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Smart Way For Automatic Water Sprinkling In Fire Catching Place In Cotton Mills Using IOT

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Abstract: ***Fire in itself is a word that describes loss and hazardous situation. Work house fire is a situation in a populated place that can leave a many shop into a bit of ashes. That is why we needs to be detected at the earliest so that high damage and loss could be prevented. The objective is to detect the fire as fast as possible and its exact localization and early notification to the fire units is vital. The objective of designing this telemetry project is to detect the fire and monitor it online. Number of two sensors are employed that needs to be placed at certain distances so that a look can be kept on the entire area. These fire sensors detect the area and if at times there is a fire, it will send the signal or the information to the microcontroller. The microcontroller also updates the information on the webpage and also sends a notification on the webpage through the Wi-Fi. This information is sent to the internet by the network of IOT.***

I. INTRODUCTION

As the Society of Fire Protection Engineers points out, IoT facility safety management includes everything from improved alarms to temperature monitors and motion sensors. With such a robust variety of technology to pull from, IoT-based detection and suppression systems can act to prevent loss before it spreads too far. Even automated shutdown for flammable systems can be integrated within a linked network to prepare facilities for safe evacuation. Likewise, connected, automated fans can cool machines off when they overheat. Ultimately, these automated systems speed up response. An automated safety network, complete with machine-to-machine (M2M) communications, ensures that in those crucial first moments of a fire, the spread of damage is controlled and suppressed. IoT also can act as a perimeter control outside the plant to keep localized fires from spreading to other nearby facilities. An IoT perimeter can allow facility safety managers to monitor environmental safety hazards. These parameter reports can convey information on everything from lighting storms to combustion events and wildfires. Automated systems even can alert both internal plant safety teams and fire departments when an incident begins, providing information about the fire's origin point, the speed and strength with which fire and smoke are spreading, and any weather information needed to understand how the fire will react when it comes in contact with the environment outside the plant.

II. LITREATURE SURVEY

Hazmat clean-ups cost tens of thousands, if not millions, of dollars, as Hazardous Materials Management writes. The costs of these clean-ups and the toll on human health increases exponentially when fire is added to the mix. Thankfully, hazardous materials can be tagged along a facility's map to create safer navigation and rescue points that can be distinguished easily, even during hectic events. Tracking both hazardous production and waste chemicals provides greater security for both plant occupants and fire response teams, and can aid in prevention. Combustible, corrosive, and toxic materials can be tagged with RFID, motion sensors, or an identity verification device at delivery and tracked with a cellular network whenever they are transported across the factory. This allows the safety team to check details, such as chain of custody and container safety inspection results, to aid in fire prevention. Tagged containers can send alerts to the network if they are tipped, opened, or exposed to excessive heat.

III. EXISTING SYSTEM

The existing system is just getting the data from sensor if the fire is detected when a water is just sprinkled. It is suitable for small space. In already existing system to identify the fire affecting place is critical within the building because there is lot of spaces. Efficiency is more but it takes lot of time to identify the place. This are already existing system

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PROPOSED SYSTEM

As with firefighters, employees can wear RFID-equipped ID tags to monitor their location within a facility. These monitors can be linked to mapping software that works with blueprints of a facility to give safety managers a real-time look at the occupants of a building at any given point. RFID and other tracking technology makes evacuation easier and can be turned over to fire response teams upon arrival to facilitate fast, effective rescue.

Auditory and tactile alert capabilities can be integrated with worker tracking systems so that each worker is notified to evacuate in a timely fashion despite factory noise that might interfere with regular fire alert systems. In the near future, the devices will be able to provide voice guided navigation of an escape route.

1. The given proposed system is done by using raspberry pi it is called small board computer it is highly useful to run a multiple program.
2. The normally the sensor like flame, temperature and smoke sensor is interfaced with Arduino and also the camera with servo motor once the fire is getting detected means its automatically rotating the camera to the fire catching place and it send the data to master. The raspberry pi is act as a master and also the server.
3. Once the temperature sensor, smoke sensor, and flame sensor is getting high means it's automatically trigger the alarm and also the water sprinkler.
4. The raspberry pi is used to tell the place where the fire is arises.
5. And it gives the message to fire station using WIFI connect

HARDWARE REQUIREMENTS

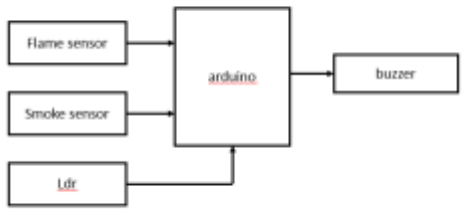
Raspberry pi
Arduino
Flame sensor
Smoke sensor
Light ambient sensor
USB camera

SOFTWARE REQUIREMENTS

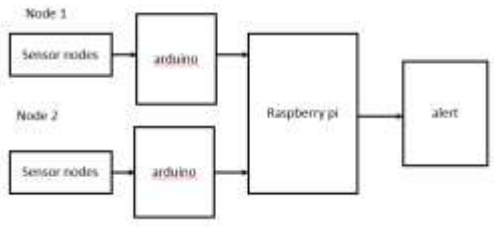
Arduino c for embedded system
Python for IOT

SYSTEM ARCHITECHTURE

• Arduino side



• Main block diagram:



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MODULE DESCRIPTION

FLAME SENSOR: Low Power 24Vdc Operation, 4-20mA or Relay Interface. Detects Open Flames & Glowing Embers. Sensitive to Flickering IR or UV/IR Emitted by Flame self-detection is required to be. Heat & smoke detection are the most economical method. Unaffected by convection currents, draughts or wind. IR sensors are tolerant of fumes, vapour, steam, dust and mist. Detection at over 25m away. Fast reaction.

SMOKE SENSOR: Smoke detectors are housed in plastic enclosures, typically shaped like a disk about 150 millimetres (6 in) in diameter and 25 millimetres (1 in) thick, but shape and size vary. Smoke can be detected either optically (photoelectric) or by physical process (ionization), detectors may use either, or both, methods. Sensitive alarms can be used to detect, and thus deter, smoking in areas where it is banned. Smoke detectors in large commercial, industrial, and residential buildings are usually powered by a central fire alarm system, which is powered by the building power with a battery backup. Domestic smoke detectors range from individual battery-powered units, to several interlinked mains-powered units with battery backup; with these interlinked units, if any unit detects smoke, all trigger even if household power has gone out.

LDR SENSOR: A photo resistor (or light-dependent resistor, LDR, or photo conductive cell) is a light-controlled variable resistor. The resistance of a photo resistor decreases with increasing incident light intensity; in other words, it exhibits photoconductivity. A photo resistor can be applied in light-sensitive detector circuits, and light-activated and dark-activated switching circuits. A photo resistor is made of a high resistance semiconductor. In the dark, a photo resistor can have a resistance as high as several mega ohms (MΩ), while in the light, a photo resistor can have a resistance as low as a few hundred ohms. If incident light on a photo resistor exceeds a certain frequency, photons absorbed by the semiconductor give bound electrons enough energy to jump into the conduction band. The resulting free electrons (and their hole partners) conduct electricity, thereby lowering resistance. The resistance range and sensitivity of a photo resistor can substantially differ among dissimilar devices. Moreover, unique photo resistors may react substantially differently to photons within certain wavelength bands.

ARDUINO: Arduino is an open source computer hardware and software company, project, and user community that designs and manufactures single board microcontroller and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical world. The project's products are distributed as open-source hardware and software, which are licensed under the GNU Lesser General Public License (LGPL) or the GNU General Public License (GPL),[1] permitting the manufacture of Arduino boards and software distribution by anyone.

BUZZER: A buzzer or beeper is an audio signalling device [1] which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

USB CAMERA: A webcam is a video camera that feeds or streams its image in real time to or through a computer to a computer network. When "captured" by the computer, the video stream may be saved, viewed or sent on to other networks via systems such as the internet, and emailed as an attachment. When sent to a remote location, the video stream may be saved, viewed or on sent there. Unlike an IP camera (which connects using Ethernet or Wi-Fi), a webcam is generally connected by a USB cable, or similar cable, or built into computer hardware, such as laptops.

RASPBERRY PI: The Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and in developing countries. The original model became far more popular than anticipated, [7] selling outside of its target market for uses such as robotics. Peripherals (including keyboards, mice and cases) are not included with the Raspberry Pi. Some accessories however have been included in several official and unofficial bundles.

IV. CONCLUSION

ADVANTAGES: When fire is detected, the water sprinkler is automatically on.

When more fire is detected means, it will send message to the fire station using IOT.

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