

SNAP THE FIRE

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Abstract:

Innovation means coming up with something really new: a big idea. When you fully accept the status quo at work or in your personal life nothing will change. These Days innovation has been improved immensely. Despite the fact, there is such a significance for innovation in our standard life there are even individuals whose ways of life is far to this notable term innovation. Along these lines, it is our duty to structure very few dependable systems which can be effectively utilized by hospitals or industries. The fundamental motivation behind this paper is to keep some places safe by stopping the fire as soon as possible. We can try to stop the fire before it spreads. The main aim of this model is to focus on the system which is capable to detect the Fire in Real Time. The fire is detected and it send's image , location and intensity of the fire to an app which is installed in user's phones . In this model we have used raspberry pie ,camera, cooling fan , jumper wires and a buzzer. Fire detecting sensor with a camera (night vision). When there is a warning of intensity of fire at a place it finds and click the picture of fire and sends to user through an app including the intensity of fire. Hence we can easily find the requirement according to the intensity of fire and resist it.

Keywords: Arduino Uno, GSM Module, DC motors, Rain sensor, Crops.

1. INTRODUCTION

Fire is a serious threat to life and property worldwide. It is usually caused by combustion of materials which releases heat and light in large amounts. Fire detection systems have been designed to detect fire via sensing different fire related change. Two types of fire detectors have been used so far, namely: traditional/sensor-based and vision-based systems. Former responds against smoke, heat, temperature and pressure, whereas later rely on the light detection. Among the two systems used, traditional detectors have several disadvantages associated with them. These include high cost, slow response time and limited detection range. Additionally, these systems are not feasible as outdoor detectors due to excessive sunlight and wind pressure. The main motive of using this system is to prevent from the loss

of life or any other damages to the company or the organization. The Raspberry Pi controller processes the camera input and detects fire using heat signatures. By using image processing method, the report is automatically generated and sends to the person immediately after the fire is being detected using Wi-Fi. This internally triggers the emergency mode of system.

2. RELATED WORK

Nowadays fire break out accident leads to a major loss. To reduce the fire breakout and to maintain the security this solution is prepared.

The project seeks to follow the following steps:

- To design a system to detect the fire.
- By using image processing method, the report is automatically generated and sends to the person immediately after the fire is being detected.

Raspberry pie:

The Raspberry Pi is a low cost, credit-card sized computer that plugs into a computer monitor or TV, and uses a standard keyboard and mouse. It is a capable little device that enables people of all ages to explore computing, and to learn how to program in languages like Scratch and Python. The Raspberry Pi 4B is the powerful development of the extremely successful credit card-sized computer system. This 3rd-generation Raspberry comes with a high-performance ARM Cortex A72 4x 1.5 GHz quad core processor. This upgrade gives Raspberry Pi 4B a lot more performance in certain applications.

The fire detection system is made using raspberry pi. Fire patterns with heat signature are used to detect fire which are color patterns for representing the fire. In this system the image or video is continuously captured on real time. The captured video or photo is sent to Raspberry Pi. Image processing is done on images. If the processor detects the fire then it goes to emergency mode or generates an alert on the server. Then the android application start and receives an alert and sends notification to all the users which are registered to android application. This process reduces the loss caused by the most deadly fire accidents.

Definition

The Image Processing Based Fire Detection System is the early warning benefit. This system can be installed just about anywhere in a commercial building, malls and at many more public places for fire detection. This system uses camera for detecting fires. SO we do not need any other sensors to detect fire. System processes the camera input and then processor processes it to detect fires. The heat signatures and fire illumination patterns are detected in images to determine if it is a fire and take action accordingly. On detecting fire system goes

into emergency mode and sounds an alarm. Also displays the status on the LCD display informing about the system.

Need of a Fire Detector:

Developed to detect fires promptly as they grow, fire detection systems are an extremely valuable fire protection tool for any establishment. Early detection is crucial in the protection of first responders and other emergency response personnel as they combat fires. With fire detection systems, appropriately loss can also be significantly reduced. Downtime for business operations can be decreased. Fire control efforts can get started while the fire is not massive yet. Most fire alarm systems equipped with fire detection features can provide necessary information to first responders and emergency response personnel, such as where the fire is located – which can hasten the control of fire.

Project Justification:

As we notice there are many fire accidents taking place, though there are many fire alarms they are only capable of warning a fire accidents. Because of this before detecting the place of fire accident and intensity of fire the fire starts spreading and causes loss of life and property. Hence to overcome this we have come up with an idea of a fire detecting sensor with a camera (night vision). When there is a warning of intensity of fire at a place it finds and click the picture of fire and sends to user through an app including the intensity of fire. Hence we can easily find the requirement according to the intensity of fire and resist it.

Purpose:

Early detection can enable you to avoid serious damage or destruction, so it is of extreme importance. In addition to providing security in the kitchen, bathroom, bedrooms, and family rooms, a fire alarm can quickly alert firefighters so they can help minimize the damage.

Scope:

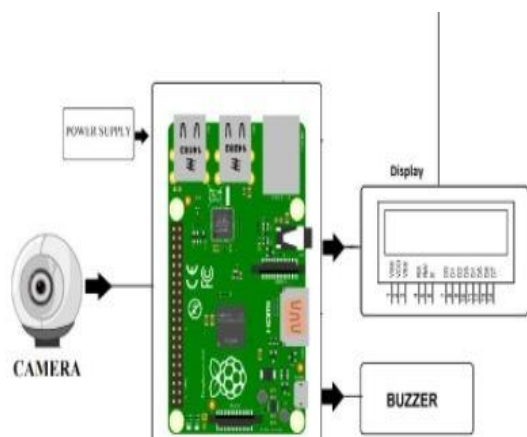
- It can be used for small and medium scale for detecting fires.
- It can be used in Offices, Factories, and public buildings, they are a part of our everyday routine but are often overlooked until there is an emergency at which point, they might just save our lives.
- It can be used in large industrial process gas heaters and are connected to the flame control system.
- It can be used with some water sprinklers in large public places to minimize the losses

3. IMPLEMENTATION

Working

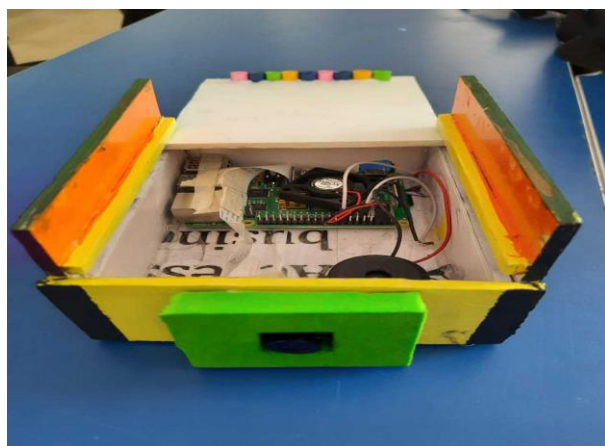
The proposed system uses Image processing; strength of using image processing in fire detection is the ability to serve large and open spaces. Proposed system consists of three stages: In the first stage, camera will capture the image and it will send that image to controller for further evaluation. And then the process of further detection has been started. In the second stage, the images are converted into frames and it will compare those images into already booted images. In the third stage, MMS will be sent

Schematic Diagram



4. EXPERIMENT RESULT

Prototype





Working



5. CONCLUSION

False fire alarms can cost lives. Not only do they use firefighter's time and delay their attendance to real fires or medical emergencies. Fatalities have been caused by people believing that it was "just another false alarm" and failing to evacuate in the event of actual danger. Our project detects when there is fire and it sends the pictures of the fire of that particular place to the owner of that place, so that owner can confirm whether the fire alarm is real or fake.

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