



e-ISSN: 2319-8753 | p-ISSN: 2320-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 5, May 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.512

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

Advanced Military Spying and Bomb Disposal Robot with Night Vision

Snehal Sanjay Kale¹, Sarita Madhukar Wankhade², Apeksha Dnyaneshwar Dakhore³,
Diksha Niranjana Gondae⁴, Ankita Prakash Deshmukh⁵.

UG Student, Department of Electronics and Telecommunication, P. R. Patil College of Engineering and Technology,
Amravati, Maharashtra, India

ABSTRACT: This paper presents the wireless bomb disposal robot which will help to improve defence of our nation from terrorist, suicide bombers and other such activities. The Wireless Bomb Disposal Robot uses a control application, at the user end to control the robot remotely using Wireless technology. The bomb technician controls the robot using this application at control site. Bomb diffusing robot which can handle simple tasks like cutting wires, flip on switches, lift light objects etc. This system makes use of robotic arm as well as robotic vehicle which helps not only to enter an area involving high risk but also to pick whatever object it wants to. Also includes night vision camera which will not only allow viewing whatever will be recorded in daytime but also during night. We are going to use servo motor as actuator

KEYWORDS: Camera, Arms, Robot, Sensors, Motors, metal detector.

I. INTRODUCTION

The word robot was derived from Czech word robota which means “a forced labourer”. From there on various different developments are being successfully done till date in the field of robotics in the form of manipulators, humanoids, micro robots etc. Thus the robot technology is advancing rapidly. The robot that we are going to make is a command and control robot. This robot takes commands from the user in the form of control signal and performs the required action. The central idea behind this robot is to provide a line of defence to a bomb disposal squad against the life threatening risk, faced by them in the event of an explosion. It provides the squad a safe distance to dispose off a bomb.

Robots are designed to carry out tasks humans either don't want to or can't do. Disarming and disposing of bombs is one of the most potentially hazardous professional activities out there and matters are complicated even further when disposing of explosives on the battle field. So designing drones in the 1970s to carry out this dangerous task was just a smart move. Bomb disposal was one of the first practical applications for robotics, and since their implementation 50 years ago, bomb disposal robots have undergone a dramatic transformation from the first wheelbarrow units controlled with a series of ropes to modern units using (VR) and advanced sensory feedback.



The technical improvement together with the need for high performance robots created faster more accurate and more intelligent robots using new robots control devices new drives and advanced control algorithms. The presented robot control system can be used for different sophisticated robot applications. This spy and bomb detecting robot was fully controlled by the remote and the commands from the remote via RF transmitter were received by the arduino. So this spy and bomb detecting robot can be used in military applications. Most of the military organization now takes the help

of robots to carry out many risky jobs that cannot be done by the soldier. These spy robots used in military are usually employed with the integrated system including gripper and cameras, video screens, sensors.

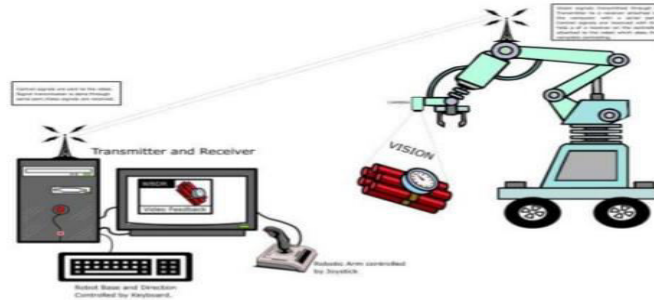
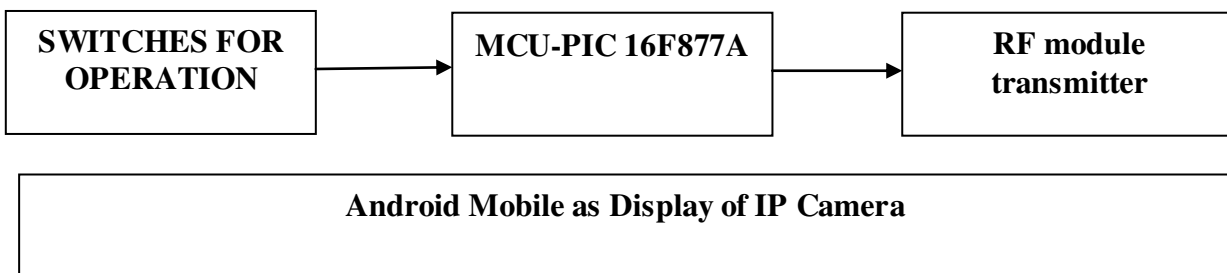


Fig 3.1 System Context Diagram

II. BLOCK DIAGRAM

Transmitter



Figs 3.2 Block Diagram of Transmitter

In the transmitter section, we can observe that there are switches for controlling of robot which are on the remote control which is interfaced with PIC 16F877A controller. After receiving the signal from the switches, the microcontroller will generate signals through USART pins for the RF module. Thus RF module will finally transmit the signal to the receiver part. Also, we are using an android mobile for the display of the visual display of the camera at the robot. The video will communicated by IP Web Camera application of Android OS.

Receiver

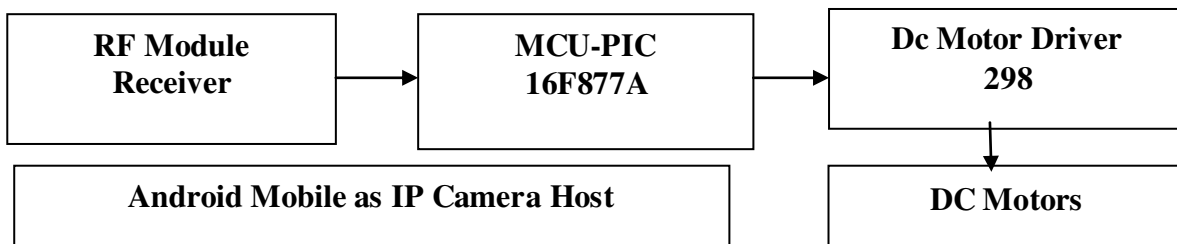


Fig 3.3 Block Diagram of Receiver

In the receiver section, we can observe that there is a rf module receiver that will receive the transmitted signal from the RF module placed at the transmitter section. After receiving the signal, it is sent to the PIC 16F877a microcontroller. The program stored in the microcontroller will direct the motor's operation according to the positions of switches at the operator side. The mobile placed on the robot will capture the visual and will send it to the operator side by the IP Web Camera App.

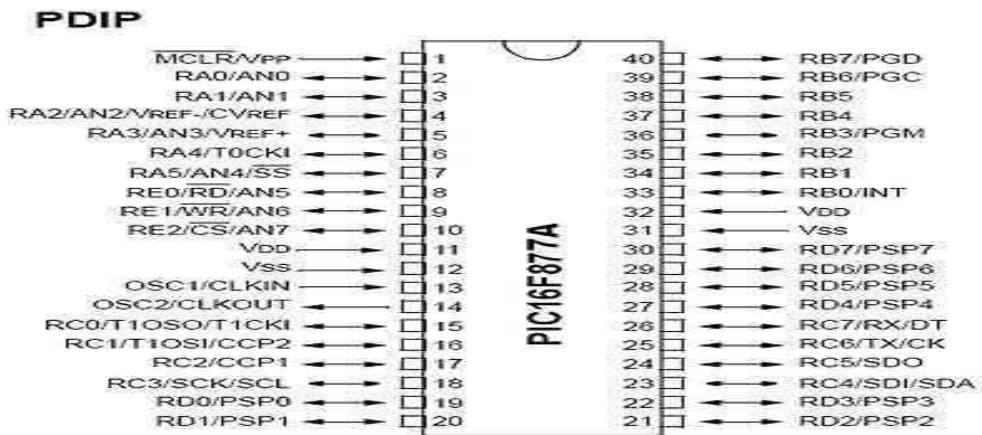


III. HARDWARE DESCRIPTION

PIC 16F877A Microcontroller



Fig 4.1 Pin Diagram



The microcontroller lic of the PIC 16F877A is one of the Most used microcontrollers of the era. This controller 1C is Very easy for use and programming the controller is also relatively easier Microcontrollers. One of the main advantages of this Microcontroller is that it provides RAM memory which can be rewritten as many times as the user desires. PIC 16F877AWhen compared with Other Is used in many PIC microcontroller projects. PIC 16F877AIC also have many applications in embedded electronic Circuits. It has a total number of 40 pins and there are 33Pins for input and output in which specifically there are 5Ports named as A, B, C, D and E.A port has 6 pins, B, C and D ports have 8 pins each. Port E has 3 pins. Function wise there are 8 analog pins, 2UART pins, and 2 PWM pins.

RF Module

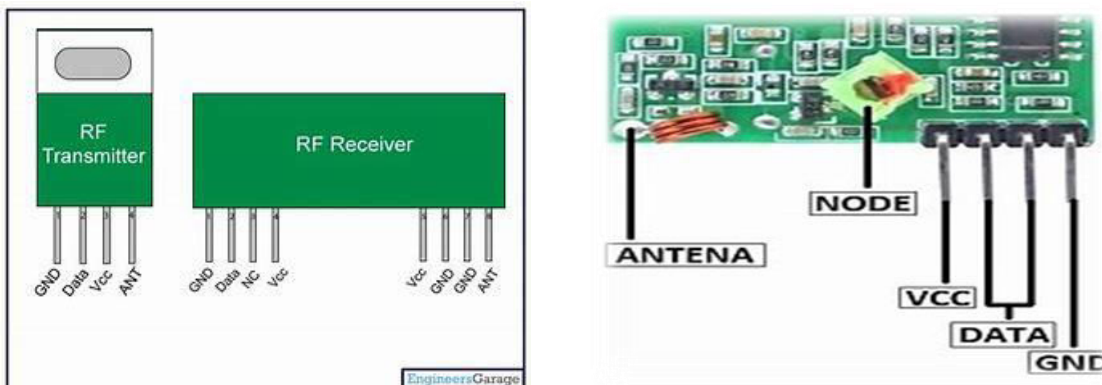


Fig 4.2 RF Module

The main objective of the wireless device used in this project is to serve as a means for wireless communication between the user and the robot. We will be using RF serial data link UART 2.4 GHz model number 1418 which will provide the data transmission serially at 9600 baud rate by the transmitter and receiver and the range will be around 50 meters. Here, signals from the user are processed by the pic microcontroller and then is transmitted from Rx-Tx ports of the PIC, and is then received by the RF receiver module placed at the robot

METAL DETECTOR



Fig 4.3 Metal Detector

For detection of any metal we will fix a metal detector on the front side of our robot. the metal detector can be used to detect slightly big metallic objects, it uses a sensing coil which will be kept near metallic object for detection. The input of the circuit will be colpitt's RF range oscillator which will have a sensing coil as part of tuned oscillator. When coil is brought near a metallic object magnetic energy is observed and oscillator fails to work which leads final transistor to conduct and corresponding signal will be sent to the transmitter.

CAMERA



Fig 4.4 Camera

For video transmission we will use a pair of mobile phones one each at transmitter and receiver. The mobile phone at receiver end will record video and sent it in real by an android application through internet to transmitter. For night vision purpose we will use infrared led's.

LM 298 Motor driver IC



Fig 4.5 Lm 298 Ic

This is again a very popular and economically feasible motor driver IC known as L298. It can control two motors at a time. Currents up to 1.2 amps per motor can be handled by the IC, but to get the maximum current proper heat sinks are necessary. The L298 has a large metallic heat sink with a hole in it, making it easy to attach a homebrew metal heat sink to it.

DC Motors



Fig 4.6 Dc Motor

A DC motor is a transducer that converts electrical power into mechanical power by the means of electromagnetic fields. DC motor in this project, we are using two types of dc motors which have specifications of 60



rpm and 10 rpm. The 60 rpm motor will be used for wheels of robot more rpm is used here so as to increase the speed of robot and 10 rpm motor will be used for movement of arms. Here lesser rpm is used so as to make the arms more precise.

IV. CONCLUSION

- The proposed system of bomb disposing robot will be very useful in the area of security and spying of enemies as well as the areas where human beings cannot reach the robot will do that bomb disposing work.
- This robot is also remotely operated through internet so there is no harm to human lives.
- Hear basic mechanical robot IOT technology and interfacing of arduino and GSM module and connectivity all together can form a best bomb disposing device which would be very helpful to save human life using internet.
- It detects the RF data send by transmitter and according to that control robot in forward, backward, left turn, right turn movements.
- Metal/bomb detector can detect the metals and alert with led to notify the metal/bomb
- Because, we can't detect the actual bomb we don't have that much authority .the camera detects the exact location of the robot.
- In this manner our project plays a crucial role in military as well as in our police department.
- In this project, we have introduces a new application using two techniques i.e. Spying and bomb disposal implemented by using arduino kit.
- In future, we can also implement bomb diffusion technique in this project. It can be used in radar detection systems to detect objects by implementing other hardware.

REFERENCES

- [1] V. Prasanna, Balaji & H. Goutham, International Journal on Theoretical and Applied Research in Mechanical Engineering (IJTARME), 2013.
- [2] "Bomb Detection and diffusion in Planes by Application of Robotics", Prashant Limje, Shailesh Khakale, Special Issue for National Conference on Recent Advances in Technology And Management for Integrated Growth, 2013.
- [3] Atzori L, Iera A, Morabito G (2010) The Internet of Things: A survey, Computer Networks,
- [4] Botterman M (2009) Internet of Things: an early reality of the Future Internet, European Commission, And Available at: http://ec.europa.eu/information_society/policy/rfid/do_comments/iotprague2009.pdf. Accessed 2011 Dec 17.
- [5] Roberts CM (2006) Radio Frequency Identification (RFID). Computers and Security.
- [6] Dr. B.Subrahmanyeswara Rao, C.Soumya, G.Shamala Siresha, M. Sushma, N. Sai Priyanka "PC Controlled Bomb Detection and Diffusion Robot" International Journal of Advanced Research in Electrical, Electronics And Instrumentation Engineering (An ISO 3297: 2007 Certified Organization) Vol. 5, Issue 4, April 2016.
- [7] Saurabh Nalwade "Robots For Surveillance In Military Applications" International Journal Of Electronics And Communication Engineering & Technology (IJECET), ISSN 0976 –6464(Print), ISSN 0976 – 6472(Online), Volume 5, Issue 9, September (2014).
- [8] Ankita Patel, Kinjal Chaudhari, Dattukumar Patel "Touch Screen Controlled Multipurpose Spy Robot Using Zigbee" International Journal Of Advanced Research In Computer Engineering & Technology (IJARCET) Volume 3 Issue 4, March 2014.



INNO  **SPACE**
SJIF Scientific Journal Impact Factor

**Impact Factor:
7.512**

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

 **9940 572 462**  **6381 907 438**  **ijirset@gmail.com**



www.ijirset.com

Scan to save the contact details