

ULTRASONIC BASED ACCIDENT PREVENTION

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ABSTRACT

This project is defined as a mechanical design that is capable of performing human tasks or behaving in a human-like manner. Building a requires expertise and complex programming. It's about building systems and putting together motor, among other important components. The main aim of this project is whenever the obstacle is present, the should sense the obstacle and it moves to the side of the obstacle. And A ultrasonic is one that has a small extinguisher added to it. By attaching a small extinguisher to the , the automation put out the by human controlling. This paper covers the design and construction of a that is able to sense and extinguish.

KEYWORDS: Ultrasonic, Complex programming, Human controlling, Amplification, RISC, CISC

INTRODUCTION:

Now day's many industries are usings due to their high level of performance and reliability and which is a great help for human beings. The obstacle avoidance ics is used for detecting obstacles and avoiding the collision. This is an autonomous . The design of obstacle avoidance requires the integration of many sensors according to their task. The obstacle detection is primary requirement of this autonomous . The gets the information from surrounding area through mounted sensors on the . Some sensing devices used for obstacle detection like bump sensor, infrared sensor, ultrasonic sensor etc. Ultrasonic sensor is most suitable for obstacle detection and it is of low cost and has high ranging capability. A extinguisher is an active protection device which is used to extinguish or control small s, often in emergency situations. A is a mechanical and virtual intelligent agent that can perform tasks

automatically or with guidance, typically by voice control or by getting response through sensors. It gives exact concept of controlling a by a voice Command. is capable of understanding and synthesizing human Command for communication and performs required functions. This processes information from its various sensors and key hardware elements via lpc2148. It uses thermistors or ultraviolet or visible sensors to detect the accident. A capable of extinguishing a simulated tunnel, industry and military applications are designed and built. All the devices such as relay driver circuit, DC motors, relay, buzzer, LCD, ultrasonic sensor, power supply are connected to lpc2148. This project “ ultrasonic sensor” using As soon as lpc2148 receives the signal a buzzer sounds, the buzzer sound is to intimate the occurrence of accident. After the sounding of the buzzer lpc2148 actuates the driver circuit and it drives the towards

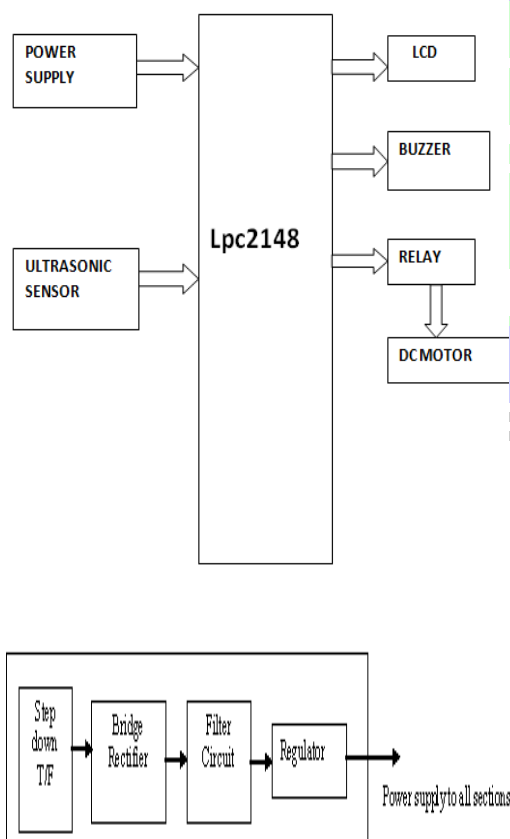
place, as the reaches near the lpc2148 actuates the relay and pump switch is made ON.

And with the help of motors the move. The common method used in every place for the detection of is, by fixing sensors in various parts of the buildings. The disadvantage of this method is when occurs in any place where the sensor is not placed then an immediate indication of is not given. To overcome this disadvantage we proposed a project called. The drawback of previous method has been overcome in this project. The acts as a human i.e. it continuously moves around the building in a path specified by the programmer. So by this method there can be an immediate indication when takes place.

The AC main Block is the power supply, which is of single-phase 230V ac. This should be give to step down transformer to reduce the 230V ac voltage to low voltage. i.e., to 6V or 12V ac this value depends on the transformer inner winding. The output of the transformer is give to the rectifier circuit. This rectifier converts ac voltage to dc voltage. Nevertheless, the voltage may consist of ripples or harmonics.

To avoid these ripples the output of the rectifier is connect to filter. The filter thus removes the harmonics. This is the exact dc voltage of the given specification. However, the circuit operates at 5V dc voltage. Therefore, we need a regulator to reduce the voltage. 7805 regulator produces 5V dc voltage.

The system uses reliably proven electronic technology to measure temperature and current, while using fiber-optic technology to energize the electronic circuitry and transmit the signals back via optical fibers. The data collected, together with the sag information, will provide support for the development of an algorithm for the estimation of conductor-sag values. ultrasonic consists of lpc2148 to, and transmit distance range to main controller of the fighting through series interface. To drive the all the components 5v dc and 12 v dc are required. The mains give the 230v ac so first we step down the 230v ac in to 12v ac by using step down transformer. Then the output is given to the full wave rectifier. The



rectifier eliminates the negative peak voltage of the input voltage. The output of the rectifier is the pulsating dc.

The error pulses are eliminated by using a capacitor filter. Then the output at the parallel of the capacitor is the 12v dc. But the Micro Controller works on 5v dc. To convert the 12v dc into 5v dc a regulator (7805) is used. The output of the regulator is constant irrespective of the input voltage. The Micro Controller requires the preset logic circuit for protection of the internal program and internal clock in case of power failure. A sudden change in the power may cause data error resulting in the corruption of the internal program. The reset logic circuit contains one capacitor and a resistor. The driver circuit is generally made by using one transistor and one relay. The driver circuit is mainly operated by the Micro Controller. The Micro controller changes the state of the output pin from the low to high, i.e. from 0 level to the 1 level. The transistor will act as an ON/OFF switch corresponding to the input of the base. If the base current of the transistor is high the transistor is under ON condition else it is in OFF state.

DC MOTORS

The direct current (DC) motor is one of the first machines devised to convert electrical power into mechanical power. Permanent magnet (PM) direct current converts electrical energy into mechanical energy through the interaction of two magnetic fields. One field is produced by a permanent

magnet assembly; the other field is produced by an electrical current flowing in the motor windings. These two fields result in a torque which tends to rotate the rotor. As the rotor turns, the current in the windings is commutated to produce a continuous torque output. The stationary electromagnetic field of the motor can also be wire-wound like the armature (called a wound-field motor) or can be made up of permanent magnets (called a permanent magnet motor).

In either style (wound-field or permanent magnet) the commutator acts as half of a mechanical switch and rotates with the armature as it turns. The commutator is composed of conductive segments (called bars), usually made of copper, which represent the termination of individual coils of wire distributed around the armature. The second half of the mechanical switch is completed by the brushes. These brushes typically remain stationary with the motor's housing but ride (or brush) on the rotating commutator. As electrical energy is passed through the brushes and consequently through the armature a torsional force is generated as a reaction between the motor's field and the armature causing the motor's armature to turn. As the armature turns, the brushes switch to adjacent bars on the commutator.

LPC2148:

The LPC2141/2/4/6/8 microcontrollers are based on a 32/16 bit ARM7TDMI-S CPU with real-time emulation and embedded trace support, that combines the microcontroller with embedded high speed flash memory

ranging from 32 kB to 512 kB. A 128-bit wide memory interface and unique accelerator architecture enable 32-bit code execution at the maximum clock rate.

FEATURES OF ARM PROCESSOR:

- 16/32-bit ARM7TDMI-S microcontroller in a tiny LQFP64 package.
- 8 to 40 kB of on-chip static RAM and 32 to 512 kB of on-chip flash program memory.

128 bit wide interface/accelerator enables high speed 60 MHz operation.

- In-System/In-Application Programming (ISP/IAP) via on-chip boot-loader software.

Single flash sector or full chip erase in 400 ms and programming of 256 bytes in 1 ms.

- Embedded ICE RT and Embedded Trace interfaces offer real-time debugging with the

on-chip Real Monitor software and high speed tracing of instruction execution.

- Single 10-bit D/A converter provides variable analog output.

- Two 32-bit timers/external event counters (with four capture and four compare

channels each), PWM unit (six outputs) and watchdog.

- Low power real-time clock with independent power and dedicated 32 kHz clock input.

The ultrasonic wave is spread in the air and hit the nearest object and reflected from the object which is received by the ultrasonic receiver. The received wave is given to amplifier in order to amplify the received weak signal. After the amplification the amplified wave is given to zero adjustment amplifier because the amplified wave is in the range of above 6v level. Then the output is given to comparator in which the wave signal is converted into corresponding square wave

signal. Then the square wave signal is given to input of the microcontroller. Now the microcontroller compares the time between the transmitted signal and received signal and generates the corresponding pulse output which is equal to distance of the object. Then the pulse signal is given to input of BC547 transistor.

RELAY:

Relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field which attracts a lever and changes the switch contacts. The coil current can be on or off so relays have two switch positions and they are double throw (changeover) switches.

Relays allow one circuit to switch a second circuit which can be completely separate from the first. For example a low voltage battery circuit can use a relay to switch a 230V AC mains circuit. There is no electrical connection inside the relay between the two circuits; the link is magnetic and mechanical. There is no electrical connection inside the relay between the two circuits; the link is magnetic and mechanical.

RESULT:



CONCLUSION:

The sensors provide the senses the distance from within the room. First distance will give the data to the controller if it finds the heat. The micro controller pin bit will go low when

the is present. The micro controller will always scan the input signal of sensors. If the first sensor gives the data about to the micro controller, First these kits are connected to the main supply (230V A.C).then it is step down to 5V d.c supply. 230V A.C supply is given as input to the step down transformer then it is step down that voltage to some 18V A.C supply. Then it is given to the Bridge wave Rectifier. This converts A.C to Pulsating D.C. then this is given to the filter circuit. Here capacitive filter is used. So it converts that pulsating D.C to pure D.C. next this is connected to 7805 regulator. It produces our required 5V D.C supply.

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