

# ROBOCULAR-The innovative electronic commando robot

NISHA YADAV<sup>1</sup>, PARAS GUPTA<sup>2</sup>, VISHAL UPADHYAY<sup>3</sup>, SWAPNIL SK VARSHNEY<sup>4</sup>, ADITI DIXIT<sup>5</sup>, DEBOJYOTI SEN<sup>6</sup>

<sup>1,2,3,4,5</sup> Student, EN Dept, IMS Engineering College, Ghaziabad

<sup>6</sup> Assistant Professor, EN Dept, IMS Engineering College, Ghaziabad

**Abstract:** In 2008 Mumbai attack Indian army lost there several commandos in this mission. This incident and loss of our soldier's life made us to construct GSM control electronic commando. This robot is controlled by mobile/laptop via gesture control mechanism connected with a wireless camera to telecast live video with sound capture. One dummy gun over the arm of commando is also fixed to defense life and take action on terrorist activity if needed by the operator. The purpose of this paper is to become familiarized with the control & automation of a robot prototype which is capable of doing various tasks.

**Keywords:** Robocular, Innovative war machine, electronic commando robot, Indian army, Mumbai attacks.

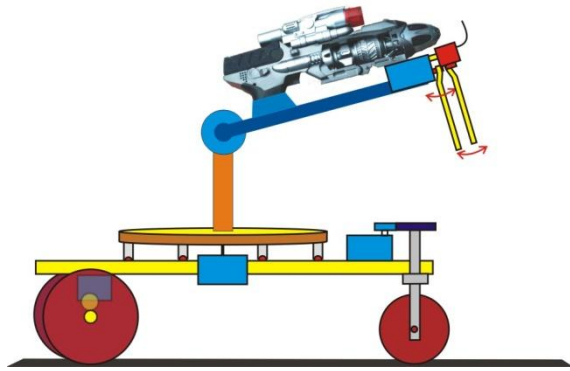
## I. INTRODUCTION

The industrial world is revolutionizing day by day. The older technologies are getting obsolete, giving way to new generation of robotics. Hence, in the modern industrial & research world, Space Aeronautics, Defenses and day to day comforts, robots are getting in. The researchers are throwing their full energies in making precise robots Controlling and automation, nowadays, have become the backbone of industries. In this stream, the human made robots have becoming more & more popular due to their accuracy, reduced labor force, proper completion of tasks, especially in Automobile industries & Home appliances. Current research in robotics tends to be in two main areas, Artificial Intelligence (AI) & related field of machine vision.

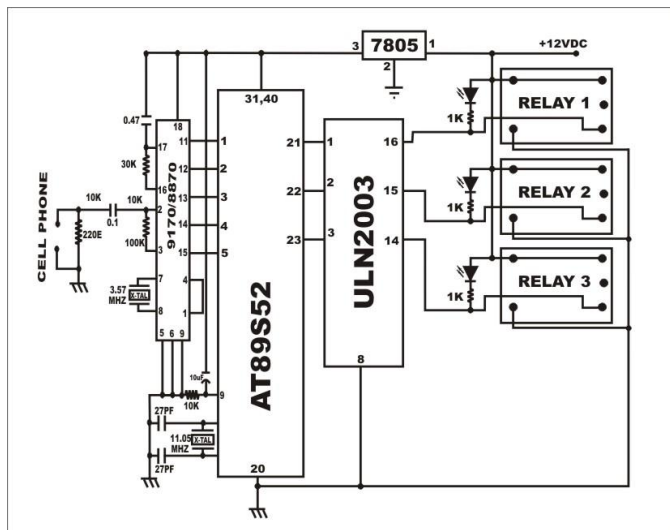
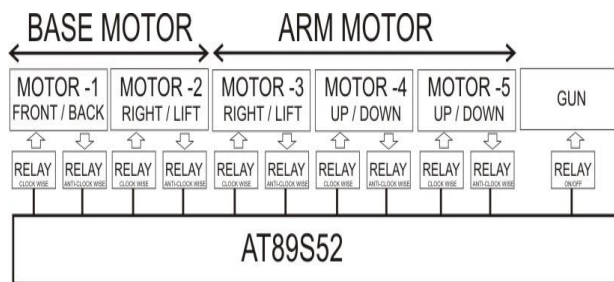
The 2008 Mumbai attacks (often referred to as November 26th or 26/11) were more than 10 coordinated shooting and bombing attacks across Mumbai, India's largest city, by Islamic terrorists from Pakistan. Eight of the attacks occurred in South Mumbai: at Chhatrapati Shivaji Terminus, the Oberoi Trident, the Taj Mahal Palace & Tower, Leopold Cafe, Cama Hospital (a women and children's hospital), Nariman House, the Metro Cinema, and a lane behind the Times of India building and St. Xavier's College. The electronic commando robots have the capability to move around in their environment and are not fixed to one physical location. In contrast, industrial robots usually consist of a jointed arm (multi-linked manipulator) and gripper assembly (or end effector) that is attached to a fixed surface.

## II. CONSTRUCTION

One high speed dc gear motor is fixed on the rear wheel for forward and backward motion. On the front wheel slow speed dc gear motor is used for turning right and left position. Three slow speed dc gear motor is used in the arm to control the action of the gripper which is used to hold the objects. Lastly one wireless camera and one dummy gun over is provided on the arm for transmission of the video and fight against terrorist. All function of commando is control by microcontroller with help of relay.



### III. BLOCK DIAGRAM



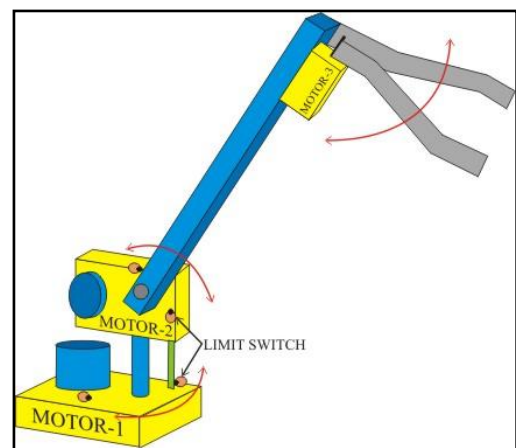
When mobile get telephone pulse its answer mode facility is switched on after three rings and the mobile gets connected with circuit. The machine feed number from mobile (controlling end) to the receiver (robot circuit) circuit which senses those pulse through opem and opem send those amplified pulse to 9170 dtmf. Dtmf ic sense

those pulse to controller and work as per program fed into the microcontroller.

### IV. COMPONENTS

#### 1. Motor: Used motor in pick and place arm

Motor detail: Compact, smooth-running Buhler gearhead motor. Operates from 3 - 24 Vdc. No-load rating: 140 RPM @ 18 Vdc / 140 mA. Body: 1.91" x 1.59" x 1.14." 3mm diameter shaft is 0.4" long. 8" wire leads. Three threaded mounting holes on face of motor.

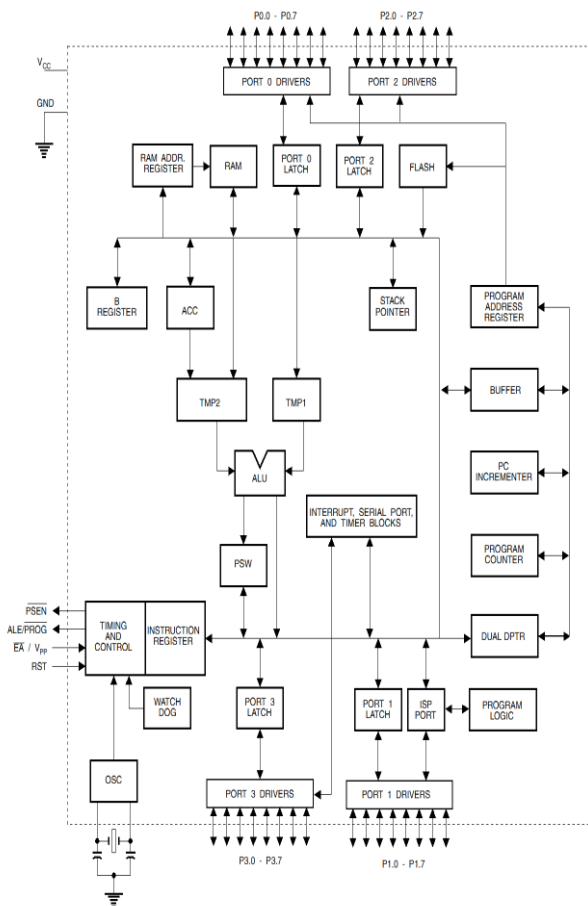


#### 2. Spy Camera: Cordless Colour Camera ( Hi Resolution ) Made In Taiwan.



#### 3. Microcontroller AT89S52: The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system

programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry-standard 80C51 instruction set and pinout. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory.



**4. Small, Low Power, 3-Axis ±3 g**

**Accelerometer:** The ADXL335 is a small, thin, low power, complete 3-axis accel-erometer with signal conditioned voltage outputs. The product measures acceleration with a minimum full-scale range of ±3 g. It can measure the static acceleration of gravity in tilt-sensing applications, as well as dynamic acceleration resulting from motion, shock, or vibration. The user selects the bandwidth of the accelerometer using the CX, CY, and CZ capacitors at the

XOUT, YOUT, and ZOUT pins. Bandwidths can be selected to suit the application, with a range of 0.5 Hz to 1600 Hz for the X and Y axes, and a range of 0.5 Hz to 550 Hz for the Z axis. The ADXL335 is available in a small, low profile, 4 mm × 4 mm × 1.45 mm, 16-lead, plastic lead frame chip scale package.

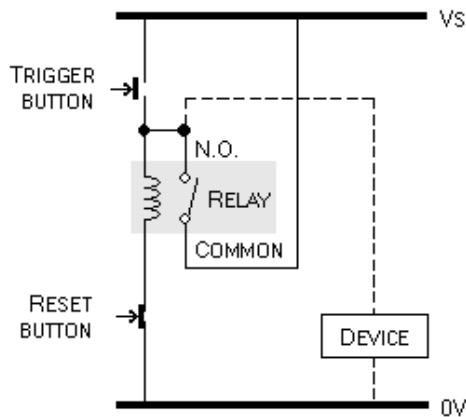


**5. DTMF Receiver:** The HT9 170 series are Dual Tone Multi Frequency (DTMF) receivers integrated with digital decoder and band split filter functions. The HT917 OB and HT917 OD types supply power-down mode and inhibit mode operations. All types of the HT9 170 series use digital counting techniques to detect and decode all the 16.

**6. Relay Circuit:** It is often desirable or essential to isolate one circuit electrically from another, while still allowing the first circuit to control the second. One simple method of providing electrical isolation between two circuits is to place a relay between them. The metal arm is at its rest position and so there is contact between the Normally Closed (N.C.) switch contact and the 'common' switch contact. The Normally Open switch contact of the relay could also be connected to a device such as a motor, as shown by the dotted connections in figure. The device will then run indefinitely until some event (maybe triggered by the device) momentarily presses the Reset button, thereby turning off the coil ready for the Trigger button to be pressed again.

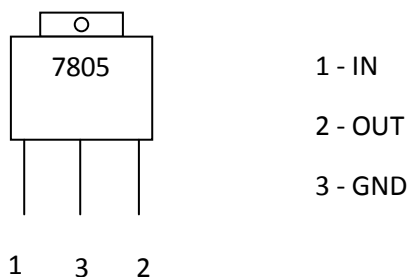
This system could be used in a model which needs a 'Push to Operate' button. A motor and

gearing system in the model can be used to press the Reset button to cut the power to the relay coil after the model has been running for a certain amount of time, or until a certain event has occurred. Of course, you would have to be sure that there was enough momentum in the mechanism that the button is released ready for the next cycle.



**7. Transformer:** Transformers are a major class of coils having two or more windings usually wrapped around a common core made from laminated iron sheets. It is used in the circuit to step up the voltage in case of requirement.

**8. Regulator 7805:** 7805 IC is used as regulator in 5V power supply. IN 7805 pin no.1 is input pin through which non-regulated signal is applied. Pin no.3 is grounded & the regulated output is taken from pin no.2.



**9. Power Supply:** Most of the digital circuits operate on 5 volt DC supply which is obtained by the following circuit. The power supply circuit consists of a step down transformer, bridge rectifier and 7805 voltage regulator IC.

**10. Miscellaneous Components:** Resistance, Capacitance, Diode, Transistor, Micro-Switch, LEDs etc.

## V. CONCLUSION

The electronic commando robot is not only aiding the Indian army by saving their lives but also making many impossible terrorist mission accomplished with ease. Few feature can be input in further study which includes:

- 1) Human detection (terrorists hiding in buildings or within a range of 30 meters can be detected) ,
- 2) Gas detection (terrorists use highly poisonous gases [ often referred as chemical weapons] to kill people .Terrorists also create gas leakages to increase the strength of explosion) , and
- 3) Metal detection (metallic objects like bombs / weapons etc can be detected within the range).
- 4) Use in Space and Aeronautics :Can be landed on planets to collect data as it can find its own way avoiding obstacles and cove large areas. Instead of ordinary batteries , solar batteries can be used to run the robot.
- 5) In locomotives to avoid accidents

This will not only increase the efficiency of the robot but will make itself a self sustained automated fighting commando for the defense.

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