

A Survey on Implementation of Security System Using IoT

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ABSTRACT: Security plays an important role in industry for the safety of employees and to avoid accidental losses. Thus, it is necessary to constantly monitor the industrial environment. Today's networking technologies are optimized for Human-to-Human interactions rather than Machine-to-Machine communication. Internet of things (IoT) aims to extend Internet to a large number of distributed devices by defining standard interoperable communication protocols. Temperature sensor, Smoke detector are organized in as Wireless sensor networks by RF. To communicate with other system and for data acquisition Raspberry-pi is used because it has its inbuilt wireless module. The functional design and development of the hardware and software architecture of the security monitoring system is proposed in this paper. Sensors are connected in wireless network consisting of spatially distributed and autonomous devices monitor physical or environmental conditions.

KEYWORDS: IOT, Raspberry-pi, Temperature Sensors, Smoke detector Sensors, RF.

I. INTRODUCTION

Using internet of things (IoT) to connect things, service, and people for intelligent operations has been discussed and deployed in many industry domains such as smart city, smart energy, healthcare, food and water tracking, logistics and retail, and transportation. However, scarce information is available for IoT usage in industrial automation domain for reliable and collaborative automation with respect to e.g., enabling scalable collaboration between heterogeneous devices and systems, offering predictable and fault-tolerant real-time closed-loop control, and inclusion of intelligent service features from edge devices to the cloud. In this paper, we will clarify the specific security constraints within industrial automation, present specific industrial IoT challenges due to these constraints, and discuss the potentials of utilizing some technical solutions to cope with these challenges. Industrial security today needs to make use of the latest technological components. In this paper I going to present the design and implementation of a remote and sensing, control and security system based on wireless web technology. This system offers a complete, low cost, powerful and user friendly way of 24 hours of real-time monitoring and remote control of a industrial security. In case of fire/security the chip will receive signals from the different sensors in the monitoring place and acts according to the received signal by updating the status on web, it also works as automatic and immediate reporting to the user in case of emergency for home security, as well as immediate and automatic reporting to the fire brigade and police station according to activated sensor to decrease the time required for tacking action.

II. MOTIVATION

Wireless Sensor Networks (WSN) has been used to gather information about physical phenomena in different applications, for example, territory monitoring, and ocean monitoring, and surveillance. As a growing innovation achieved fast advances in present day modern wireless telecommunication, Internet of Things (IoT) has entranced a great deal of consideration and is relied upon to bring advantages to various application ranges including mechanical WSN frameworks, and medicinal services frameworks fabricating. WSN frameworks are appropriate for long haul

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modern ecological information procurement for IoT portrayal. Sensor interface gadget is basic for distinguishing different sorts of sensor information of modern WSN in IoT conditions. It enables us to get sensor information. Therefore, we can better understand the outside condition data. So as to meet the prerequisites i.e. requirement of long haul mechanical ecological information procurement in the IoT, the acquisition interface device can collect multiple sensor data at the same time, so that more accurate and diverse data information can be collected from industrial WSN. With the improvement in Internet advances and WSNs, another new trend is framing in the period of universality. IoT is all about physical things conversing with each other, where machine-to-machine (M2M) communication and person to- computer communication will be reached out to things. Key technologies that drive the fate of IoT are identified with smart sensor technologies including WSN nanotechnology, and smallness Since IoT is related with extensive number of remote sensor device, it creates a enormous number of information .Sensor information obtaining interface gear is one of the key parts in IoT applications. Information gathering is the essential use of WSN and that's just the beginning critically it is the establishment of other progressed applications in IoT condition. IoT is a noteworthy drive to bolster benefit arrangement with different applications. The design of IoT comprises of three layers:

- 1) Perception layer;
- 2) Network layer;
- 3) Application layer.

The design of information securing interface i.e data acquisition interface is predominantly connected to the recognition layer of IoT. The recognition layer of IoT is essentially made out of sensors, RFID perusers, cameras, M2M terminals, and different information gathering terminals. The information procurement interface is in charge of the combination and coordinated effort of different situations also, gathering of sensor information

III. OBJECTIVES

The objective of the proposed system is given below

The main objective of this project is to design and deployment of a WEB-enabled distributed control application platform for industrial automation.PC based control are the important aspects to be considered for implementing LAN based industrial automation with WEB connectivity to Control unauthorized user for the Industry through biometric camera and buzzer system.

1. To design a smart sensor interface for industrial security system using IoT.
2. Design a system suitable for real-time and effective requirements of the high-speed data acquisition system in IoT environment.

IV. LITERATURE SURVEY

In literature, the problem and the previous techniques of smart sensor interface for industrial security system in IoT environment described by Shifeng Fang et al. presents an incorporated way to deal with water resource management based on geo-informatics including technologies such as Remote Sensing (RS), Geographical Information Systems (GIS), Global Positioning Systems (GPS), Enterprise Information Systems (EIS), and cloud services. This paper too presents a model IIS called WRMEIS i.e. Water Asset Management Enterprise Information System that incorporates capacities, for example, information securing, information administration and sharing, demonstrating, and information administration. This framework gives best administration to water security and surge for human culture which is future for human life. This framework is mix of Snowmelt Surge Forecasting Enterprise Information System i.e. SFFEIS, which depends on the Water Resource Administration Enterprise Information System. This framework contains operational database, Extraction-Transformation Loading (ETL), data stockroom; in which it contains data administration that permits any member assume the part as a sensor and a benefactor to the data distribution center, worldly and spatial examination, reproduction/expectation models to anticipate the air condition, learning administration is helpful for the taking choice; which is given by both clients and open assume the part of giving information and information, and different capacities.

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S.Pandikumar and R.S. Vetrivel, presents GSM based outline of smart home controlling framework in IoT Condition. This framework empowers the clients to control and screen savvy gadgets through internet and furthermore it creates an interface amongst clients and savvy home by utilizing GSM what's more, web advances, or it can state that it makes GSM based remote correspondence from the web server into the savvy home. Clients give charges through web then the clients sources of info are changed over into GSM-SMS charges, at that point these summons are sent to embedded system module. This installed framework straightforwardly interface with gadgets through GSM network, lastly the client summons are parsed and executed by microcontroller to control any electronic articles like home machines, lights, and so on and it sends the acknowledgement.

GauravTiwari and RiyazKazi, exhibit Autonomic Shrewd Sensor Interface for Industry in IOT Environment. Sensors are for the most part compelled by the device due to the present connect number, sampling rate, and signal types. In the event that required to associate gadgets required to compose confused and cumbersome information gathering programming code. This issue is tackled by outlining the shrewd sensor interface for mechanical WSN in IoT condition, in this field programmable gate array (FPGA) is received as a core-controller.

S. Liet.althis paper introduces an EIS combination plot in cloud administrations. The advances in hybrid wireless networks and cloud computing technologies makes it conceivable to build up a coordinated plan that can flawlessly incorporate these new advances into existing EISs. In this article, by taking the elements of half and half remote systems and distributed computing into thought, they propose a cloud-based administration arranged undertaking data framework, which incorporates frontend layer, center layer, and backend layers associated to IP EISs. In light of a communitarian design, a cloud administrations administration structure and process outline is exhibited. In our future works, we will execute the proposed system over Swan Mesh stage by incorporating the UPnP standard into an enterprise information system.

This paper addresses all phases of the practical development from scratch of a full custom WSN platform for environmental monitoring IoT applications. It starts by analysing the application necessities and characterizing an arrangement of details for the stage. A real-life, requesting application is chosen as reference to direct the vast majority of hub and stage arrangement investigation and the execution choices. All parts of the WSN stage are considered: stage structure, adaptability and reusability, improvement of the sensor also, passage hubs, improvement of the correspondence conventions for both in-field and long range, blunder recuperation from correspondences and hub operation, high accessibility of administration at all levels, application server unwavering quality and the interfacing with IoT applications. Of specific significance are IoT necessities for low cost, fast deployment, and long unattended service time.

Cheong, P. et al. paper presents presents ultraviolet flame detection with the help of ZigBee based wireless sensor network node for the ultraviolet. In this framework, there is one sensor hub; which comprises of a ZnSSe UV photograph finder, current delicate front end including a high pick up current to voltage speaker with 120 dB and a logarithm converter, a handset worked at a 2.4GHz modern, logical, and medicinal band (ISM). The uninvolved photograph finder is planned or set in a manner that it will have a cut off at 360 nm and framework can identify the fire at the speed of 70 ms for outflow of fire into picoamperes. With this the framework likewise contains blended flag handling for the speed of fire discovery is as quick as 70 ms and ZigBee transmits information from the sensor to the focal processor framework or to the application layer. The power utilization of framework's sensor hub is on a normal of 2.3mW from a 3.3V supply.

Bharani M., Elango S., Ramesh S.M., and Preetilatha R., presents an embedded system based monitoring system for industries by interfacing sensors with ATmega Microcontroller. In this paper the different sensors are being utilized for measuring the temperature, weight, gas and so forth. In the proposed framework, sensors are interfaced with the microcontroller ATmega328p which gives a highperformance Atmel 8-bit AVR RISC-based microcontroller joins 32KB blaze memory with readwhile-compose capacities, 1024B EEPROM, 23 general reason I/O lines, 32 broadly

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useful working registers, three adaptable clock/counters with look at modes, inner what's more, outside interferes with, serial programmable, a byteoriented 2-wire serial interface, serial port, a 6-channel 10- bit A/D, programmable guard dog clock with inner oscillator, and five programming selectable power sparing modes. Utilizing Zigbee the deliberate qualities are sent from checking station to the controlling station and afterward sent through WAN to the Internet if necessary. Gotten qualities are contrasted and the limit esteem if any confound is discovered then the laborers will be educated to take restorative measures.

This paper describes an IOT Based Reconfigurable smart WSN unit for modern security parameters monitoring. The framework can gather sensor information brilliantly. It was composed in view of utilization of remote correspondence. It is exceptionally reasonable for constant and compelling prerequisites of the rapid information obtaining framework in IoT condition. The utilization of ARDUINO UNO significantly streamlines the outline of fringe circuit, and makes the entire framework more adaptable and extensible. Diverse sorts of sensors can be utilized the length of they are associated with the framework. Principle outline technique for the reconfigurable savvy sensor interface gadget is portrayed in this paper. At last, by taking industrial safety parameters checking in IoT condition for instance, we confirmed that the framework accomplished great impacts in pragmatic application. All things considered, many fascinating headings are staying for further examines in the range of WSN in IoT environment.

V. PROPOSED SYSTEM

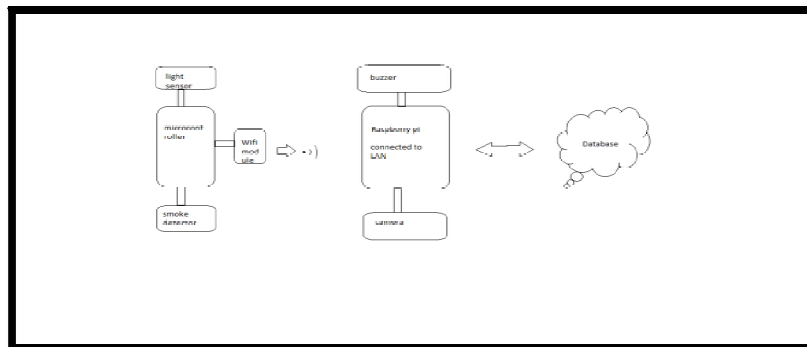


Fig: System Architecture

Our system consists of web based monitoring system. A system will monitor the hazardous gases that are emitted by industries across the particular arena. It simultaneously provides data to authority and organization. The main objective of the work is designing microcontroller based toxic gas detecting and alerting system. The hazardous gases emitted due to fire were sensed and display message in LCD. If these gases exceed the normal level then an alarm will get generated immediately and also an alert message is sent to the authorized person through the android application. The advantage of this automated detection and alerting system over the manual method is that it offers quick response time and accurate detection of an emergency and in turns leading faster diffusion of the critical situation.

ADVANTAGE:-

- Safety is fully automatic so continuously monitoring is possible.
- Due to face recognitions no chance of intruder passing.
- Data is easily and accurately maintain on server.

It can be implemented to any levels of the security system. The architecture of the system mainly consists of three components the Wifi module and the interface circuit that include the different sensors used. The function of the Wifi module is the remote communication between the WEB and the controller through Wifi module communication with raspberry pi. The function of the controller is to continuously check the inputs coming from the different sensor and send message through the Wifi network in case of emergency. The microcontroller is connected to different devices

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like smoke detector, temperature sensor through relays. The Wifi connected to the web through the mobile cellular network. An interface circuit has been designed which includes sensors as input devices. Then the programmed microcontroller has been connected to the interface circuit and the Wifi through the serial web server. This figure shows the overall functionality of the project. In this block diagram there are 3 modules which implement the industrial smart automation system. First is microcontroller system which gets the status from the smoke sensor & temperature sensor. Smoke sensor gives the value to the microcontroller continuously. This value is sent to the Raspberry Pi when the value crosses the threshold value. The Raspberry Pi rings the buzzer and sends a message to the security person. Like this, Temperature sensor value is also compared for fire detection, when fire is present then the increased value is sent to the microcontroller. This is forwarded to Raspberry Pi to start the buzzer. Second system is Raspberry Pi which performs the action according to the microcontroller value as well as the camera images. In this Raspberry Pi circuit, it will capture the image and interact with the web server. When any employee comes in front of the camera, then the image is captured & this image is compared with the image which is already stored on the web server. When the image is matched, then the authentication is accessed; otherwise, unauthorized person indication is given to the owner and security authority. Third section is web server. In this section, the data is maintained & updated by Raspberry Pi through wireless communication.

VI. CONCLUSION

From the consideration of all the above focuses, we reason that the main objective of this project is to outline and arrangement of a WEB-empowered circulated control application stage for industrial automation. PC-based control are the critical perspectives to be considered for executing LAN-based industrial automation with WEB network to control unapproved clients for the industry through biometric camera and ringer system. The framework comprises of electronic checking framework. A framework will screen the unsafe gasses that are radiated by ventures over the specific field. It all the while gives information to specialist and association. The fundamental goal of the work is planning microcontroller-based harmful gas identifying and alarming framework. The dangerous gasses discharged because of flame were detected and show message in LCD. In the event that these gasses surpass the ordinary level, then a caution will get produced quickly and furthermore a ready message is sent to the approved individual through the android application. The advantage of this automated detection and alerting system over the manual method is that it offers quick response time and accurate detection of an emergency and in turns leading faster diffusion of the critical situation.

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