INDUSTRY - SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM

LITERATURE SURVEY

TITLE : Developed Intelligent Fire alarm system
AUTHOR : Hussam Elbehiery,Vanridge University
YEAR OF PUBLICATION: 2012

The primary purpose of fire alarm system is to provide an early warning of fire so that people can be evacuated & immediate action can be taken to stop or eliminate of the fire effect as soon as possible. Alarm can be triggered by using detectors or by manual call point (Remotely). To alert/evacuate the occupants siren are used. With the Intelligent Building of the rapid development of technology applications, commercial fire alarm market demand growth, the key is to use the bus system intelligent distributed computer system fire alarm system, although installation in the system much easier than in the past , but still cannot meet the modern needs, the installation costs of equipment costs about 33% ~ 70. The suggested technique in Fire alarm system used the addressable detectors units besides using the wireless connection between the detector in zones as a slave units and the main control unit as the master unit. The system shall include a control panel, alarm initiating devices, notification appliances, and the accessory equipment necessary for a complete functioning fire alarm system. In the wireless fire alarm, individual units are powered by primary & secondary batteries for the communication.

TITLE : An Intelligent Fire Warning Application Using IoT andan Adaptive Neuro-Fuzzy Inference System

AUTHOR : Barera Sarwar,Imran Sarwar Bajwa,Noreen Jamil, Shabana Ramzan

YEAR OF PUBLICATION : 2017

In the recent past, a few fire warning and alarm systems have been presented based on a combination of a smoke sensor and an alarm device to design a life-safety system. However, such fire alarm systems are sometimes error-prone and can react to non-actual indicators of fire presence classified as false warnings. There is a need for high-quality and intelligent fire alarm systems that use multiple sensor values (such as a signal from a flame detector, humidity, heat, and smoke sensors, etc.) to detect true incidents of fire. An Adaptive neuro-fuzzy Inference System (ANFIS) is used in this paper to calculate the maximum likelihood of the true presence of fire and generate fire alert. The novel idea proposed in this paper is to use ANFIS for the identification of a true fire incident by using change rate of smoke, the change rate of temperature, and humidity in the presence of fire. The model consists of sensors to collect vital data from sensor nodes where Fuzzy logic converts the raw data in a linguistic variable which is trained in ANFIS to get the probability of fire occurrence. The proposed idea also generates alerts with a message sent directly to the user's smartphone. Our system uses small size, cost-effective sensors and ensures that this solution is reproducible. MATLAB-based simulation is used for the experiments and the results show a satisfactory output.

.**TITLE:Intelligent Multi-Sensor Detection System for Monitoring Indoor Building Fires**

AUTHOR: Jaeseung Baek,Taha J. Alhindi,Young-Seon Jeong, Myong K.Jeong,Seongho Seo

YEAR OF PUBLICATION:2021

This paper presents a novel fire detection system to monitor various types of indoor building fires. While conventional studies mainly focus on developing fire sensing systems or detection algorithms, the proposed fire detection system integrates both sensing and detection phases to effectively utilize diverse sensor signals in real-time and detect fire outbreak at an early stage. The proposed fire sensing system gathers sensor data from multiple sensor types that are sensitive to measuring various components emitted from fires. Then, the collected sensor data are utilized by a similarity matching-based fire detection algorithm that captures diverse shape patterns that exist in the sensor signals under various fire scenarios, and detects the outbreak of fires at an early stage, with low false alarms. The real-life sensor data collected by the newly developed sensing system and experimental results conducted by the proposed fire detection algorithm show the effectiveness of the proposed fire detection system.

TITLE :An Automated Smart Embedded System on Fire Detection and Prevention for Ensuring Safety

AUTHOR:F.M. Javed Mehedi Shamrat,Aliza Ahmed Khan, Zakia Sultana, M. Imran, Abdulla Abdulla, Ankit Khater

YEAR OF PUBLICATION:2021

One of the biggest issues for architects, planners, and landowners is house combustion. Singular sensors have been used in the case of a fire for a long time, but they cannot quantify the volume of fire to warn emergency service units. To resolve this problem, this research aims to develop an intelligent smart fire warning system that detects fires utilizing connected sensors and alerts property owners, emergency services. The current model is divided into three modules: Smoke Detection Module (SDM), which is responsible for detecting smoke to prevent unwanted incidents; Notification Send Module (NSM), which is responsible for creating an alert service to alert the closest support center and user; and Emergency Alarm Module (EAM), which is responsible for handling the emergency alarm schedule when a fire arises. The results prove that the device worked well, and it should be remembered that our proposal can be integrated into any kind of setting, such as a house, workplace, ship, or industry.

TITLE :Smart Home System for Fire Detection Monitoring Based on Wireless Sensor Network

AUTHOR:M. Udin Harun Al Rasyid, Depandi Enda, Ferry Astika Saputra

YEAR OF PUBLICATION: 2019

Utilization of wireless sensor network technology can improve the anticipation of the occurrence of fire hazards in the smart home; this is done by replacing the human task in monitoring the situation around the home by using multiple sensors which can directly interact with the environment. The goal of this paper is building the early fire detection systems on smart home-based wireless sensor network monitoring. Sensors are used to detect the level of fire danger include temperature sensors, humidity, carbon monoxide, and smoke. The system use fuzzy logic inference systems to process the data from the four sensors in order to improve the reliability and accuracy of the information provided for the system that will give warning to users. Based on the results obtained, the system has been able to give an alarm warning to users appropriately. The proposed system also implement sleep scheduling method in the system which can improve the delivery efficiency of data packets and can reduce battery resource usage.