International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

MISSILE TARCKING AND AUTO DESTRUCTION BY USING ARDUINO

[1]DR.ABDUL RAHIM, [2]A.RENUSRI, [3]A.KALYANI, [4]D.SHRINIDHI

[1]Assistant Professor, Department of Electronics and Communication Engineering, Malla Reddy Engineering College For Women, Maisammaguda, Dhulapally Kompally, Medchal Rd, M, Secunderabad, Telangana.

[2,3,4]Student, Department of Electronics and Communication Engineering, Malla Reddy Engineering College For Women, Maisammaguda, Dhulapally Kompally, Medchal Rd, M, Secunderabad, Telangana.

ABSTRACT

The objective of this project is to develop an automatic missile detection and destruction system capable of tracking targets moving in various directions. This system is designed to autonomously navigate towards the detected missile and engage it once locked on. It features an intelligent sonar-based object tracking mechanism that continuously monitors potential threats. Upon detecting a missile, the system relays its location to a Central Control System, which directs the firing mechanism towards the target. Once aligned, the system sends commands to initiate the attack.This project utilizes an ultrasonic radar system alongside a DC geared motor for the firing unit, all integrated with a microcontroller-based control unit. Ultrasonic sensors are chosen for their ability to detect targets over long distances and under all lighting conditions, whether day or night. The microcontroller is programmed using Embedded C, allowing for automation that reduces manpower requirements and minimizes human error, resulting in more precise operation. This paper outlines various methodologies for automating the missile targeting process through maneuverable actuators, presenting innovative ideas and design modules to enhance the overall automation system.

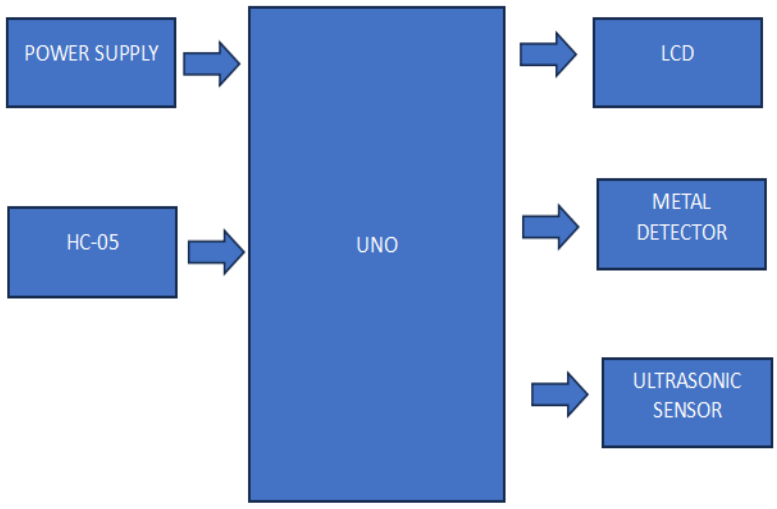
I.INTRODUCTION

The purpose of this project is to design and construct automatic missile detection and destroying system. This system is designed to detect the target (missile) moving in multiple directions. The target destroying system moves automatically in the direction of missile and fires it upon fixing the target. This system consists of an intelligent sonar based object tracking system that continuously monitors the target. Upon

International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

detecting the target it sends the target's location to a Central Control System. The Central Control System takes the action of moving the firing mechanism in the direction of target (missile). Upon fixing the direction, it sends the control command to firing system for attacking the target. In this project we are making use of ultrasonic radar system and a dc motor driven firing unit interfaced with a Microcontroller based control unit. We prefer ultrasonic sensor to IR sensor, because the Ultrasonic sensors covers larger sensing distance and it can detect the target in all the lighting conditions (day or night). The programming of Microcontroller is done using Embedded 'C'. An embedded system is a combination of software and hardware to perform a dedicated task. Some of the main devices used in embedded products are Microprocessors and Microcontrollers Microprocessors are commonly referred to as general purpose processors as they simply accept the inputs, process it and give the output. In contrast, a microcontroller not only accepts the data as inputs but also manipulates it, interfaces the data with various devices, controls the data and thus finally gives the result. The Missile tracking and auto collision system using ARDUINO Microcontroller is an exclusive project that can move the target aiming gun according to the instructions given by microcontroller and also alerts through LCD when any missile is being detected by it. The thesis explains the implementation of "Missile tracking and auto collision system" using ARDUINO microcontroller.

Block diagram



International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362

II.DESIGN PROCESS

Embedded system design is a quantitative job. The pillars of the system design methodology are the separation between function and architecture, is an essential step from conception to implementation. In recent past, the search and industrial community has paid significant attention to the topic of hardware-software (HW/SW) codesign and has tackled the problem of coordinating the design of the parts to be implemented as software and the parts to be implemented as hardware avoiding the HW/SW integration problem marred the can be applied to advantage in the design methodology. Simulation tools are used for exploring the design space for validating the functional and timing behaviors of embedded systems. Hardware can be simulated at different levels such as electrical circuits, logic gates, RTL e.t.c. using VHDL description. In some environments software development tools can be coupled with hardware simulators, while in others the software is executed on the simulated hardware. The later approach is feasible only for small parts of embedded systems. Design of an embedded system using Intel's 80C188EB chip is shown in the figure.

Inorder to reduce complexity, the design process is divided in four major steps: specification, system synthesis, implementation synthesis and performance evaluation of the prototype.

1.SPECIFICATION

During this part of the design process, the informal requirements of the analysis are transformed to formal specification using SDL.

2.SYSTEM-SYNTHESIS

For performing an automatic HW/SW partitioning, the system synthesis step translates the SDL specification to an internal system model switch contains problem graph& part running on a FPGA board known as phoenix, prototype hardware for Embedded Network Interconnect Accelerators.

5. APPLICATIONS

Embedded systems are finding their way into robotic toys and electronic pets, intelligent cars and remote controllable home appliances. All the major toy makers across the world have been coming out with advanced interactive toys that can become our friends for life. 'Furby' and 'AIBO' are good examples at this kind. Furbies have a distinct life cycle just like human beings, starting from being a baby and growing to an adult one. In

architecture graph. After system synthesis, the resulting system model is translated back to SDL.

3.IMPLEMENTATION-SYNTHESIS

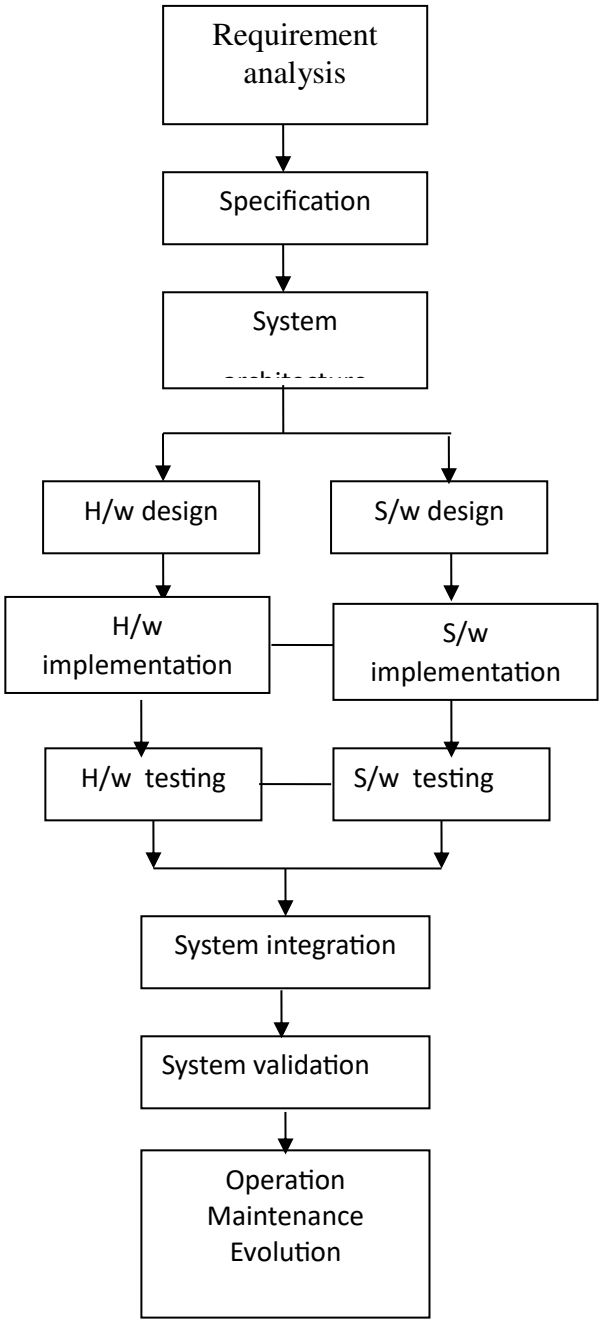
SDL specification is then translated into conventional implementation languages such as VHDL for hardware modules and C for software parts of the system.

4. PROTOTYPING

On a prototyping platform, the implementation of the system under development is executed with the software parts running on multiprocessor unit and the hardware

AIBO first two letters stands for Artificial Intelligence. Next two letters represents robot. The AIBO is robotic dog. Embedded systems in cars also known as Telematic Systems are used to provide navigational security communication & entertinment services using GPS, satellite. Home appliances are going the embedded way. LG electronics digital DIOS refrigerator can be used for surfing the net, checking e-mail, making video phone calls and watching TV.IBM is developing an air conditioner that we can control over the net. Embedded systems cover such a broad range of products that

International Journal For Advanced Research In Science & Technology
A peer reviewed international journal www.ijarst.in
ISSN: 2457-0362



1.Data communications: Analog modems, ATM switches, cable modems, XDSL modems, Ethernet switches, concentrators.

2.Digital imaging: Copiers, digital still cameras, Fax machines, printers, scanners.

3.Industrial measurement and control: Hydro electric utility research & management traffic management systems, train marine vessel management systems.

4.Medical electronics: Diagnostic devices, real time medical imaging

systems, surgical devices, critical care systems.

- **Server I/O:** Embedded servers, enterprise PC servers, PCI LAN/NIC controllers, RAID devices, SCSI devices.
- **Telecommunications**: ATM communication products, base stations, networking switches, SONET/SDH cross connect, multiplexer.
- **Mobile data infrastructures**: Mobile data terminals, pagers, VSATs, Wireless LANs, Wireless phones.

III.CONCLUSION

In this paper we have attempted to use ultrasonic sensor for implementation of RADAR and got results that exceeds our presumed expectations. With some enhancements the system can be used for real time purposes. The project "Missile tracking and auto collision system" is mainly intended to operate design and construct automatic missile detection and destroying system. The system is designed to detect the target (missile) moving in multiple directions. The target destroying system moves automatically in the direction of missile and fires it upon fixing the target. . In future we can add GSM to this project is that the status of target properties is not known. This can eliminate by having a GSM module, which gives the status of target. We can also add Ultrasonic module, which is used for obstacle detection with GSM module which gives respective information. By connecting wireless camera to the system, then we can see the outer world from our personal computer only by using GPRS and GPS. We can use this system at so many fields and we can use to handle so many situations.

IV.REFERENCES

[1] A.M. Anushree Kirthika (2014), "Missile Detection and Automatic Destroy System"Volume 4, Number 1, pp. 1-6.

[2] Ashish Jadhav, Mahesh Kumbhar, and Meenakshi Pawar"Cell Phone Controlled Ground Combat Vehicle(July 2012), "International Journal of Computer and Communication Engineering, Vol. 1, No. 2, July 2012.

[3]. S. Murakami, Y. Nishida, T. Hori, H. Mizoguchi, Detecting Human Head Location Using a Simply Installed Ultrasonic Radar System, in Proceedings of the 22nd Annual Conference of the Robotics Society of Japan, 1A23(1)-(2), September 2004.

[4] Fu-Kuang Yeh, Kai-Yuan Cheng, and Li-Chen Fu." Variable Structure-Based Nonlinear Missile Guidance/Autopilot Design With Highly Maneuverable Actuators "IEEE transaction on control

systems technology,vol.12,no.6,november 2004.

[5] Harvey, C., and Stein, G.(June 2014), “Missile Flight control system,” IEEE Trans. Autom. Control AC-23(3), 378–387 (June 2014).

[6] A.Hla Myo Tun, S.San Hlaing Oo, C.Myint Myint Yi," Analysis of Phase Lead Compensator Design for Laser Guided Missile System using MATLAB"

[7] B. Kada,"Outer-Loop Sliding Mode Control Approach to Longitudinal Autopilot Missile Design"IFAC World Congress Milano, September 2, 2011

[8] Masahiko Saito,Mayur Palankar(2015), ”Embedded Systems - Missile Detection/ Interception,”IEEE transactions of Missile system 2015.

[9] Reichert, R. T.(2014), “Dynamic Scheduling of Modern-Robust-Control Autopilot Designs for Missiles,” IEEE Control Systems Magazine 12(5), 35–42 (2014).

[10] Yang Xin, Bo Qingwei and Zhou Changsheng, "Design and Analysis of Servo Actuator Control System Based on ARM," 6th International Conference on Machinery, Materials, Environment, Biotechnology and Computer (MMEBC 2016).