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FLYING ROBOT AS A FIRE EXTINGUISHER

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ABSTRACT: **The project aims at designing a flying platform which fly towards the fire and uses CO2 gas to extinguish it completely and calm down the situation. It uses four flame sensors (thermistors) which are used for the detection of fire. The plane moves in the direction where temperature is more than 1000*C.It also has a video camera mounted on it which helps in viewing the live images or videos on a laptop or PC. With the help of this camera, pictures can be taken inside the building helping the fire brigade to know the situation inside, the characteristics of the fire, if there is somebody trapped, etc. Ultrasonic sensors are also used for obstacle detection .If the temperature increases beyondthe predetermined threshold value, a buzzer sounds to intimate the occurrence of fire accident. A warning message will be sent to the respective personnel in the industry and to nearby fire station with the GSM module provided to it. The biggest concern was that we may have to keep the machine ON everytime so that it may continue to do its work even if no one is with it to activate it. So smoke detector will be used which will detect the fire smoke and activate the flying platform with the help of interconnected sensors.**

INDEX- Ultrasonic sensor, GSM, Thermistors.

I. INTRODUCTION

What is a Robot?? :- A robot is a type of mechanical machine, which works automatically and perform its tasks on its own. Building of a robot needs an expertise and complex programming.

Why do we need a fire fighting robot?? The world of fire extinguishers is full of possibilitiesand is constantly under study. Numerousdisasters have taken place over the years causing the destruction of forests and many deaths. If we use fire extinguishers in industries, companies, homes, etc, we will be able to tackle the difficult situation more efficiently. And it may ease some pressure off the fire brigade and work as their companion. Our flying fire extinguishing robot is a type of robot which performs several functions from extinguishing a fire to informing the fire brigade.

Many fire extinguishing robots have already been created but this is a special type of robot which doesn't need to follow any specific path to extinguish the fire because it will be equipped with the flying ability. To add to its features, we will provide it with a video camera with high resolution so that it may send the pictures or some video recordings of the current situation of the fire place.

The history of robots has its roots as far back as ancient myths and legends. Digitally controlled industrial robots and robots making use of artificial intelligence have been built since the 1960s. But flying robot which can work as a fire extinguisher is not in a practical use till date.

II. BLOCK DIAGRAM

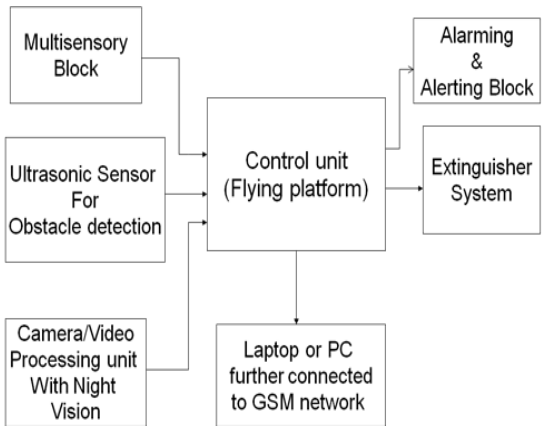

Fig 1 . Block Diagram Of Flying Platform

III. ORKING AND ARCHITECTURE

A. Multisensory unit-

Multisensory unit is nothing but it is the collection of sensors in order to detect the fire such as flame detecting sensor, smog detecting sensor, temperature sensor. These sensors acquire input from field and send out to the control unit.

B. Ultrasonic sensor for obstacle detection-

Ultrasonic sensors are commonly used for obstacle detection purposes. A sonic pulse is first emitted from the sensor. When the pulse bounces off from an obstacle, an echo is returned. The sensor is able to emit the pulse because of a transducer that converts between sonic, electrical and mechanical energies. There are mainly two types of transducers used for serving this purpose. The first is called a piezo, and the second is an electrostatic transducer. Distance is calculated by measuring the time from which the pulse is sent to the time that the echo is returned.

C. Video processing with night vision-

Video camera is used to view the recording of the situation in which the fire-stricken place was. It will be connected to a laptop or a PC and will send the live video of the situation to the laptop which can help in finding out the causes of the fire. It is enabled with night vision capabilities. A night vision camera is a device that emits infrared light and is capable of detecting it in a camera. Infrared LEDs may be used for this purpose.

D. Control unit-

It is the main part of the entire system. This unit is used to get the input signal from various sensors and produce a proper output to the other appropriate units. Multisensory block, ultrasonic sensor and video processing unit serve as input to the control unit & video processing output is given to the laptop or pc.Control unit is connected to the extinguishing part which may contain CO2 as extinguisher.An Alarming unit is connected to it which produces sound when the fire is detected.

E. PC enabled with GSM-

GSM stands for global system for mobile communication. GSM module is used for sending any kind of warning message to the respective personnel in the industry or to the nearby fire station. It uses a combination of both TDMA and FDMA. When a GSM modem is connected to a computer, this allows the computer to use the GSM modem to communicate over the mobile network.

F. Alarming and alerting block-

This part is employed to indicate the fire detection in nearby and far distance.It receives the indication signal from control block and an Alarm buzzer is used to indicate that a fire is there.GSM modem is used to bring up to date to the related ones to the area of accidental zone.

G. Extinguisher System-

We will use CO2 gas for extinguishing the fire, but many other chemicals orcompounds can be used to serve the same purpose effectively and efficiently. For example, ammonium phosphate, dry chemical-BC, dry chemical-D, aerosol, etc.

IV. APPLICATIONS

1.) This flying machine works as a fire extinguisher.
2.) Live images feedback through wireless video camera.
3.) Obstacle detection capability.
4.) Night vision capability.
5.) GPS used to inform fire brigade.

V. CONCLUSION

World haven't seen such a machine which will serve so many purposes such as fire extinguishing, night vision, video recording, etc. If this machine comes in practical use, world will see a great transformation in terms of technology. Although some important factors need to be taken care of. The machine must be kept away from fire and prevented from getting damaged. Although ultrasonic sensors are there to serve this purpose but additional measures will boost the working capability of this machine and thus increase the efficiency of the machine.

VI. REFERENCES

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