Literature Survey

1) Topic: IOT BASED INDUSTRIAL MONITORING SYSTEM.

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

Abstract:

Modernization and automation are sweeping the globe, with IoT-based industrial monitoring solutions at the forefront. The importance of assessing the state of the industry is vital to the safety and efficiency of the products. The goal of this study is to create an IoT-based industrial monitoring system with intelligent sensors. A web controller, often known as an Econtroller, is a set of embedded systems and software stacks that is the most extensively used method of web development in the world. Instead of employing large server systems for monitoring, administering, and handling data, remote login and monitoring using a distributed web control system produced using web pages generated in web applications are increasingly used instead of big server systems for monitoring, administering, and processing data. The main objective is to adapt the Internet control system to the Internet of Things, allowing users to access the application over the Internet from anywhere in the globe. IoT monitoring allows you to analyze dynamic systems and analyze billions of events and alerts. IoT monitoring also enables you to bridge the gap between devices and businesses by collecting and analyzing a wide range of IoT data at a web scale across connected devices, consumers, and apps. 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 system feeds signals from several sensors, such as the smoke, temperature, and humidity sensors, to the Arduino Mega microcontroller. The data is subsequently sent to the IoT module via the microcontroller (ESP8266). The ESP8266 is a chip that allows microcontrollers to connect to a Wi-Fi network, establish TCP/IP connections, and deliver data. The implementation is not only for safety reasons, but it also has the potential to increase industry yields.

2) Topic: Embedded IoT-based Monitoring Utility for Safety Management and Access Control.

Author:Wejie-Okachi, Ugwechi et al.

Abstract:
In an industrial workplace, the safety of human lives and properties are key functions of the Health, Safety and Environment (HSE) department. In this work, an industrial automation monitoring system based on IoT was designed and implemented to assist in access control and safety management in a storage facility of an Industrial plant. The monitoring utility detects the alcohol levels of employees before they enter the facility. It further continuously checks the environment for Liquefied Petroleum Gas (LPG) leakage and any possibilities for a fire outbreak, then sends out real-time alert/alarm notifications to the HSE department, fire office, security units and other authorized personnel through the industry's website and a dedicated GSM line. The system's sensor modules, consisting of alcohol, LPG and fire sensors, measure the parameters and sends the relevant data to the microcontrollers for processing. The NodeMCU activates the IoT-based alert mode by sending the processed data. While sending out the alert, it also activates the fire suppression system via the sprinkler circuit. With this the industrial storage facility urgently carried out necessary actions that prevented and minimized workplace hazards. However, in this research, three parameters were monitored with sensors modules, and then status reports are sent to authorized departments for necessary actions. The various reports were used as data to conduct safety measures, facility's access control, employees' training schools and for the improvement of the entire facility. Due to this monitoring agent and associated utility, the HSE department reported a 90% drop in injuries and other safety issues related to LPG leakage, fire, and intoxicated employees showing up at work. The industry was able to improve its safety management and access control in its storage facility.

3)Topic: Integrating IoT technologies for an "intelligent" safety management in the process industry.

Author: Gnoni, Maria Grazia, Paolo Angelo Bragatto, Maria Francesca Milazzo, and Roberto Setola.

Abstract:

IoT (Internet of Things) technologies are wide spreading in several industrial sector due to a combination of increasing technical performance together with decreasing purchase prices: thus, new tools are been evaluated for adoption in new fields of application, like safety at work. In recent years, several projects and prototypes as well as industrial solutions have been developed using IOT technologies especially to dynamically managing safety levels at complex workplaces. The aim of this study is to describe a prototype system where the so called Smart Objects (SOs) - integrating different IoT technologies- interact in a working environment through a digital platform for managing different type of hazards – e.g. involving safety of plants as well as workers - usually influencing safety levels especially in process industry. The fields of application of the proposed system vary from tracking periodic mandatory maintenance and analyzing aging of equipment, processing or containing hazardous materials, to remote tracking of hazardous conditions of workers.

4)Topic: A Novel Environmental Monitoring Strategy for Industrial Safety and Disaster Prevention Management Applications

Author: Zong-Yi Yang, Chih-Wei Chou, Wei-Cheng Lin, Wei-Chun Chenand Chi-Min Shu.

Abstract:
Building an industrial safety and disaster prevention management (ISDPM) system can effectively prevent unforeseen industrial accidents, such as fires, explosions, releases of hazardous chemicals, and leaks of poisonous gases. To prevent disasters caused by the smoldering and spontaneous combustion of hazardous wastes in a hazardous waste storage area, we proposed a novel intelligent environmental monitoring system (IEMS) for ISDPM applications. The proposed IEMS based on the integration of a monitoring sensor network, remote central database server, desktop/laptop/mobile network, and smart user interface has the ability to smartly and automatically help users prevent disasters from occurring. Through using network connections, all of the devices were able to perform real-time actual data transmission directly. Therefore, users could select a communication product from anywhere at any time to scrutinize the details of the overall current ambient environmental information, including surveillance images, thermal images, gas concentrations, air quality, temperature, and humidity. The results obtained with the proposed IEMS in practical field tests suggest its high suitability for use in a wide range of industries.

5) Topic: IoT-Based Indicator for Industrial Accident Risks.

Author: Teixeira, Igor TT, and Frank Herman Behrens. "" Brazilian Technology Symposium. Springer, Cham. (2020)

Abstract:
The manufacturing industry is one of the most dangerous in terms of work safety. Among different kinds of accidents in industrial environments, the biggest causes involving humans are related to machines and equipment used for manufacturing. Although there are standards and regulations for machines' safe operation, some specific criteria could only be identified by specialists and managers in Environment, Health, and Safety (EHS). The internet of things (IoT) is a fundamental technology for Industry 4.0, bringing many benefits for automation and process control. Despite the increasing automation leading to a decrease in manual work, there is still a considerable presence of employees subject to accident risks. This work proposes the use of physical variables collected on machines in a production line to create a safety risk indicator. Considering that these variables are available in IoT-based monitoring systems, a method of analyzing accident risks based on multi-variable graphs obtained from the normalization of the monitored variables is proposed. This risk display method is believed to assist in safety analyzes by operators and specialists in a Safety Management System (SMS).

6) Topic: Air Pollution Monitoring and Alarming System via Internet of Things

Author:Nakpong, Nuttapun, and Nopphagaw Thongbai

Abstract:
Internet of Things (IoT) is a network of smart sensors that can control and monitor things from anywhere over wireless communication and internet. Therefore, this research aims to propose air pollution monitoring and the alarming system powered by the internet of things technology. The smart box has been developed as a prototype to measure the level of air quality, dust, temperature, and humidity. It comprises of two important units including a microcontroller and related sensors. Data from sensors is collected and sent to the IoT cloud server over a wireless network. The Blynk mobile application is used to monitor and display real-time related data through the digital

dashboard. Moreover, Blynk application is selected as a real-time notification system to the user provided that air pollution is greater than the standard level.