Ideation Phase
Literature Survey

Assignment Date	31 October 2022
Team ID	PNT2022TMID22775
Project Name	Project - Industry-specific intelligent fire management system
Maximum Marks	2 Marks

Suresh Sankaranarayanan [1] has offered a solution to the fire management in the forest. The author has observed the fire accidents happening in the forest mostly due to global warming .The author has proposed a work which works efficiently and have also handled the latency of delay due to the remote area communication of IoT. The author has addressed previously employed technology that is currently being used and its short comings. The author has provided a solution that is Fog based Forest Fire management. Fog enabled frame work for Forest Fire management proposed. Also there has been work where Fog nodes collect data from sensor node and perform real time processing. Then the analyzed data sent to Cloud for storage. Also work has been focused on routing protocol implemented for maximizing the energy efficiency where RPL routing protocol used.

Noorinder , Jaspreet Singh [2] has given a solution for fire management system using Raspberry pi based fire management system employing sensor based automatic water sprinkler. The author has proposed the idea as follows a gas leakage sensor has been employed to detect various types of gases like ethane, methane, LPG etc. The proposed fire controlling system performs various functions on detection of fire or gas, which includes switching off the main power supply, switching on the exhaust fan and finally dousing the fire. The water sprinklers have been employed which will be activated on the detection of fire by the employed fire sensors in the system. If temperature rises above the set threshold temperature, then the proposed system will also drop the mail to fire brigade

Rafat Shams [3] have offered a domestic ceiling mounted fire fighting system which uses computer vision to detect fire in an indoor environment and subdue it in root level. The author has said the steps in which the area is being observed and how the system would react in case of fire break out . The first level of detection is the visual detection of fire .The has used a A4tech PK-760MB camera for the surveillance of the area and have used image processing to detect the fire.The next sensor deployed is the heat detection sensor LM35

which constantly monitors the heat and The last sensor is the smoke detection sensor. Using these sensors when ever a fire break out happens the system is notified and the sprinklers are turned on.

Karwan Muheden [4] has proposed a work of implementation of the mobile fire alarm system using wireless sensor networks (WSN) techniques by composing new design methods and improved a low-cost industrial and home safety systems.The author has used the following sensors in the implementation of the system Gas Sensor MQ-6 which is suitable for detecting LPG,ISO -Butane extra. Humidity and temperature detector DHT11 this sensor contains the calibrated digital signal output .The output from these sensors are passed into the internet which is forwarded to the used inturn. The proposed network structure consists of several sensor nodes organized in an HDG204 Wireless LAN 802.11b/g

Francis F. Balahadia [5] proposed a utilized data mining and geo-mapping methods to develop a fire risk management system for the Bureau of Fire Protection (BFP). This system was integrated into a web portal where the BFP personnel can log and view fire incident reports. Data is collected in the beginning source of data was the fire incident reports obtained from the BFP Headquarters in Manila. Most of the data are categorical in nature, which were then converted into numerical data to enable the application of data mining approach using One-Hot Coding. Then the mapping is done .The fire data set consisted of temporal attributes such as the time of the day, day of the week, month, and year and spatial attributes such as the specific location or district in Manila where the fire incident took place. A mapping of the fire occurrences was produced for easy visualization, where each plot on the map provides details about the fire incident when clicked. Using the mapped data the predication of fire is done.

Md Saiam [6] introduced a microcontroller-based model for the industry's fire safety, which can detect gas leakage or hazardous fire as well as take action to extinguish the fire With the assistance of sensors, the system continuously senses the leakage of gas & fire occurrence. Upon detecting suspicious activity, the system disconnects the building's primary power source and shuts the main gas valve. Two sensors make up the input unit. One is a gas sensor MQ-2, and the other is a flame sensor that can detect environmental data and provide information for further guidance to the central processing unit. The author have used the Arduino UNO microcontroller board as the central processing unit. In this microcontroller, the instructions are programmed. The output unit consists of an alarm, main gas valve, highpressure emergency exhaust fans, fire extinguisher valve, main electrical supply, GSM & GPS module, etc.

B Prabha [7] has proposed a work on the IoT based efficient fire monitoring system. It consists of all world wide web-enabled devices responsible for gathering, transmitting and functioning on information extracted from the surrounding atmosphere by utilizing sensors, detectors and computing hardware. To monitor the integrated devices with several sensors and a cameras, the Raspberry Pi 3 has been used. The sensors continuously sense and actually begins to broadcast values over a Wi-Fi association to the online digital server. The input signals from different sensors are captured and integrated fuzzy logic is used to identify the fire breakout location. Using all the sensor the Fire system management system is implemented efficiently.

Asma Mahgoub [8] has given a implementation of IoT-Based Fire Alarm System. The proposed system is an ad-hoc network that consists of several nodes distributed over the house. Each of these nodes consists of a microcontroller (ESP8266 nodeMCU) connected to smoke, temperature, humidity, flame, Methane and Carbon Monoxide (CO) sensors that continuously sense the surrounding environment to detect the presence of fire. hese nodes communicate with a centralized node implemented with a Raspberry Pi microcontroller integrated with a 4G module. Once fire is detected by a node, it sends a signal to a centralized node that is triggered to send an SMS to the fire department and the user, call the user and alert the house by producing a local alarm. The user can also get information about the status of his home via sending an SMS to the system. The sensing nodes create a mesh network and they are linked to the central node via a bridge node.

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