AUTOMATIC FIRE FIGHTER ROBOT

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ABSTRACT:

In this paper we are going to develop a new method to fight with the fire. Basically we are suggesting a method which require very less human power and very easy to handle, because of whole system is automated and controlled by a single human with additionally with the wireless technology. This is robot is not only used as a fire extinguisher but also we use as an industrial robot or domestic appliances   for protecting from fire and to stop fire.

KEYWORDS: Solar panel, Micro Controller, DTMF, Motor Driver, DC Motor.

I.INTRODUCTION:

The use of robots is more common today than ever before and it is no longer exclusively used by the heavy production industries. The need Fire extinguisher Robot that can detect and extinguish a fire on its own is long past due. With the invention of such a device, people and property can be saved at a much higher rate with relatively minimal damage caused by the fire. Our task as engineers was to design and build a prototype system that could autonomously detect and extinguish a fire. Also aims at minimizing air pollution. In this Project we design a wireless controlled Robot. It is the Robot that can move through a model structure, find a burning and then extinguish it with help of a Water Jet. Robots are intelligent machines that can be controlled according to need. If a multimedia interface is provided, it further aids in navigation of the robot. Making the robot wireless increases the effective area of operation, thereby making it possible to control the robot from a remote location. Keeping all the above factors in mind the, a robot capable of being remotely controlled through the Internet and possessing a multimedia interface, was conceived and developed. I have used very basic concept here, easy to understand from the prospective of beginners or for the masters of this field. The need for a device that can detect and extinguish a fire on its own is long past due. Many house fires originate when someone is either sleeping or not home. With the invention of such a device, people and property can be saved at a much higher rate with relatively minimal damage caused by the fire.

II.COMPONENT SELECTION:

1.SOLAR PANEL:

For this system we use panels made from Monocrystline solar material i.e. Monocrystline solar cell. Because of it has highest efficiency compared to other solar cells like Poly-silicon and thin film, the efficiency is approx.15-18%. Also it is highly standard and it is easily available in market as per requirement.

2.DUAL TONE MULTI FREQUENCY (DTMF):

Dual Tone Multi-frequency or DTMF is a method for instructing a cell phone switching system of the cell phone number to be dialed, or to issue commands to switching systems or related cell phone equipment. The DTMF dialing systems traces it's roots to a technique AT & T developed in the 1950s MF (Multi-Frequency) which was deployed within the AT & T cell phone network to direct calls between switching facilities using in-band signaling. In the early 1960s, a derivative technique was offered by network customers to place calls. The consumer product war marked by AT&T under the registered trade name Touch-Tone. Other vendors of compatible cell phone equipment called this same systems "Tone" dialing or "DTMF".

		HIGH – GROUP FREQUENCIES			
		1209HZ	1336HZ	1477HZ	1633HZ
LOW – GROUP FREQUE NCIES	697HZ	1	ABC 2	DEF 3	A
	770HZ	GHI 4	JKL 5	MNO 6	B
	852HZ	PRS 7	TUV 8	WXY 9	C
	941HZ	*	OPER 0	#	D

The frequencies used were chosen to prevent any harmonies from being incorrectly detected by the receiver as some other DTMF frequency. The transmitter of the DTMF signal simultaneously sends one frequency from the high-group & one frequency from the low- group. This pair of signals represents the digits or symbols shown at the intersection of row & column in the table. For example, sending 1209 Hz & 770Hz indicates that the "4" digit is being send.

3.CONTROLLER:

In this paper we are using AT89c52 micro controller. This controller 256 bytes of on-chip RAM.8K Bytes of In-System Reprogrammable Flash Memory. Three-Level Program Memory Lock. Programmable Serial Channel.. By combining a versatile 8-bit CPU with in-system programmable Flash on a monolithic chip, the Atmel AT89S52 is a powerful microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications. The AT89S52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointers, three 16-bit timer/counters, a six-vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator, and clock circuitry. In addition, the AT89S52 is designed with static logic for operation down to zero frequency and supports two software selectable power saving modes. The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning

4.MOTOR DRIVER:

In this project motor driver integrated circuit (IC) L293D is used. Motor drivers act as current amplifiers since they take a low-current control signal and provide a higher-current signal. This higher current signal is used to drive the motors. In its common mode of operation, two DC motors can be driven simultaneously, both in forward and reverse direction. The motor operations of two motors can be controlled by input logic at pins 2 & 7 and 10 & 15. Input logic 00 or 11 will stop the corresponding motor. Logic 01 and 10 will rotate it in clockwise and anticlockwise directions, respectively.

5.DC MOTOR:

In this project 12VDC motors (300RPM) are used. All DC "brushed" motors operate in the same way. There is a stator and a rotor .There is magnets on the stator and a coil on the rotor which is magnetically charged by supplying current to it. Brushes are responsible for transferring current from the stationary DC voltage source to the spinning rotor. Depending on the position of the rotor its magnetic charge will change and produce motion in the motor. The animation below further explains the basic operation of a DC motor. Utilizing a DC power source, very few controls are needed. To control speed an in-line variable resistance can be utilized to change the amount of current reaching the coils.

6.RELAY:

In this project relay is usually an electromechanical device that is actuated by an electrical current. The current flowing in one circuit causes the opening or closing of another circuit. Relays are like remote control switches and are used in many applications because of their relative simplicity, long life, and proven high reliability. Relays are used in a wide variety of applications throughout industry, such as in telephone exchanges, digital computers and automation systems.

7.WATER MOTOR:

For pumping the water a 12 V DC water motor is used A submersible pump (or sub pump, electric submersible pump (ESP)) is a device which has a hermetically sealed motor close-coupled to the pump body. The whole assembly is submerged in the fluid to be pumped. The main advantage of this type of pump is that it prevents pump cavitation's', a problem associated with a high elevation difference between pump and the fluid surface. Small DC Submersible water pumps push fluid to the surface as opposed to jet pumps having to pull fluids. Submersibles are more efficient than jet pumps.
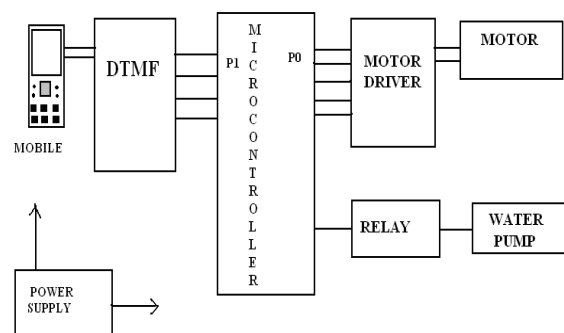
III. HARDWARE IMPLEMENTATION:

Fig 1.General block diagram of system.

IV. ADVANTAGES:
1. Less human efforts required.
2. Takes quick action so fire can be controlled soon.
3. Advanced control technique.

4. Due to wireless live streaming fire can be controlled easily.
5. Due to remote no chances of any accidents.

V. APPLICATIONS:
1. It will be used for fire extinguishing at any places.
2. We can use them in our homes, labs, offices etc.

VI. FUTURE SCOPE:
1.Using GSM.
2. Use of Dry Chemical Powder.
3. Use of Foam.
4. Can use Camera.

VII. REFERENCES:

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