

NATIONAL SECURITY COMMANDO ROBOT WITH NIGHT VISION EYE

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ABSTRACT

The applications of instrumental robotics are spreading every day to cover further domains, as the opportunity of replacing human operators provides effective solutions with return on investment for supporting human life, the robot need to be close and interact with human. Generally, those closeness and interactions force the robot to have the ability for recognizing human and having the space awareness. For a specific need, the robot also has to be equipped with a specific ability, too. This ability is often taken or imitated from the human behavior when he faces the same task or situation. This is especially important when the duties, that need be performed, are potentially harmful for the safety or the health of the workers, or when more conservative issues are granted by robotics. Heavy chemicals or drugs dispensers, manure or fertilizers spreaders, etc. are activities more and more concerned by the deployment of unmanned options. In this project, we are designing a robot to help security authorities. In this first robot will acquire data from the attacked place. The robot will go to attack place & then it will measure condition like human along with metal, toxic gas & light. These measured value robot will transferred to the control system, after that control system will take the appropriate action like shooting. On receiving shoot command from the microcontroller, robot will perform shooting mechanism. Robot will also detect toxic gas and microcontroller send signal on the android device which will indicate presence of gas. Robot consist of live announcement system to read enemy's activities in Audio format.

1. INTRODUCTION

Terrorism is an issue that plagues the world every minute of every day. Especially in a country like India, which is highly and densely populated with about 1.22 billion people, a terrorist attack may cost too much in the form of casualties. This was clearly seen in the 26/11 terrorists attack at Taj hotel in Mumbai where 101 people including nine foreigners and 14 police officers have lost their lives and about 300 people were injured. Therefore, there is an urgent need to go for comprehensive strategies and to adopt newer technologies to counter these types of inhuman acts. One step towards it is the designing of highly improvised robots which are made exclusively to tackle these types of attacks. It evolved from numerous attacks in the 20th century, to less frequent but more destructive assaults in the 21st century. Contemporary world is facing many immediate challenges, nations, cultures and people are being affected by various issues regarding the security, especially after 9/11 attacks over trade towers in New York USA. According to the observers on global terrorism, international terrorist groups mainly target and attack the civilians in third world countries. When these kinds of attacks take place government should respond quickly so as to save the lives of civilians. The **National Security Guard commando bot** is designed to help the security authorities to complete the operations quickly when such attacks occur so that the casualties can be

reduced. The robot consists of different systems, which serve in acquisition of data from the attacked place, help in rescuing the people inside the attacked place and attacking the terrorists, even killing them under extreme conditions. The robot can detect bombs, live humans, and temperature of a remote place and alerts the operator with the help of audio. It is equipped with bomb/teargas activation circuit, a gun which can be used to attack terrorists.

1.1 Overview of the system

Robot will enter attack place by receiving command from operator through Bluetooth. It will detect live human along with metal by using human detector sensor then microcontroller will send signal to operator. On receiving shoot command from the operator, microcontroller will perform shooting mechanism. Robot will also detect toxic gas and microcontroller send signal on the android device which will indicate presence of gas.

1.2 Literature Review

Man has mostly learned from the nature and developed many things by the inspiration of the creatures living here. He learned flying by the birds developed night vision system by studying the animals, developed night vision system by studying the animals developed sensor observing how nature behaves in those condition, and many more. Researchers are developing robot in the likeness of their living animal or insect counterparts. Robot were originally developed to do repetitive "hard to do". The military forces always tried to use new gadgets and weapons for reducing the risk of their casualties and to defeat their enemies. With the development of sophisticated technology, it mostly relies on the high tech weapons or machinery being used. Robotics is one of the hot fields of modern age in which the nations are concentrating to use it for military purposes in the state of war and peace. They have been in use for some times for the demining and rescue operations but now they are under research for combat or spy missions.

Today's modern military forces are using different kinds of Robots for different applications ranging from mine detection, surveillance, logistics and rescue operations. In future they will be used for reconnaissance and surveillance, logistics and support, Communications infrastructure, forward-deployed offensive operations, and as tactical decoys to conceal maneuver by manned assets. In order to make robots for unpredictable cluttered environment of battlefield, the research on different aspects of robots is under investigation in laboratories to be able to do its job autonomously, as efficiently as a human operated machine can do. Latest techniques are being investigated to have advanced and intelligent robots for different operations. Different kinds of robotic technologies being used in all the three main forces, Navy, Army and Air. Some of the robots discussed are also being used in the wars of Afghanistan and Iraq, also, the robots that are under investigation in laboratories for future military operations. These robots are under investigation for autonomous and cooperative environment. We focus our attention on the uses of robots in war and peace as well as their impact on society. Keywords: Military Robots, Nano Robots, Unmanned Aerial Vehicle (UAV), Unmanned Ground Vehicle (UGV). Micro Robots, Future[1]

For supporting human life, the robot need to be close and interact with human. For a specific need the robot also has to be equipped with a specific ability, this ability is often taken or imitated from the human behavior when he faces the same task or situation. The viewpoint planner is used for the guard robot to watch a certain object such as human continuously. Rather than continuously follows the object, moving the guard robot using the viewpoint planner has many benefits such as reducing the movement and the energy used by the robot. Our viewpoint planner exploits the topology feature of the environment, which is extracted using a skeletonization technique to get a set of viewpoints. We search for escaping gaps from which the target may go out of the robot's sight, and make the movement model of the target and the robot to determine the predicted time of the worst case escape of the target. We then plan the action for the robot based on the geodesic model and escaping gaps. Simulation results using 3D simulator are provided to show the effectiveness and feasibility of our algorithm.[2]

2. Technical Approach

The hardware of the system contains a PIC microcontroller, Pyro-electric sensor, MQ-6, Photoconductive sensor and LCD. The actual hardware is as shown in the picture below.



Fig 1.Hardware

2.1 System Architecture

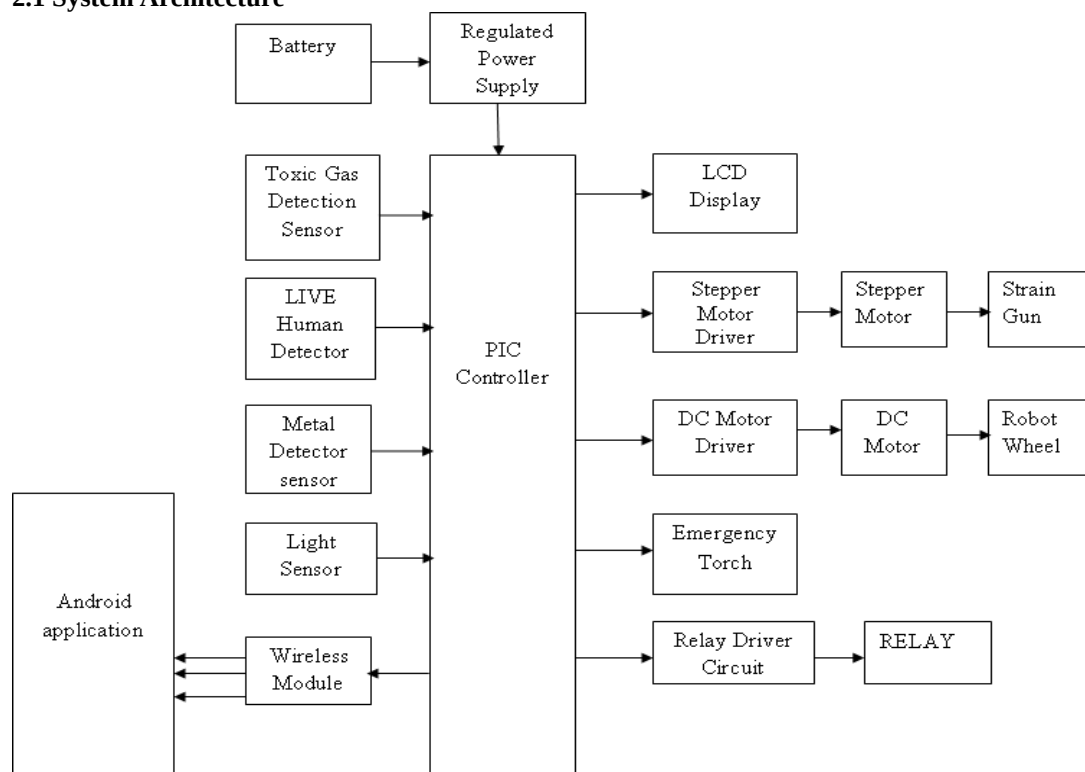


Fig 2.Block Diagram

2. Specifications

2.1 LCD

LCD is an electronic display module. A 16x2 LCD display module displays 8 bit. It contains 8 data pins along with 3 control pins. One ground two power pins are also there. D0-D7 used to send information to the LCD.



Fig-3 LCD Display

2.2 BLUETOOTH

Bluetooth Smart technology is a wireless communications system intended to replace the cables connecting many types of devices, from mobile phones and headsets to hear monitors and medical equipment. Wireless technology for short-range voice and data communication

Feature:

Low-cost and low-power

Provides a communication platform between a wide range of “smart” devices

Not limited to “line of sight” communication



Fig 4. Bluetooth module

Specification of Bluetooth:

- Frequency: 2.4GHz ISM band
- Modulation: GFSK(Gaussian Frequency Shift Keying)
- Emission power: $\leq 4\text{dBm}$, Class 2
- Sensitivity: $\leq -84\text{dBm}$ at 0.1% BER
- Speed: Asynchronous: 2.1Mbps(Max) / 160 kbps, Synchronous: 1Mbps/1Mbps

- Security: Authentication and encryption
- Profiles: Bluetooth serial port
- Power supply: 3.3VDC 50mA
- Working temperature: -20 ~ 75Centigrade
- Dimension: 26.9mm x 13mm x 2.2 mm

2.4 PYROELECTRIC SENSOR



Fig 5. Pyroelectric sensor

Pyro-electric sensor is an electronic sensor that measure infrared IR lights radiating from object in its field of view. A Pyro electric detector is an infrared sensitive optoelectronic component which are specifically used for detecting electromagnetic radiation in a wavelength range from (2 to 14) μm .

A receiver chip of a pyroelectric [infrared detector](#) manufactured by InfraTec consists of single-crystalline lithium tantalate. Because of its very high curie temperature of 620 °C lithium tantalate guarantees an extremely low temperature coefficient with an excellent long-term stability of the signal voltage.

3. CONCLUSIONS :- This system can enhance commando operation., it also help the security authorities. This robot can also be used on disaster situations.

4. REFERENCES

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