Terrorist Fighting Robot with EM Gun

Ashish Tayshete[1] , Aditya Lad[2], Padmaj Narkar[3], Vishma Hegde[4]
1-4B.E. Students
Department Of Electronics & Telecommunication Engineering
K.C. College of Engineering & Management Studies &Research
Kopri, Thane (E)-400 603, India

***Abstract* — We cannot forget 26/11 when 101 people including nine foreigners and 14 policemen have lost their lives while about 300 people were injured in the worst terror attack seen in the country in which desperate men fired indiscriminately at people. Hence the objective of project is to minimize human casualties in terrorist attack.**
It has got two barrel turret through Bullet can be fired; radio camera in synchronization with the turret can rotate up and down, left and right up to a safe firing limit. Turret and camera mechanism has been installed on my previous spy robot vehicle, which has all the function like tank, turing to any angle on its axis, moving forward and reverse turning left and right, running instantly into reverse direction.
This robot is radio operated, self powered, and has all the controls like a normal car.
A pair of laser gun has been installed on it, so that it can fire on enemy remotely when required, this is not possible until a wireless camera is installed. Wireless camera will send real time video and audio signals which could be seen on a remote monitor and action can be taken accordingly. It can silently enter into enemy area and send us all the information through its' tiny Camera eyes. It is designed for, fighting as well as suicide attack.

I.INTRODUCTION

Earlier in wars many people lost their lives**.** To overcome this scientist came up with automated ROBOTS. But these robots were even harmful for them. Thus there was a need for development of SEMI AUTOMATED ROBOTS.
The risk of terrorist attack can perhaps never be eliminated but sensible steps can be taken to reduce the risk
These Semi Automated Robots are wirelessly controlled by HUMAN. Similarly we have tried to develop such kind of Robot which is controlled wirelessly using RADIO FREQUENCY REMOTE.

Our project TERRORIST FIGHTING ROBOT is a SEMI AUTOMATED ROBOT.

The robot has the following features mounted on it

- Mobile Electromagnetic Gun
- LASER Pointer
- Wireless camera
- LED Flashlight and Buzzer

II.OPERATIONAL CIRCUIT DIAGRAM

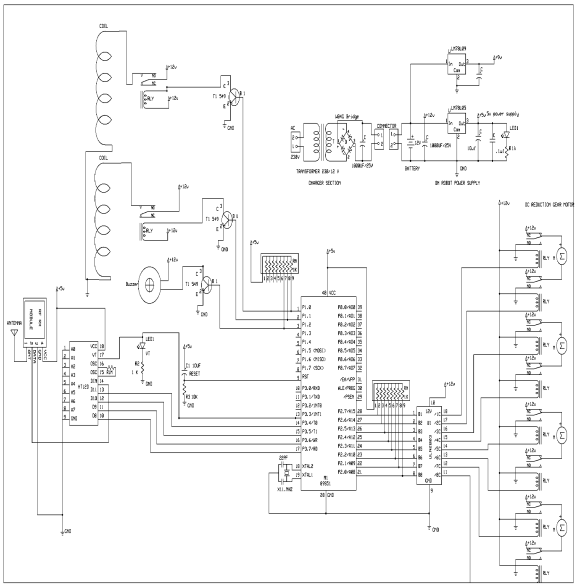


Fig. 1 Operational Circuit Diagram

- To overcome the shortcomings of 8051, we use an In-System Programmable AT89S51 microcontroller which requires a 5V operating voltage.
- The VCC of 5V is connected to the last pin of the microcontroller IC while the pin number 20 is grounded.
- The pins 18 and 19 being oscillator pins have a crystal oscillator connected to them. The frequency of the crystal is 11 MHz. Two 22 pF capacitors connected with the crystal push the crystal into oscillation.
- The pin number 9 being the RESET pin is connected to a power ON reset which will reset the device whenever VCC is applied to the controller 8951.
- The port 0 of the controller is connected to the 16*2 LCD in 4-bit mode in which 8-bit data is sent twice over the 4 bit connection. The project status will be displayed over the LCD.
- The entire 8-bit port 1 and 4 bits of port 2 are connected to the red, yellow and green LED's representing traffic signal with common anode current limiting resistors.
- To achieve synchronization between two signals, whenever a signal goes green, it will send a

trigger to the next signal with the approximate time required to reach there. On receiving the trigger, the next signal will start its cycle in such a manner that it most probably goes green at the end of the time interval sent to it by the previous signal.

- On being turned ON, a traffic signal will wait for the duration till it receives a 'sync pulse in' on its pin number 0 of port 3. After being turned ON and completing one cycle it will give out a 'sync pulse out' through the pin number 7 of port 3. Thus, while it will wait for the 'sync pulse in' only once, it will emit a 'sync pulse out' signal after the completion of its every cycle.
- The pin number 1 of port 3 is connected to the traffic sensor. A tactical bump sensor is used in this case. Depending on the width of the pulse generated by the sensor, the traffic along the road between two sensors is judged. If a traffic jam is prevalent, a message shall be displayed over the LCD screen of the previous signal, informing drivers and asking them to detour.
- A step down transformer is used to step down 230V supply to 12V which is further pulled down to 5V by the bridge rectifier and smoothed by the couple of filters on either sides of voltage regulator IC 7805.

III.CIRCUIT COMPONENTS

a. 8951 Microcontroller

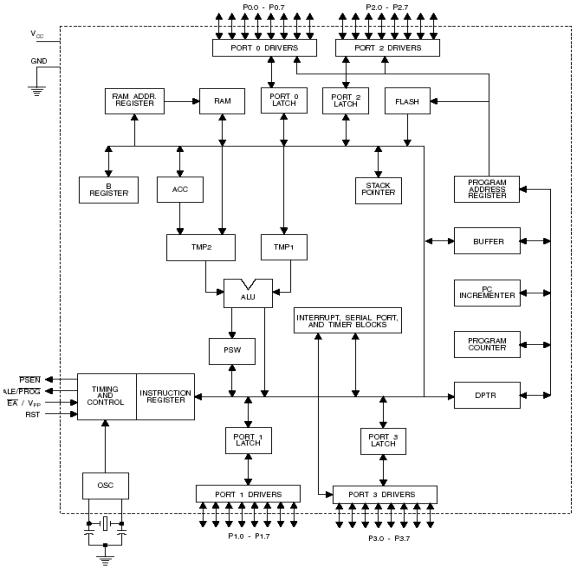
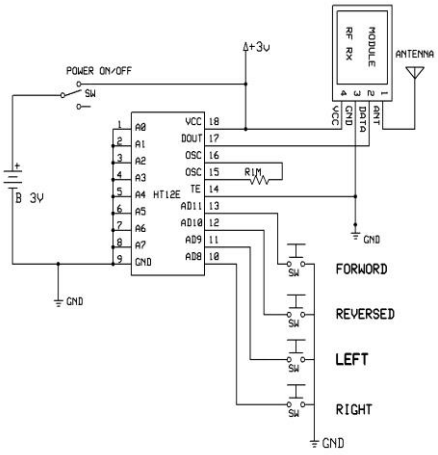


Fig. 4 Architecture of 8951 Microcontroller

The AT89C51 is a low-power, high-performance CMOS 8-bit microcomputer with 4K bytes of Flash programmable and erasable read only memory (PEROM). The device is manufactured using Phillips's high-density nonvolatile memory technology and is compatible with the industry-standard MCS-51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with Flash on a monolithic chip, the Phillips AT89C51 is a powerful microcomputer which provides a highly-flexible and cost-effective solution to many embedded control applications.

b. *RF-Remote.*



This radio frequency (RF) transmission system employs Amplitude Shift Keying (ASK) with transmitter/receiver (Tx/Rx) pair operating at 434 MHz. The transmitter module takes serial input and transmits these signals through RF. The transmitted signals are received by the receiver module placed away from the source of transmission.

The system allows one way communication between two nodes, namely, transmission and reception. The RF module has been used in conjunction with a set of four channel encoder/decoder ICs. Here HT12E & HT12D have been used as encoder and decoder respectively. The encoder converts the parallel inputs (from the remote switches) into serial set of signals. These signals are serially transferred through RF to the reception point. The decoder is used after the RF receiver to decode the serial format and retrieve the original signals as outputs. These outputs can be observed on corresponding LEDs.

1. Forward: - This function drives the robot in the forward direction.
2. Reverse: - This function drives the robot in the backward direction.
3. Left: - This function drives the robot in the left direction.
4. Right: - This function can drive the robot in the right direction.
5. Up: - This function drives the carpet sweeper in forward direction.
6. Down: - This function drives the carpet sweeper in reverse direction

IV.CONCLUSION

In this project, the projectile is fired without using any kind of chemical agents like Gun powder. We use electromagnetic properties of the projectile i.e. when small current is passed through the current carrying coil it produces magnetic field around it. This field attracts the projectile in forward direction and this fires the projectile from the non-magnetic barrel. This project is based on

Electromagnetic & RF Circuitry. Except the reloading, firing and controlling of the robot the whole project is automated in which all the devices are controlled by microcontroller 89S51. Thus instead of using any chemical agents like Gun powder which are conventionally used to fire the projectiles during a war, we used electricity to fire the projectile towards an aimed target.

REFRENCES

1. Jan R. McNab, "Launch to Space With an Electromagnetic Railgun" , Senior member IEEE, January 2003.
2. "Electromagnetic Waves and Radiating Systems" by Edward C Jordan.
3. "Radio Frequency Circuits" by Ludwig.
4. Basic Electronics-B.Ram
5. Digital Electronics – R.P.Jain
6. Jan R. McNab, "Launch to Space With an Electromagnetic Railgun" , Senior member IEEE, January 2003.
7. "Electromagnetic Waves and Radiating Systems" by Edward C Jordan.
8. "Radio Frequency Circuits" by Ludwig.
9. Basic Electronics-B.Ram
10. Digital Electronics – R.P.Jain