improve the standards is developed. It is a real time monitor able system developed with simple hardware which simplifies the possibility of error free security system [5]. This system can be easily implemented with maximum reliability and high security with low cost, It is a special enhancement.

FUTURE SCOPE

Voice announcement system can be added to indicate Status of a device. If we can add voice announcement system with the buzzer so if there are hazardous parameters then that problem is easily detected then accordingly respective voice message will be announced. We can automatically switch off the extinguisher which we were doing it manually.

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