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SELF OPERATED INDUSTRIAL SECURITY ROBOT WITH WIRELESS MOBILE CAMERA

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ABSTRACT

At present days in industrial restricted areas we can't monitor what's going on in mines and some restricted places, Because of in that restricted places persons were not allowed to observe continuously, so avoiding this difficulty we introduced project "SELF OPERATED INDUSTRIAL SECURITY ROBOT WITH WIRELESS MOBILE CAMERA". In this project we are using free wheel robot, this robot is continuously rotates in restricted places or underground mines, the top place of the robot we have placed a camera for video purpose and this robot is detected through PIR sensor. The robot is operated by Android mobile with in android mobile we have application in that app different keys like navigation keys and number keys throughout these keys we can controlled the robot. The PIR sensor is interfaced to AT89C51 micro controller and whatever the places covers the robot can be monitored by camera. Here we are using 5v dc Regulated power supply to our AT89C51 micro controller by developing the power supply circuit to maintain constant output regulated dc voltage.

Key Words- AT89C51, Wireless Camera, PIR Sensor.

I. INTRODUCTION

In present days robotic technology is developed tremendously. In industries security system is needs because lot of equipments are placed in firm. So security is required and proposed system can control the thefts in the industry. Robot can operated through sensors without any human efforts. If any objects or walls are detected it can change their direction and checking surrounding automatically. Wireless camera can be placed in front of the robot and it can capture the surrounding and also record the video. In this way proposed system can work as a security guard in industries.

II. PROPOSED SYSTEM

In the proposed system the robot can transmit video in a wireless fashion reducing the cost of wires, implementation of advanced technology so which is proposed to be a high security alert. The robot can return to the docking station recharging operations when the on-board battery is too low hence an high security system which is high alert for people and hence on the whole Monitoring easy through Computer and storing of the

video Detecting persons through PIR sensors and thus alert in the server side only when there is detection of human and use of multiple use of sensors like ultrasonic sensor and IR sensor so on for High Protection.

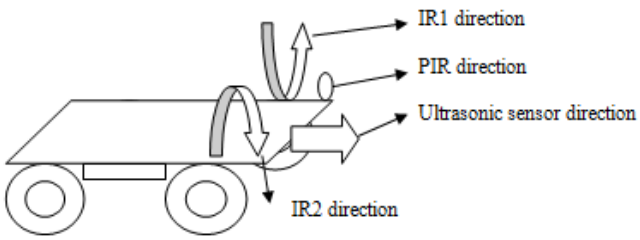

Fig: Proposed system

II. BLOCK DAIGRAM

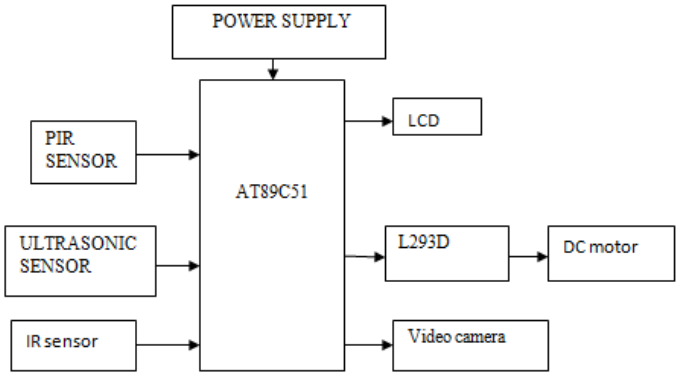

Fig 1: Block diagram of the project

2.1 8051 Micro Controller

A micro-controller consists of a powerful CPU tightly coupled with memory, various I/O pins, timer or counter, interrupt controller, A/D converter, D/A converter integrated on a single silicon chip. Micro controller cost is less compared to the micro processor and micro processor peripherals are connected externally. But controller is provided with all these facilities on a single chip. Development of a micro-controller reduces PCB size and cost of the design. One of the major differences between a micro-processor and a micro-controller is that a controller often deals with bits not bytes as in the real world application. Intel has introduced a family of micro-controllers called the MCS-51.

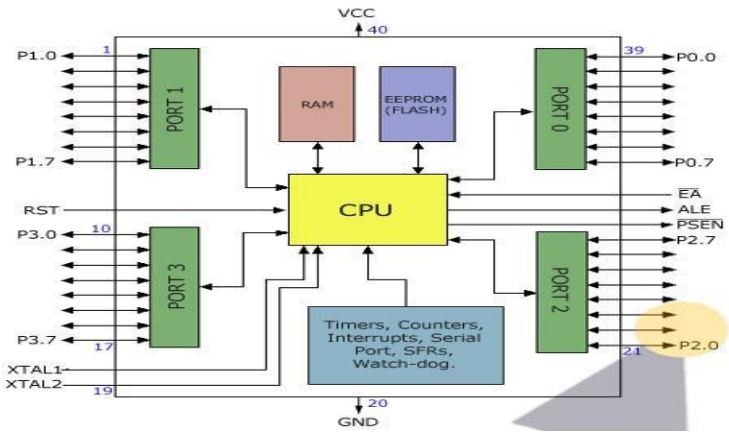

Fig 2: Block diagram of 8051 micro controller

8051 micro controller consists of 40 pins. Complex instructions are performed in 8051 microcontroller except P0 remaining ports consists of pull up resistors. In port P0 pull up resistors are connected externally.

3.1 PIR Sensor

These are basically IR detectors; they don't use any IR source. These form the major class of ***IR sensors/detectors***.

The PIR sensor itself has two slots in it, each slot is made of a special material that is sensitive to IR. A PIR based motion detector is used to sense movement of people, animal or other objects. Passive infrared systems can detect presence, occupancy, and count. PIR sensor consists of digital output (0's or 1's).

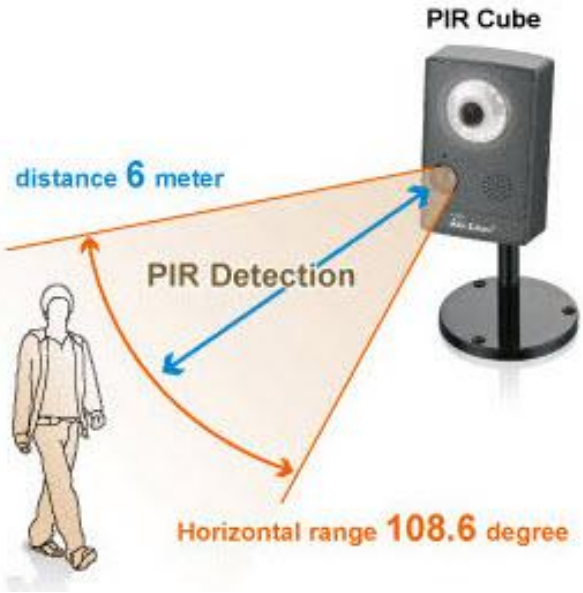

Fig 3: PIR sensor detection of human

3.2 IR Sensor

IR sensor is mainly used for obstacle detection. IR can measure the heat of the obstacle and also detect the motion of the body. IR sensor consists of rx and tx, If IR can detect the object, rays are transmitted from the IR and reflected back to the IR rx when object is present in front of the sensor.

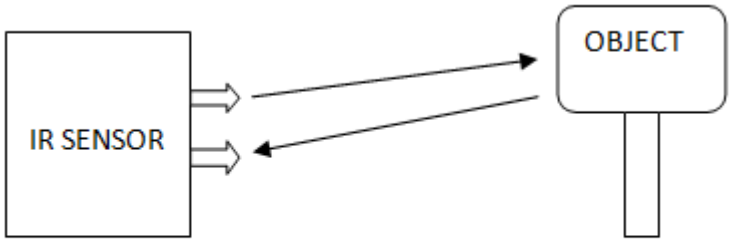

Fig: IR sensor reflection when object detected

3.3 Wireless AV Camera

It is a small and having delicate appearance, good performance with high-quality picture and sound transmitting and receiving. It supports minimum of 100m transmission distance without block and can be used on TV, monitor, LCD, etc. including adaptive bracket and supports easy installation. The AV signal from the camera is sent to the TV tuner which is connected to the local system through the easy cap (USB 2.0 Grabber). The Audio-Video streaming is done at the local and also at the remote system.

3.4 Software Design

To finish the undertaking on equipment need to installed programming on to the controller utilized as a part of this venture for that reason we need programming's similar to Kiel u vision and glimmer enchantment those are examined in given beneath

Compiler that keeps running on one pc however delivers PC code for an unmistakable sort of pc. Cross compilers square measure usual produce PC code which will keep running on PCs with a substitution plan or on exceptional reason gadgets that can't have their own compilers. Cross compilers square measure extremely in vogue for implanted improvement, wherever the objective more likely than not couldn't run a compiler. Normally relate degree inserted stage has limited RAM, no plate, and confined I/O ability. Code are frequently adjusted and accumulated on a brisk host machine, (for example, a tablet or working framework workstation) and in this way the resulting feasible code will then be downloaded to the objective to be tried. Cross compilers square measure helpful at whatever point the host machine has a ton of assets (memory, circle, I/O and so on) than the objective. Kiel compiler is one such compiler that backings a gigantic assortment of host and target blends. It underpins as an objective to eight piece microcontrollers like Atmel and Motorola and so forth. Streak Magic is partner application created by Embedded Systems Academy to allow you to just get to the choices of a microcontroller gadget. With this project you'll have the capacity to delete individual squares or the entire nonvolatile stockpiling of the microcontroller.

3.5 Working Description

Here we are using AT89C51 MICRO-controller. The LCD is connected to the PORT-2. We are using 8-bit LCD. So we used 8-data lines. The register select is connected to the P3.7 and enable is connected to P3.6. So whatever the data we want we can display it on LCD. Here we are interfacing sensors like ultrasonic sensor, IR and PIR sensors to the 8051 micro controller. In hardware ultrasonic sensor is connected to the port pins P1.1 and P1.2, IR sensor is connected to the P1.3 and PIR sensor is connected to the port pin P1.4. L293D is used for current amplification and these are connected to respective port pins P0.0, P0.1, P0.2, P0.3 respectively. Video camera can be used to monitor the industrial surrounding.

IV. RESULTS

Here the results are shown our project “Self Operated Industrial Security Robot With Wireless Mobile Camera” whenever object detects near ultrasonic sensors robot can change their direction and also PIR sensor can be used to detect human. Here two IR are used for obstacle detection. L293D is used to amplify the current which comes from micro controller and wheels are move in forward, reverse, left, right, depending on ultrasonic sensors and

IR sensor. Camera can be used to observe the surrounding of industrial places and capture the video of surroundings.

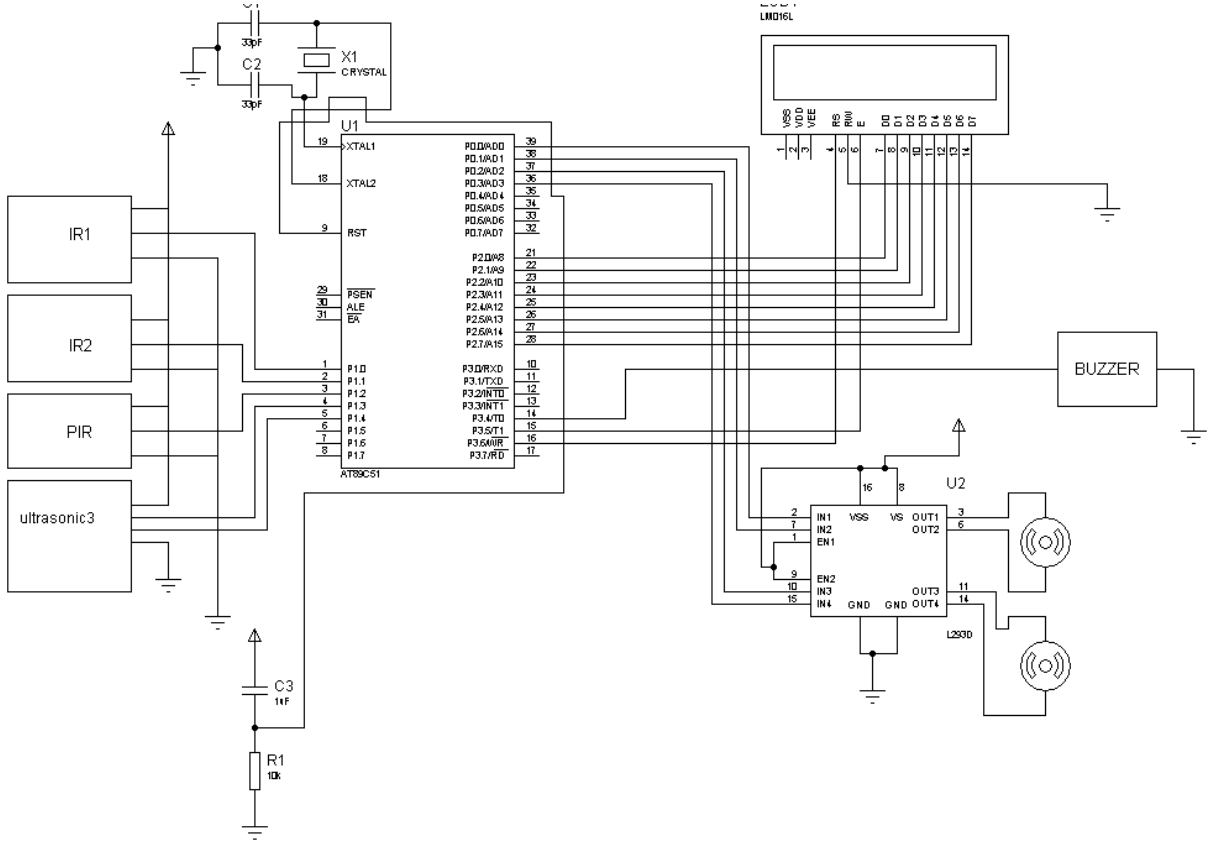

Fig: Schematic diagram of the project

V. CONCLUSION

The proposed robot can be used in war field, mines, power station, military operations, industries, research and educational institutions and so on. And also be used wherever people cannot go or where things doing too dangerous for humans to do safely. The Robotic movement is controlled remotely through the local system. Similarly the intruder (Human or Animal) entered into the industry/ range is detected through the PIR sensor. The above two sensed parameters were sent to the local system through the ultrasonic sensors which are presented at both the ends that are at the robot and at the local system. A wireless AV camera resides at the robot; send's the robotic environment information to the local system. The video streaming is simultaneously done at both the local and 'N' number of remote system (web server) this system can be used where ever the safety and security are the major threat. In these way robot can operate by self and also capture the videos of surrounds for security purpose.

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