



“Mini project internal review”

Submitted as the part of mini project

V.Shafiya(S190233)

K.Revathi(S190274)

M.Himalalitha(S190231)

B.Anitha(S190294)

Under the supervision of:
Laxmibala

HOD of computer science and engineering
Rajiv Gandhi University of Knowledge Technologies
Srikakulam – 532402

“FireDetect Vision:Real-Time Fire Detection with GPS”

CONTANTS

- Abtsract
- Technologies Used
- Problem statement
- Analysis of Existing model
- Implementation
- Results(Till now)
- Conclusion
- Reference

A B S T R A C T

The process of oxidation of any material in the exothermic process of combustion, releasing heat and light as by-products, is called Fire. Most of the available fire detection system uses temperature or smoke sensors which take time to respond. Moreover, these systems are costly and not effective if a fire is far away from the detectors. This led to thinking of alternatives such as computer vision, image processing techniques. One of the costs effective methods would be to use surveillance cameras to detect the fires in order to inform the relevant parties. The light parameter and the color of the flame help in detecting fire.

The proposed work suggests a method to use surveillance cameras in order to monitor occurrences of fire anywhere within the camera range. In order to enhance the performance parameters of fire flame detection based on a live video stream, In this, a method has been used that finds the boundary of the moving region in the color segmented image and calculate the number of fire pixels in this area. Then a fire detection system is developed based on this method to detect fire efficiently, generate immediate alarm and send alert notification along with GPS location to the fire stations, to save life and property from fire hazard .

TECHNOLOGIES USED

Python 3.6 or above

Computer Vision

OpenCV (modules)

```
>> pip install opencv-python  
>>pip install playsound
```

Play Sound

import geocoder

PROBLEM STATEMENT

The fire accidents are very major problem in this challenging world, the major fire accident spots are chemical industries, forest's.

Recent fire accident spots :

Major fire breaks out in Ahmedabad's Danilimda area, no casualties reported (2024)

Massive fire breaks out at Carnival Farm House in Alipur area, fire tenders rushed Delhi (2024)

- There Are many sensor based fire detection systems are existed for protected our lives from the fire accidents, but it was not effective.
- Our proposed system uses surveillance cameras to detect the fire and generate alarm and sending alert notifications contains alert message along with the GPS location to the fire station.

ANALYSIS OF EXISTING MODEL

- Existing systems include Fire and Hazard Detection systems which employ heat sensors or temperature sensors or smoke sensors or a combination of these.
- Smoke Sensor will detect Only after detection of smoke, the fire is detected. And sometimes sensor fails to detect the fire if the air flows in opposite direction.
- And It can produce the false alarm when someone smoke near to the smoke sensor
- These sensors have limited range and becomes tough for large industries and they are very expensive.
- Temperature sensors do not sense the particles of combustion and are designed to alarm only when heat on their sensor reached the predetermined level.
- Sensors releases more radiation which affects the living organisms.

IMPLEMENTATION

- Instead of sensors we are using cameras to detect the fire
- Our proposed system provides fire detection using a simple algorithm.
- Firstly, the image frame is acquired from the live video feed. The RGB color model is then applied to the frame.
- The resultant RGB frame is then converted to a HSV frame. This frame is then passed through Gaussian Blur, median blurring (to remove noise).
- A suitable response is displayed on the window monitor, and an alarm buzzer is sounded and the notification will be sent.
- Alert notifications contains alert message along with the GPS location to the fire station

CONCLUSION

This project proposed a fire detection algorithm which is free from sensors as the ordinary fire detection systems contain. The objective of this project was to create a system which would be able to detect fire as early as possible from a live video feed. System is expected to detect fire while it is still small and has not grown to large. Also, the hardware is minimal. It also saves cost by getting rid of expensive temperature and heat sensors etc. Based on the results produced, the system has proven to be effective at detecting fire.



Thank you!
