

# Automatic Mystery Detection and Destroy Using Embedded Systems

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**Abstract**—This proposed system is made to detect the target (missile, planes, drones etc.) approaching and automatically destruct it with the help of ultrasonic sensors. The ultrasonic transducer consists of a transmitter and a receiver and is rotated at 360 degrees. The sound waves are emitted from the transducer and gets reflected back from the target is received by the transducer again. The ultrasonic transducer is connected with the PIC microcontroller. When the target is detected within the detection range the microcontroller receives the signal. The assigned program on the microcontroller will move the launching application towards the detected degree and shoots towards the target.

**Keywords**— PIC Microcontroller, Ultrasonic sensors, Target

## 1. INTRODUCTION

With the advancement of science and technology security on this modern world has been the major concern for natural treasures especially through air. While on previous years only the missiles and planes but now on recent years the improvement on the technology of drones there need to be concentration on this also. The drones are having more advantages such as they are used for Ariel filming, surveying etc... But they are also having threat to be hacked easily and with the help of this it is easier for anyone to easily attack through air. In order to overcome all this and defend a specific area with very low price we are using ultrasonic sensors here. The work of the transducer here is to rotate 360 degrees and keep sending sound waves and receives it again. The ultrasonic transducer is rotated with the help of stepper motor. When the target is detected the ultrasonic sound wave is reflected back from the target and received. The microcontroller receives the information about the target approaching. The program will be pre assigned on controller. So, as per the program the controller will turn on its launching application on. The control room will be sent the information about the target and then the launcher will turn towards target and shoots. The KEIL software is used for programming on PIC microcontroller here.

## 2. LITERATURE SURVEY

This paper describes on defending a missile approaching using an ultrasonic sensor. It is based on SONAR based object tracking system where it continuously monitors the target. When the target is been detected the microcontroller receives the signal and sends the information about the detected missile to the control room. After that it waits for the information from the control room for further actions to be taken. When the information is got from the control room the launching vehicle will turn towards the detected missile and fires. Even though the target is clearly been

detected the main problem occurs is that the control room needs to take action against the approaching missile and so it takes some time as a result the time is wasted and the target comes closer to the protected area. In case of a nuclear war head the possible blanketing area will become very less. [1]

In this paper the entire defense system is placed on the robotic module and always kept moving and keeps searching for the target. The ultrasonic sensor is placed on the robotic module and rotated 360 degrees. The ultrasonic sensor sends the sound waves repeatedly, when the target is been detected the launcher will turn towards the detected target and fires. The main disadvantage of this project is that it's been kept moving all the time, some or the other area to be projected will loosen its importance. So as a result not every place area can be protected. [2]

This paper is designed in a manner that the missile is detected using the IR at the cheaper cost. The fire that accompanies the chemical action does produce heat known as infrared radiation. So if the IR is sensed the objective is said to be achieved. The system is designed to be portable, economical and low maintenance for tracking a missile. The demerit of this paper is considered that the drones are also becoming as equal danger as of missiles. The drone does not produce any type of radiation and so they can't be detected. [3]

This paper describes in detail about the drones which are also called as UAV (Unmanned Ariel Vehicle). The drones can either be controlled manually or it can be operated from ground or it can also been controlled by another vehicle. After the improvement of drones the aerial surveillance, filming etc... But there is major threat that it can be hacked easily and be used for terror attacks. [4]

This paper describes in detail about TASS (Total Airport Security System). The TASS is based on the concept of integrating different types of selected real time sensors and amplifier subsystem for data collection on variety of modes which includes fixed and moved. They are suitable for any

environment condition. The TASS concept was implemented on 2012 Olympics for security purposes. [5]

This paper describes briefly about the Nike Hercules Missile System. This system is capable of performing three types of missions which are namely (1) surface to air. (2) Surface to air low altitude. (3) Surface to surface. This system is an effort to support the air force by providing the selected systems with the capability of RADOR scoring of simulated bombing runs. [6]

**3. EXISTING METHOD**

In the existing method the target can be detected and after detecting the controller will send the information to the controller. The controller needs to take certain action about the target. The target is been sensed through ultrasonic sensors here. The other method detects the missile through the IR sensors since the upcoming missile will undergo chemical reaction which emits IR radiation. Time is wasted when a microcontroller sends information to the control room and because of that the defending area becomes less. While sensing the target through IR radiation drones can't be found out.

**4. PROPOSED METHOD**

This proposed system uses a fully automated system and due to this valuable time can be saved. The ultrasonic sensors can detect the drones also. Here the controller is interfaced with the ultrasonic sensor and it will be rotated in 360 degrees and keeps on sending the sound waves and receiving.

When the object is detected the launching machine will turn towards the degree of detected target and shoots.

**ARCHITECTURE OF BLOCK DIAGRAM**

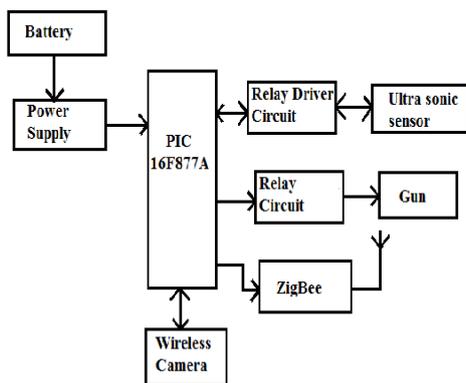


Figure: Block Diagram of Microcontroller based Mystery Object Detector.

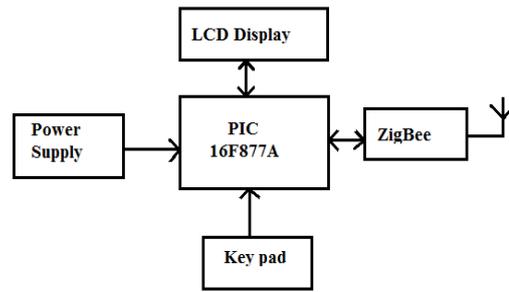


Figure: Block Diagram of Microcontroller based ZigBee Wireless Key pad controller.

*a) PIC CONTROLLER*

PIC refers as Peripheral Interface Controller. Mostly used because of its low cost and high availability. It has 35 single word instructions and is single cycle instructions and uses two cycles. The operating speed is 200ns instruction code and clock input is 200ns instruction code cycle.

*b) ZIGBEE*

ZigBee is a wireless technology. When connected on mesh network it can get more range. It consists of smaller batteries and longer life. It can cover a maximum distance of 2kms.

*c) LCD*

A liquid crystal display is thin electronic visual display. LCD does not emit light but they use ambient light in the surrounding. So they consume only very little power. They are applied on computer monitors, television, aircraft cockpit display, etc.

*d) ULTRASONIC SENSOR*

Ultrasonic sensors are also called as transducer. Ultrasonic sensor concept is based on SONAR. The transducer produces high frequency sound waves and checks it by detector which is reflected back from the target.

*e) WIRELESS CAMERA*

Wireless security cameras are closed circuit television cameras. It transmits a video and audio signal to a wireless receiver. Here the camera is battery powered which makes it wireless.

*f) VIDEO DISPLAY UNIT*

In this project video display unit is normal television is enough for displaying the capturing video in the robot section.

*g) MOTOR*

The DC motors can be powered from the battery. Here it is used for rotating ultrasonic sensor on 360 degrees.

**5. RESULT AND CONCLUSION**

The ultrasonic sensor is rotated on 360 degrees and keeps sending sound waves. When the target is been detected within the detection range the controller will receive the message. The pre assigned program on the controller will turn on the launcher on. The launcher will turn towards the direction of detected target and shoots. The launcher can also be controlled manually. Hence the time is saved by making the system automatic and so the blanketing area can be enlarged. The drones also can be detected by using ultrasonic sensors.

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