Automatic Missile Detection and Destruction System

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Abstract: **This project is to design and build an automatic missile detecting and destructing system. Missile is being detected by ultrasonic sensor acting as a radar. This system consists of Control unit i.e. raspberry pi which takes the action of moving the firing mechanism within the direction of target (missile). Upon fixing the direction, it sends the command to firing mechanism to destroy the target. This system will be able to differentiate between ally and intruder missile then it destroys the intruder one. Camera is used to capture the video at the war field and transmit video wirelessly to control room.**

Keywords: **Missile, Raspberry pi, Ally, Intruder**

1. Introduction

In modern age, A missile also known as a guided missile, is a guided self-propelled system which basically carries explosive warheads. In 21st century the missile technology is rapidly developing. A ground missile is a missile designed to be launched from the ground to destroy aircraft or other missiles. It is one type of anti-aircraft system. In modern armed forces missiles have replaced most other forms of dedicated antiaircraft weapons, with anti-aircraft guns pushed into specialized roles. War is an organized armed warfare that is carried out by states, nations, national and social groups. Missiles are definitely going to be used in war. In fact, some missile has the capacity to destroy larger areas. So as to protect our nation from such an attack, A system for detection and destruction of missile need to be developed. We are developing a system which will able to do so. This system detects an intruder missile attack as well as it distinguishes between which is the ally or intruder missile. Identification code will be assigned to the ally missiles. The intruder missile is eliminated by the firing unit which is controlled by control unit. The designed system is characterized with efficient video camera for remote sensing and surveillance featured with stream live video.

2. Literature survey

- *Missile Detection by Ultrasonic and Auto Destroy System. (May 2014). Samir Chopra, Suman Bharti, Tarun Singh Negi, Prof. P.D Kulkarni,* In this paper they are attempting to make a robotic platform along with a stepper motor fitted with ultrasonic sensor is used to automatically locate and aim at a moving target and successfully destroys it. The control system is ATmega32 is an 8-bit high performance microcontroller of Atmel's Mega AVR family with low power consumption. This system takes decision to detect and destroy the moving missile. It sends control signal to firing unit to destroy missile. The Ultrasonic transceiver (Transmitter & Receiver) detects missile object and displays the missile direction on LCD through Microcontroller. If there is any target within the detection range, the application will turn ON the Laser gun to the nearest detected target and fires. A buzzer alarms when any of the ultrasonic sensor identifies the missile to alert the nearest people. They have introduced wireless camera for taking the visuals at war field. A RF transmitter and receiver are used for controlling robotic platform [2].

- *Microcontroller Based Missile Detection and Destroying System. (July 2014) S. Nagakishore Bhavanam, Acharya Nagarjuna* The proposed paper describes that this project consists of an intelligent sonar based object tracking system and DC geared motor driven firing unit interfaced with microcontroller based control unit is used. ultrasonic sensor is preferred instead of IR sensor, because the Ultrasonic sensors can cover large distances and it can detect target in all the lighting conditions (day or night). Atmel 89c52 microcontroller is used as a control unit. As the target(missile) is detected the control unit sends commands to firing unit to destroys the target. The programming of microcontroller is done using embedded 'c' language [3].

- *Missile Detection and Auto Destroy System on a Robot Platform. (2015) Ms. Palwe Pooja Balasaheb, Ms. Shinde Tejashree Anil, Ms. Sonawane Chaitali Shivajirao, Prof. S. M. Bhilegaonkar.* This paper proposes a missile detection and auto destroy system on Robot Platform. A microcontroller ATmega16 for loading embedded C program. The ATmega16 is 40 pin IC which has four port like port A, port B, port C

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and port D. .AT mega16 is 8-bit microcontroller and it is based on RISC architecture. It works on 16MHz frequency. It has low power consumption and inbuilt analog to digital converter. This microcontroller executes powerful instruction in single clock cycle. Stepper motor and ultrasonic sensor are mounted hence sensor rotate continuously rotate in 360-degree direction. If any obstacle come in between ultrasonic ray that time stepper motor will stop and Laser gun gets on. Sensor also measure the distance and it is displayed by using LCD display. Here Laser is used for destroying purpose as obstacle is detected. Robotic Platform movement in all required direction it means forward, backward, left, right etc. for that RF transmitter for sending wireless data, RF receiver for receiving data and motor driver IC for movement of robot according to our input data [4].

- *Automatic Missile Detector Using Ultrasonic Proximity Detector. (April 2016) Narayan Thakkar, Shubham Sahu, Shrushti Sindhemeshram, Roshan Kumar.* This proposed system uses 8051 Microcontroller as a central control system to send control command to targeting system to attack the target (missile) via laser. The Intel MCS-51 (commonly termed 8051) is an internally Harvard architecture, complex instruction set computing (CISC) instruction set, single chip microcontroller series developed by Intel in 1980 for use in embedded systems. power supply is very important for any circuit, so the ripples present are removed using a capacitive filter and it is then regulated to +5V using a voltage regulator 7805 which is required for the proper operation of the microcontroller and other components. In this project a robotic platform along with a stepper motor fitted with ultrasonic sensor is used to automatically locate and aim at a stationary target, moving target and firing a laser. It is Light Amplification by Stimulated Emission of Radiation. Target acquisition and tracking are frequent domains of active sensing such as Ultra-sound, and then LASER firing. The ability to track targets at manipulation range can significantly reduce the cost and complexity of manipulator control. This research has an additional advantage that it checks the target is hostile or not and accordingly fire the laser. A RF transmitter and receiver modules are used for controlling robotic platform RF Transmitter is use for transmit the wireless data from input side. It operates at 434MHz frequency. For communication purpose we need serial data so we use Encoder HT12E, it converts parallel data into serial form at transmitter side. and at receiver side decoder HT12D converts that serial data in to parallel form [6].
- *Automatic Mystery Detection and Destroy Using*

Embedded Systems (2016) K. Anbalagan, V. Divakar, Y. Sathik Basha, M Senthil Kumar. This paper describes on defending a missile approaching using an ultrasonic sensor. The ultrasonic transducer is rotated with the help of stepper motor. 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. The microcontroller receives the information about the target approaching. 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 [5].

- *Missile Detection and Automatic Destroy System (May 2017) Sachin Gardi, Abhijeet Ghorpade, Prakit Gaikwad, Prof. Y. D. Kulkarani.* This proposed system uses an ultrasonic sensor module interfaced to a microcontroller of AVR family. An ultrasonic transducer consisting of a transmitter and receiver are used. ultrasonic transducer will sense the object with the help of antenna and stepper motor rotate antenna 360 degree, if any object detected then it will display on the LCD display. DC motor has used for moving hardware with antenna. The control unit is the ATmega32 is a low-power CMOS 8-bit microcontroller based on the AVR enhanced RISC architecture. By executing powerful instructions in a single clock cycle, the ATmega32 achieves throughputs approaching 1 MIPS per MHz allowing the system designed to optimize power consumption versus processing speed. 5-volt power supply is required. The tank vehicle is fitted with another microcontroller for movements of the vehicle control actions send and receive by the key panel through wireless Bluetooth module communication. If there is any target detected within the range, the application will turn ON the Laser gun to the nearest detected target and fires. A buzzer alarms when any of the ultrasonic sensor identifies the missile to alert the nearest people [7].

3. Conclusion

From this review paper survey, it is concluded that the proposed projects are based on microcontroller as a control unit. But they are much slower than the processor. So as to detect and destroy missile in real time and accurately. A processor based control system will be beneficial. So we are using raspberry pi as a control unit here which is a stand-alone computer itself. It is much faster than microcontrollers and camera can be directly interface to it. The above mentioned projects does not have the ability to distinguish between intruder and ally missile. So we are providing a provision to distinguish between intruder and ally missile.

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