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# Real Time Anti-Terrorist Smart Robot Monitoring using Embedded System

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***Abstract: The Main objective of this paper is to reduce human life risk in terrorist attacks. This is real time intelligent robot has been designed to handle such a cruel terror attacks. This real time intelligent robot is operated with radio signals, self- powered, and has all the controls like a normal vehicle. A wireless camera and laser gun has been installed on it, so that we can monitor enemy remotely when required. It can easily enter into enemy premises and show us all the information from its Camera. This smart robot can be used in hotels, shopping malls, apartments, etc where there can be threat from terrorist attacks. These robots can fight against terrorists in war areas such that reduce work burden for security guards and save the human life and property damages.***

**Keywords***: Intelligent Robot, Radio operated, Self powered, Security guards, Wireless Camera*

## I. INTRODUCTION

Now a day's Terrorist attacks were frequently happening in so many countries and lots of human lives were getting lost. The nature of terrorism and how to fight it have become defining global security questions since the end of the Cold War, especially after the attacks on New York and Washington D.C. on Sept. 11, 2001.By using technology we can use smart robots to fight against terrorist. The main objectives of using robot are

*A* .Hazardous area where man cannot enter.
*B*. Robots also work under precarious conditions, for search and rescue after disasters
*C*. They can involve in battle field if they are intelligent.

We aim to introduce a model which will be effectively used to minimize terrorist causality. Being able to achieve reliable long distance communication is an important open area of research to robotics as well as other technology areas. As interest in robotics continues to grow, robots are increasingly being integrated into everyday life. The results of this integration are end-users possessing less and less technical knowledge of the technologies.
Presently, the primary mode for robot communication uses RF. RF is a perfect choice to communicate information over long distance at high speed. This paper shows the use of RF networks for communication and device control. This reduces the usage of a new infrastructure.

## II. HARD WARE DESIGN AND WORKING PRINCIPLE OF SYSTEM

The block diagram of the with hardware components of the entire system is as shown in the Figure 1. This robot is radio operated self-powered. The Smart Robot can be controller from user itself. When terror attack happens we send robot to particular area to monitor the situation. A pair of laser gun has been installed on it, so that we can fire on enemy remotely when required. Wireless camera will send real time video and audio signals, which could be seen on a remote monitor, and action can be taken accordingly.

### *A. Micro Controller AT89S52*

It is the heart of the system which controls all the activities of transmitting and receiving. The AT89S52 Microcontroller is an 8-bit microcontroller with 8K Bytes of In-System Programming Flash Memory. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional non-volatile memory programmer The device is manufactured using Atmel's high-density non-volatile memory technology and is compatible with the industry standard 80C51 instruction set and pin out. 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.

Fig 1 AT89S52 Microcontroller

The Idle Mode stops the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning.
The Power-down mode saves the RAM contents but freezes the oscillator, disabling all other chip functions until the next interrupt or hardware reset.

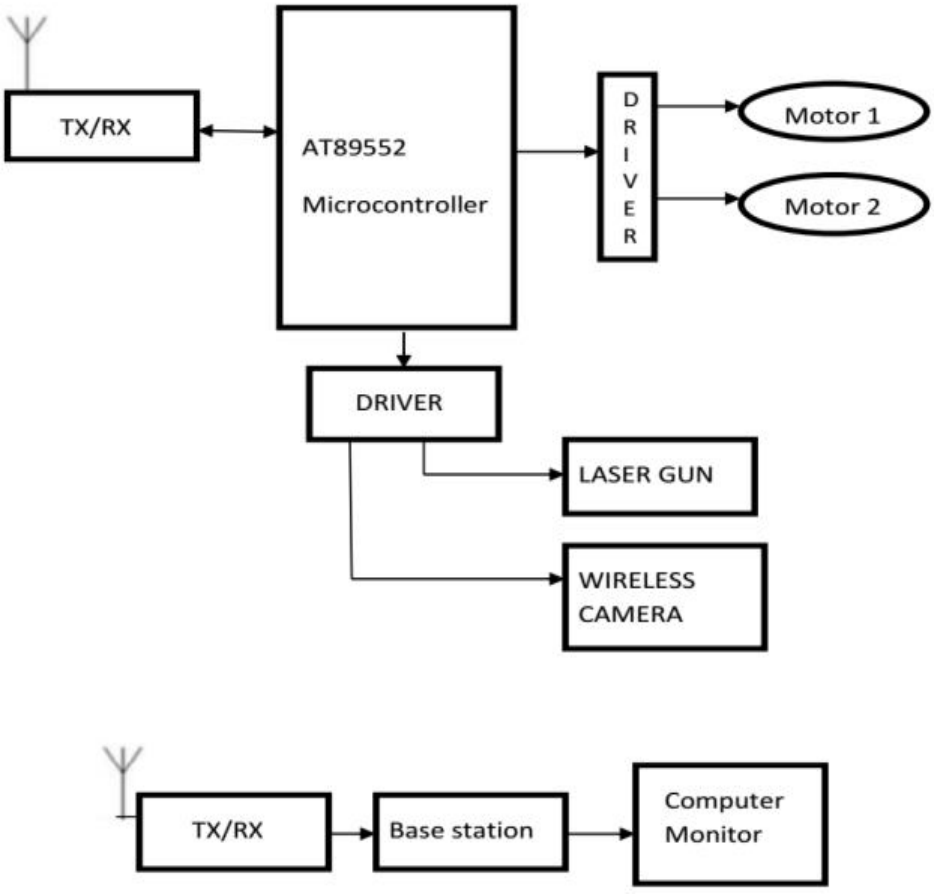



Fig 2 Block diagram

*B. Motor Driver L293D*

The Motor driver Device we use in this is a monolithic integrated high voltage, high current four channel driver designed to accept standard DTL or TTL logic levels and drive inductive loads and switching power transistors. To simplify use as two bridges each pair of channels is equipped with an enable input. A separate supply input is provided for the logic, allowing operation at a lower voltage and internal clamp diodes are included. This device is useful in switching applications at frequencies up to 5 kHz. The L293D is assembled in a 16 lead plastic package which has 4 centre pins connected together and used for heat sinker. The chip is designed to control 2 DC motors. There are two Input and output pins for each motor. The actual behaviour of motor for various inputs is shown in Table.1

Table 1 Motor Operation

| Operation | A | B |
|---|---|---|
| Stop | Low | Low |
| Clock Wise | Low | High |
| Anti Clock Wise | High | Low |
| Stop | High | High |

*C. Wireless Camera and TV Capture card*

A TV capture card is a computer component that allows television signals to be received by a computer. It is a kind of television tuner. Most TV tuners also function as video capture cards, allowing them to record television programs onto a hard disk. The card contains a tuner and an analog to digital converter along with demodulation and interface logic. Here Figure.2 and Figure.3 shows wireless camera and TV capture card.


Fig 3 Wireless Camera with AV receiver


Fig 4 TV Tuner Card

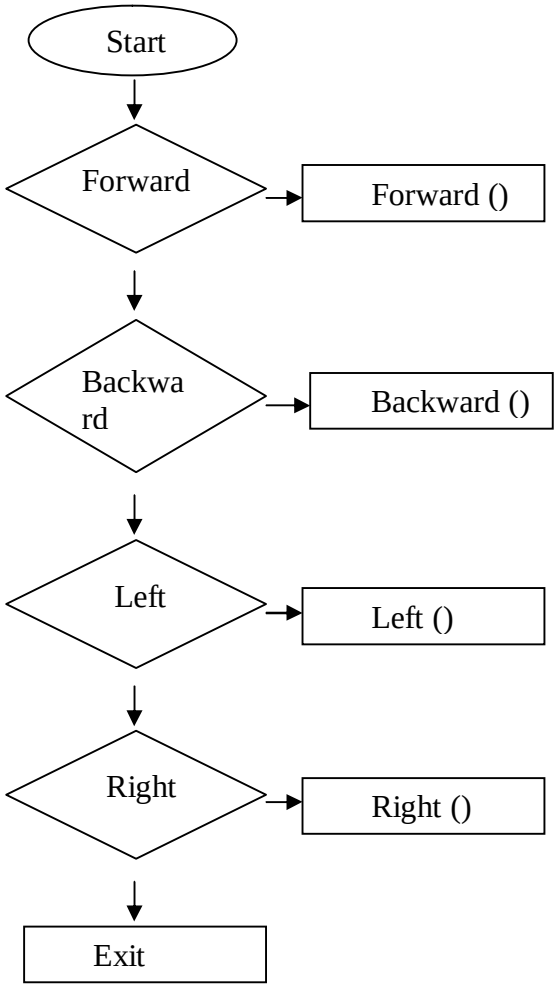
## III.IMPLEMENTATION OF SOFTWARE

For the software implementation, we have two software packages. Keil µVision 3.0. and Flash magic simulator. The Keil µVision Debugger accurately simulates on-chip peripherals (I²C, CAN, UART, SPI, Interrupts, I/O Ports, A/D Converter, D/A Converter, and PWM Modules) of 89S52 device. Simulation helps to understand hardware configurations and avoids time loss on setup problems. With simulation, we can write and test applications before target hardware is available. The system program written in embedded C using KEIL IDE software will be stored in Microcontroller.

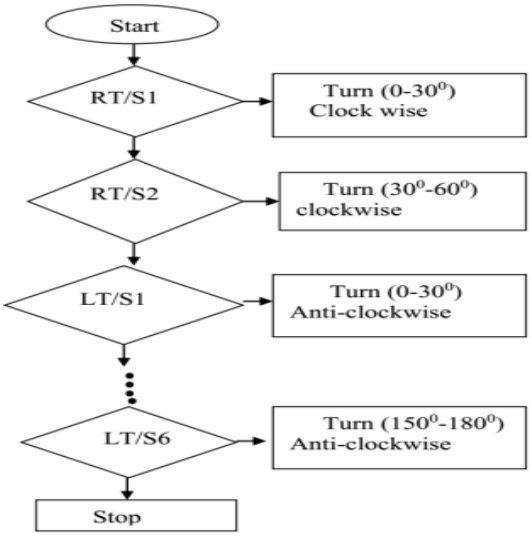
## IV. FLOW CHARTS

The flow charts shows Robot movement and Laser gun operation

### *A. Robot Movement*




### *B. Laser Gun*



## V. LASER GUN OPERATION

The laser gun can be rotated in clock wise and anti clock wise directions at certain range of angle at different step size. The below table shows the operation of laser gun at different modes

Table 2 Laser Gun Operation

| S.no | Clock wise direction | Anti-clock wise Direction | Angle in degrees |
|---|---|---|---|
| 1 | S1 | S1 | (0-30) |
| 2 | S2 | S2 | (30-60) |
| 3 | S3 | S3 | (60-90) |
| 4 | S4 | S4 | (90-120) |
| 5 | S5 | S5 | (120-150) |
| 6 | S6 | S6 | (150-180) |

## VI. RESULTS AND DISCUSSIONS

Remote controllers are designed to direct the orientation of robot and to operate the laser gun. Robot keeps on moving in two modes i.e., Manual mode and self-mode. It's brought under user's control in the case of manual mode. In self-mode, robot starts moving over surface and takes action according to the scenario. To detect the obstacles, we have deployed Infrared sensors (left sensor and right sensor) in the front portion of the module. While moving on the surface, if the left sensor is detected, robot takes back the position for a moment and moves right. If the right sensor is detected, robot gets back and moves left. The front view and top view of designed combat robots are shown in the figures 4 & 5

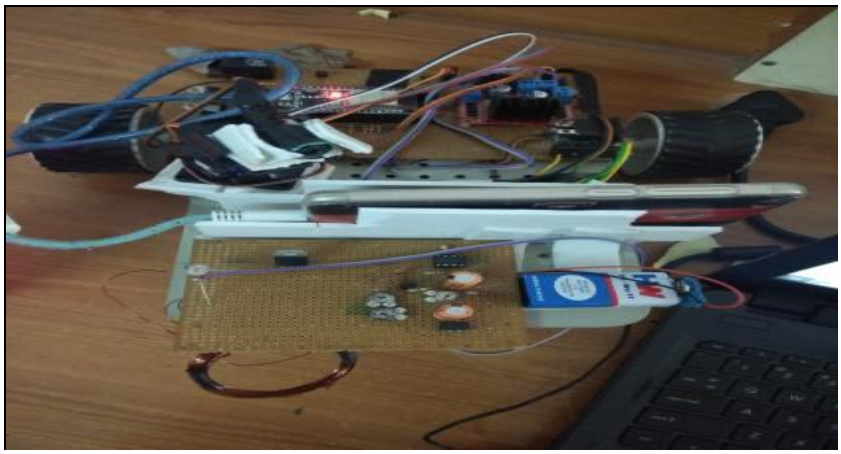


Fig 4 Front view of Smart robot

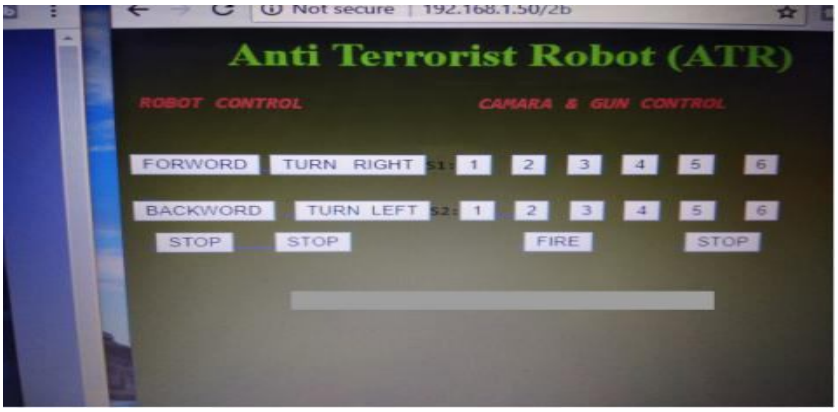



Fig 5 Desktop Screen

## VII. CONCLUSION AND FUTURE SCOPE

As we aware that country like India facing challenges from terror attacks. To over come this problem massive usage of technology must come to existence. One of the best technologies is smart robot where it reduces human casualties from great risks. Not only from terror can attacks but also we use it in border security purpose.

In future, we can make autonomous robots to monitor border attacks and terror attacks. Autonomous Robot taking decisions to attack enemy is a challenging trend now a days. Once it happens we will be succeed in avoiding terror attacks and we can save human lives.

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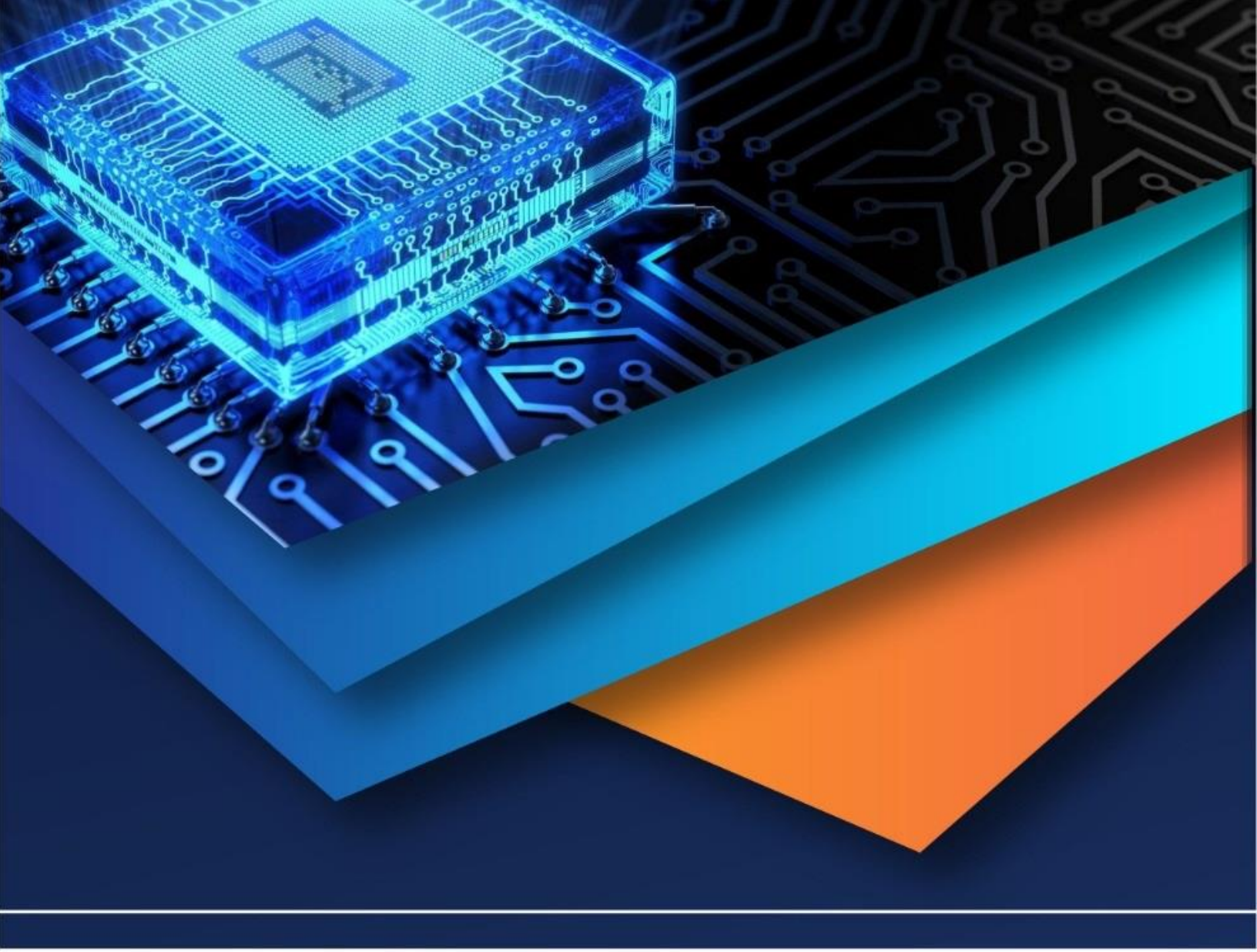

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