

**V.S.B. ENGINEERING COLLEGE, KARUR**

**Department of Information Technology IBM NALAIYA THIRAN**

**LITERATURE SUYVEY**

**TITLE :** Industry-Specific Intelligent Fire Management System

**DOMAIN NAME :** Internet of things

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**ABSTRACT :**

IoT technology uses automation functions to control accidents and disasters. The industry is using smart fire management systems. This smart fire management system uses a GAS Sensor, Flame Sensor, and Temperature Sensor. The gas sensor is used to detect any gas leakage and unwanted gases in closed areas. If gas is detected in the surroundings sensors are automatically activated. A flame sensor is used to capture the shape of the flame RGB colour model to identify the fire. Temperature Sensor, to check the amount of heat that is present in the surroundings. These sensors detect the fire, and when it is identified, then suddenly it forwards the alarm to alert the workers. When the alarm sound is received by the protocol, it releases all the doors in the industry and also alerts those members to get out of work from the industries. The sprinklers are activated and the water spears all the places of fire. This causes the workers to not panic when a flame is caught in the industries. It is very useful for workers and prevents the industries with a short period. When these sensors are not present in the industries, it is very hazardous to all workers and sometimes it creates severe injuries and even death. Emergency alerts are notified to the authorities and the Fire station. Through the smoke and gaseous substances, it can easily be detected by the sensor, due to this, the exhaust fan is turned on..

## INTRODUCTION :

Fire and smoke kill more people every year than many other forces. While controlled fire serves us in so many instances, uncontrolled fire can be of harm, however, the rapid detection of fire and its control can save lives and property damage worth millions. Conventional and addressable are two main types of fire alarm systems, but unfortunately, these fire alarm systems often generate false alarms. The ratio of false alarm is higher in conventional alarm systems compared to addressable, but addressable alarm fire systems are more expensive. The most likely cause of a false warning is different for distinct types of detection systems, such as a smoke sensor often being activated falsely due to an environmental effect. So, there is a need for a cost-effective multi-sensors expert alarm system that is artificially trained and assists FDWS (fire detection and warning system) to make the right decisions and to reduce the number of false alarms. False alarm warnings are so common that London fire brigade alone is called out almost every 10 min to attend a false alarm causing them a loss of about £37 million per year. To achieve the aforementioned goal, in this paper, we introduced a home-based FDMS that uses a microcontroller Arduino UNO R3 (Arduino, Somerville, TX, USA) based on the atmega328p. It is easily available and programmed using the Arduino Software (IDE) with a set of cost-effective sensors. The proposed solution effectively uses a smoke sensor with flame sensors with a particular increase in room temperature; to further investigate the true presence of fire and to avoid false alarm, the FDWS is trained with a neuro-fuzzy designer. The purpose of this intelligent fire alarm system is to sense true occurrences of fire, alert the proper authorities, and notify the occupants via GSM to take necessary action immediately.

## LITERATURE SURVEY :

The author describes [1] **Analysis of Fire-Accident Factors Using Big-Data Analysis Method for Construction Areas**. The Ministry of Employment and Labor releases its annual report on the present conditions of industrial disasters by aggregating and summarizing negligent accidents that occur at construction sites. Industry-specific accident and fatality rates, and disaster classification and statistics are aggregated in this report, but its effectiveness is low. This is due to the fact that it does not sufficiently present the direct causes of accidents or related information on their causal relation. However, this study utilizes a big-data method that has recently gained significant attention throughout all

industrial and academic areas to collect Internet articles on fire-accidents that have occurred at construction sites over the last decade. In addition, principal component analysis was conducted to deduce season-specific factors according to time, location, inducer, and accident pattern. Based on this analysis, as for common factors, direct spark and oil mist were deduced. As work-related factors, negligent supervision and violations of the safety regulations were shown to cause fire-accidents, illustrating the man-made nature of such accidents. It was also found that secondary accidents such as collapses, burials, explosions, and suffocation have occurred when fires have broken out. The big-data analysis method utilized in this study is considered to be very effective and can be successfully utilized in the future for deducing high volumes of text data.

The author describes [2] **Some Cases of Smart Use of the IoT**. IoT refers to an emerging paradigm that consists of a continuum of unique things that communicate with each other to form dynamic global networks. IoT, such as objects, appliances, and sensors, is the network of unique identified connected devices with computing services. The IoT term is relatively new and has been the concept of combining computers and networks to monitor and control devices for decades. For example, by the end of the 1970s electric grid remote monitoring meters via telephone lines had already been used in commercial use. Advanced wireless technology has also become extensive for the machine-to-machine companies and industrial solutions for monitoring and operation of equipment where closed-end networks or proprietary industry-specific standards have been used instead of Internet Protocol (IP) and internet standards. Since the beginning of the use of IP to connect devices in the early 2000s, a robust research and development field in the networking of intelligent objects leads to the foundation of IoT today. The term IoT is now popular for scenarios in which internet connectivity and computing capabilities extend to a variety of objects. The idea behind the IoT can also be seen in. A refers to technology globalization (anytime, anywhere, any device, any device, any network, etc.) and C reflects IoT's collection, convergence, connectivity, computing, etc. properties. But the IoT of today has extended beyond the A and C range. Several organization predictions provide a wide range of estimates of the total number of IP-enabled IoT devices operating on the internet by next year, from a low of 19 billion to a highly optimistic forecast of up to 40 billion, and rather this growth continues exponentially over the coming decade. This growth opens an era of new services which can bring significant changes for individual citizens, society, the economy, and the environment as well as numerous business opportunities. The rest of this chapter provides basic IoT building blocks with the definitions proposed by various organizations and major IoT applications.

The author describes [3] **A Low-Cost Internet of Things Integration Platform for a Centralized Supervising System of Building Technology Systems in Hospitals**. In a hospital often up to 100 different medical and building technology systems are required for meeting demands with regards to security, comfort, reliability, and efficiency. Many systems have their own company-or industry-specific standards and protocols. So, a growing need for remote monitoring of such technology systems to provide users fault detections, anomaly warnings and classification of load for predictive maintenance does exist. To this aim, a low-cost supervising system based on single board computers Raspberry pi 3 has been implemented and reported in the paper. These connect the main components of the various technology systems to a server PC, thus implementing a distributed supervising system. The system has the main aim of an early collection of faults or alarm signals from the control panel of the various technology systems for both medical and building technology. The distributed Raspberry pi 3 computers communicate over the internet through a customized app installed on Android mobile.

The author describes [4] **Internet of Things for Industrial Automation -- Challenges and Technical Solutions**. 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 quality attribute 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.

The author describes [5] **Industrial Internet of Things (IIoT): Principles, Processes and Protocols**. in the production process, smart objects identification mechanisms by embeddedness technologies, intelligent automation abilities and around the clock monitoring abilities. Importantly, it reduces workforce

intervention in risky industrial environments. Some of the best practicing places and activities for the IIoT employment are factory shop floors, materials handling, assembly lines, production processes, finalising goods, and other inbound and outbound logistical tasks. The basis for the IIoT phenomenon growth is the Internet of Things (IoT) technologies, which have currently been ensuring efficient work execution in many spheres, industrial as well as commercial and social. This chapter provides a discussion on IIoT concepts and definitions, on business drivers behind the growth of this technology, and the evolution process of this phenomenon. This contribution also discusses the fundamental underlying principles, related technologies, deployment approaches in different areas and associated frameworks. The chapter also explore Japanese Industry-specific case studies, where the industries have already been employing the IIoT-related practices. These include Zenitaka Corporation, Tsuchiya-Gousei, Toyota and Hitachi. This book chapter provides a broader overview in crystal clear and sets the background for the rest of the chapters in this book.

## References :

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