Literature Survey

Paper 1 : Wireless Sensors Network for Environmental Radiation Monitoring using IOT

The main objectives of the proposed work are To provide low cost effective environmental radiological monitoring system. To develop an early warning system in Nuclear Power plants and submarines.Whenever the nuclear radiation is released to the open environment, due to presence of radioactive elements present in the radiation, environmental parameters such as temperature, pressure, sound, smoke and carbon monoxide levels various rapidly. Due to breakdown of radioactive elements temperature increases rapidly and humidity decreases. By these variations we can detect the presence of nuclear radiation. All these variations of atmospheric parameters are sensed by the incorporated sensor module and it's displayed by things speak web server. So radiation leakage in nuclear power plant can be detected. By the tremendous variation of atmospheric parameters, all the operators can be easily came to know about the radiation leakages. The Architecture of sensor module , abstract architecture of sensor nodes used in wireless Sensor network .

Author : Ashwini S R , Dr. Shivashankar , Karthik R , Harish B R , Karan D Bafna .

Year : 2018

Paper 2: Internet of Things for Flame Monitoring Power Station Boilers

The method uses the concept of within class mean (the mean value for the flame images within the same combustion category), between class mean (the mean value of the flame images between the categories of combustion) and the global mean. The relations between discriminant analysis and multi layer perceptrons has been addressed by considering the number of patterns and feature size (Foley 1972). A linear mapping is used to map an n-dimensional vector space onto a two dimensional space. Some of the linear mapping algorithms are principal component mapping,

generalized de-clustering mapping, least squared error mapping and projection pursuit mapping. The flame video is captured from NLC and segregated into frames. The intensity of the flame colour in the captured frame varies with respect to temperature and combustion quality. The features are extracted and then reduced using FLD. The reduced feature set is used as an input to the BPN classifier and finally the classification performance is validated with certain performance measures.

Author : K. Sujatha, Nallamilli.P.G Bhavani , T.Kalpalatha Reddy, K.S. Ram Kumar .

Year : 2017

Paper 3: IoT Based Industrial Parameter Monitoring System

Arduino module is fully equipped with inbuilt peripherals and bridging devices for communicating with sensors or another platform. This module operates with solar energy and using of battery charger circuit it is operating night time also. The figure shows the interfacing of physical parameters like Temperature, Light intensity, Water level identifier, voltage and current in this module. Data acquired from each parameter is collected in the Arduino module is displayed in (16x2 LCD) which is used as our output module. The in-built analog to digital (ADC) converter is used to measure the voltage and current. The water pump releases when there is fire. The voice module gives voice output of various requirements. The LED glows when there is some gas leak or some problem. In this section receiver, a personal computer can be used. Receiver collects the data from the transmitter and sends to the personal computer through a serial cable. If any fluctuations in the parameters then it will be shown on LCD for example if the fire will be detected then work pump will ON or voice module will give emergency alerts like don't use lift etc. Voice module has 8 voices. If the fire is present then the voice sound is "Fire is present". While using IOT it sends the message to the server room if any sensor limit is raised.IOT has two parts that are a sender and receiver.

Author : Prof. Nitin Ahire, Shreya Bandodkar, Kanchan Gupta, Yasar Farooqui

Year : 2019

Paper 4: IoT Based Industrial Monitoring System

The Industrial Monitoring System project is built on the Internet of Things (IoT). Arduino is used to control various sensors (using smoke and temperature sensors) providing complete control over the industry. The Internet of Things (IoT) is used in this project to deliver data to the user. The Internet of Things (IoT) is a network of 'things' that allows physical items to communicate data by using sensors, electronics, software, and networking. These systems are self-contained and do not need to interact with humans . The system feeds signals from several sensors, such as the smoke, temperature, and humidity sensors, to the Arduino Mega micro-controller. The data is subsequently sent to the IoT module via the micro-controller (ESP8266). The ESP8266 is a chip that allows micro-controllers to connect to a Wi-Fi network, establish TCP/IP connections, and deliver data. In case a fire takes place, the smoke sensor and the temperature sensor would detect the presence of smoke and temperature changes and send the information to the Arduino. the information then is transmitted through ESP8266 to the Blynk app. Blynk app is a free app on the play store where you can connect your IoT module to your phone screen, and helps you control the project and its activities virtually. The IoT module, four LED's, one fan, and an LCD are all connected to the microcontroller. LED's represent different pieces of machinery that can be as a symbol. The temperature and humidity values are also displayed on the Blynk app, thanks to Arduino and the internet. At the same time, informative messages would be displayed on the LCD for manual control. The Wi-Fi module must be linked to a Wi-Fi zone as a prerequisite for this project. This project can as well be implemented using the GSM module instead of the IoT module. Instead of the Blynk app, you can also create your app through MIT app inventor as well.

Author : Hemlata Yadav, Naomi Oyiza, Sarfaraz Hassan, Dr. Suman Lata, K. Jaya Chitra **.**

Year : 2022

Paper 4: IOT Based Industrial Parameters Monitoring and Controlling Systems

Safety is very paramount in any industry, especially with manufacturing, forging industries and many others .Therefore we intend to aid these problems in industries by developing a safety parameters monitoring and controlling system, and making it more capable and user friendly by inclusion of IoT. We believe that a system should be well automated so that a new user or a new employee who has no prior experience in controlling a unit should be able to get acquainted very easily. With the help of IoT, administrators will come to know the live status of a unit on which a parameters monitoring and controlling system is installed, it can be done via mails, or if a person is present there they can observe themselves. For example we can set temperature to a certain limit and if temperature exceeds beyond the set limit, the fans or other cooling system will start automatically. This system will also have gas sensors, flame sensors as well as radiation sensors. We are using Arduino UNO ATmega 328 as a controller for this system. Lastly the administrator will have records or logs of the parameters fluctuation and other activities at a particular time so it will be ready for reference in future and this will help the administrator to take security measures.

Author : Hritik Biswas, Atharva Ghodvaidya, Madan Gughe, Utkarsh Kadu ,A.M.Suryawanshi

Year : 2022

Paper 5: Low Cost IoT Based Emission Monitoring System for Thermal Power Plants

In this, the system measures the data at a regular time interval of 30 seconds for both CO and PM. The data is measured at outside environment and is acquired initially for the 10 to 12 values. When the system measures data it send to the thing speak as well as blynk app. the serial monitor output window of Arduino IDE. It reads the data values from Node MCU through USB port. It displays the intermediate calculation values and the final sensed values of sensors. Data is monitored from graphs of Thing speak, which shows the emission levels of pollutants . The government

agency will only be having access to it. And Blynk is used to display the emission levels to power plants agency. Based on that, the power plant agency can avoid emission of large volume of pollutants in air. If in case pollutants are emitted greater than or equal the standard levels then thing speak by using IFTTT sends the warning email notification . We have taken the threshold value for CO as 200ppm and PM2.5 dust density as 0.25µg/m**3**. As can be seen in thing speak graph, the value of CO is above 200, PM2.5 dust density is above 0.2 at start and hence, at that instance of time an email notification is send to the power plant agency

Author : Ayesha Samreen , P. Sathish, N.Alivelu Manga .

Year : 2019

Paper 6: Bluetooth based Sensor Monitoring in Industrial IoT Plants

Internet of Things adoption in traditional and slow changing industrial plants such as power, water, oil-gas and chemical has proven to be beneficial in providing business value by transforming the way data is utilized in decision-making and visualization. Typical industrial IoT use cases involve acquiring data from sensor devices in plant and communicating the same to internet for local or remote monitoring and control. The sensor data acquisition in an industrial plant thus becomes paramount as the same acquired data is used for bringing out the underlying knowledge of system. IoT typically requires a local, low power wireless communication to acquire data from sensor devices and local gateway that is connected to internet for local or remote monitoring and control. This paper describes how Bluetooth low energy (BLE) technology can be used to connect sensor nodes to Internet-based services and applications using gateway in an industrial plant. It also investigates the performance of BLE technology as a local communication for sensor device monitoring. Internet of Things adoption in traditional and slow changing industrial plants such as power, water, oil-gas and chemical has proven to be beneficial in providing business value by transforming the way data is utilized in decision-making and visualization. Typical industrial IoT use cases involve acquiring data from sensor devices in plant and communicating the same to internet for local or remote monitoring

and control. The sensor data acquisition in an industrial plant thus becomes paramount as the same acquired data is used for bringing out the underlying knowledge of system. IoT typically requires a local, low power wireless communication to acquire data from sensor devices and local gateway that is connected to internet for local or remote monitoring and control. This paper describes how Bluetooth low energy (BLE) technology can be used to connect sensor nodes to Internet-based services and applications using gateway in an industrial plant. It also investigates the performance of BLE technology as a local communication for sensor device monitoring.

Author : Rahul N. Gore, Himashri Kour, Mihit Gandhi, Deepaknath Tandur, Anitha Varghese, .

Year : 2019