Advance Technology Based Region and Id Checker Based BSF Replacement System

Ankit Tripathi
B. Tech Student
Department of Electronics & Communication Engineering
MIT, Moradabad

Ayush Sharma
B. Tech Student
Department of Electronics & Communication Engineering
MIT, Moradabad

Dr. Pankaj Sharma
Associate Professor
Department of Electronics & Communication Engineering
MIT, Moradabad

Abstract

National security problem raises with major threats i.e. illegal activities at border areas and few others are examples of those. Even if government provides bullet proof jackets and high quality guns to our armed forces, yet it is hard to resolve such issues. In such operations when forces are not able to push their strength beyond human efforts, we can implement Artificial Intelligence based machines to put into action. In this paper, it is described that a machine will identify the region of my country, other country and display on LCD. And it takes appropriate action according to valid region. Also, this system check the id for valid person and take an appropriate action for invalid persons such as operate the laser shooter that identifies the suspected person and display all conditions in LCD at border. This system checks the force member id wirelessly.
Keywords: IA, BCD, ID, LCD, RF, SONAR, LASER, RAM, DIP

I. INTRODUCTION

The Indian Army (IA) is the land-based branch and the largest component of the Indian Armed Forces. The primary mission of the Indian Army is to ensure national security and unity defending the nation from external aggression and threats, and maintaining peace and security within its borders. We are designed an Artificial Intelligence based Unit which identify the region of my country and other country and display in LCD and the system automatically identify the invalid person within the border region and take appropriate action against invalid person. To design this system we are use ultrasonic SONAR to identify the region of my country, microcontroller 89S52 to transmit and receive ultrasonic waves through 40 KHz ultrasonic receiver and transmitters, LCD to display the person is valid or invalid and distance, Ht 12ed encoder and decoder IC, Regulator IC, RF module, LASER shooter to shoot the invalid person and circuitry to control the motion of robot.

Artificial intelligence is playing an increasing role in the research of management science and operational research areas. Intelligence is commonly considered as the ability to collect knowledge and reason about knowledge to solve complex problems. In the near Future intelligent machines will replace human capabilities in many areas. The main objective is to design this system to prevent the unwanted or illegal activities at the border areas. This system uses ultrasonic sensor for identifying the valid or invalid person near the border areas and also specified the border areas or region of my country. Anyone who present near the border area have a unique identification card and every ID card have a BCD code which is stored in microcontroller look-up table. When the scan BCD code is match with the BCD code which is stored in microcontroller look up table then person having that ID card is valid person otherwise they became invalid person.

There are four modes of this project: Wireless robot: In this mode we operate the robot wireless technology through RF technology. To design radar concept: In this mode we use the ultra sonic sensor that sense the obstacle and measure the distance and display in LCD. Boarder checker mode: in this mode we use the switch for setting the critical distance and it can be change. Person checker: in this mode we use the RF active module for wireless ID card that sense the system automatically check and take appropriate action for criminal. This paper organized as follows: Section II presents the system design model. Section III discusses the experimental result in which we describe the working of proposed system. Finally section IV presents our main conclusions.

II. SYSTEM DESIGN MODEL

The proposed AI unit is using 8-bit microcontroller with 8K bytes of in-system programmable flash memory. The on-chip Flash allows the program memory to be reprogrammed in-system or by a conventional nonvolatile memory programmer. By combining a versatile 8-bit CPU with in-system programmable flash on a monolithic chip, the Atmel AT89S52 is a powerful microcontroller which provides a high-flexible and cost-effective solution to many embedded control application.
The AT89S52 provides the following standard features: 8K bytes of Flash, 256 bytes of RAM, 32 I/O lines, Watchdog timer, two data pointer, three 16-bit timer/counters, a six vector two-level interrupt architecture, a full duplex serial port, on-chip oscillator.

In addition, the AT89S52 is designed with static logic for operation down to zero frequency and support two software selectable power saving modes. The idle mode stop the CPU while allowing the RAM, timer/counters, serial port, and interrupt system to continue functioning. The power down mode save the RAM contents but freezes the oscillator, disabling all other chip function until the next interrupt or hardware reset.
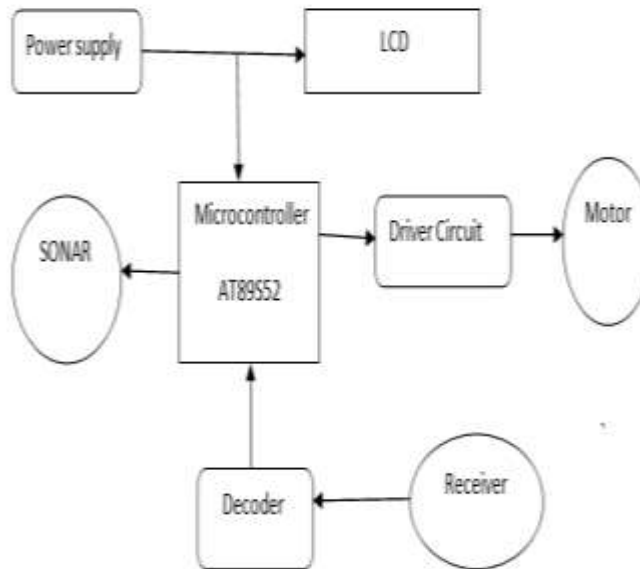

Fig. 1: Block Diagram

The block diagram used for implementation is as shown in figure 1. The proposed system consists of ultrasonic sensor also called ultrasonic transceiver because they can both transmit and receive the ultrasonic signal. These device works on principle similar to that of transducers used in radar and sonar system, which evaluate attributes of a target by interpreting the echoes form radio or sound waves respectively as shown in figure 2. Active ultrasonic sensor generate high-frequency sound waves and evaluates the echo which is received back by the sensor, measuring the time interval between sending the signal and receiving the echo to determine the distance to an object. Proposed system also consist decoder and encoder IC. The 2^{12} encoders are a series of CMOS LSIs for remote control system applications. They are capable of encoding information which consists of N address bits and 12-N data bits. Each address/data input can be set to one of the two logic state.
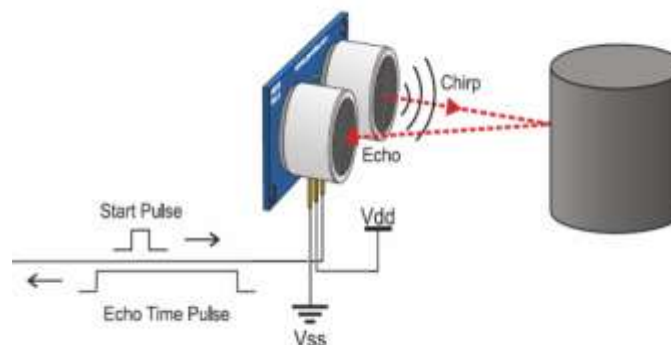

Fig. 2: Ultrasonic Sensor

The programmed address/data are transmitted together with the header bits via an RF or an infrared transmission medium upon receipt of trigger signal. The pin no 1 to pin no 8 is use for the address line, if we use one encoder and one decoder IC then we give a same address in encoder and decoder IC. In this project we connect all the address pin to join together and connect to the ground pin. So we provide same data to decoder IC by connecting to all address pin to the same ground voltage pin no 9 is V_{ss} pin, pin no 10 to pin no 13 is for data line. In this project we connect a changeable data base logic to this point. By connecting a DIP switch to these pin, DIP switch is used for external data base by changing the side switch we change the data base.
Data from RF transmitter is received by the RF receiver module. Modulation frequency of receiver and transmitter is same 433 MHz, when RF module receives the data then it transfers this data serially into decoder IC. Decoder IC receives the data serially and decoder delivers a data parallel.

III. EXEPERIMENTAL RESULT

The experimental setup uses ultrasonic sonar which is connected to microcontroller AT89S52 work on principle similar to that of transducers used in radar and sonar system, which evaluate attributes of a target by interpreting the echoes form radio or sound waves respectively. For years, ultrasonic sensors have been used in a wide range of applications including fish finders, parking sensors in cars and burglar alarms, the frequency of ultrasonic rays is 40 KHz. Active ultrasonic sensor generate high-frequency sound waves and evaluates the echo which is received back by the sensor, measuring the time interval between sending the signal and receiving the echo to determine the distance to an object.
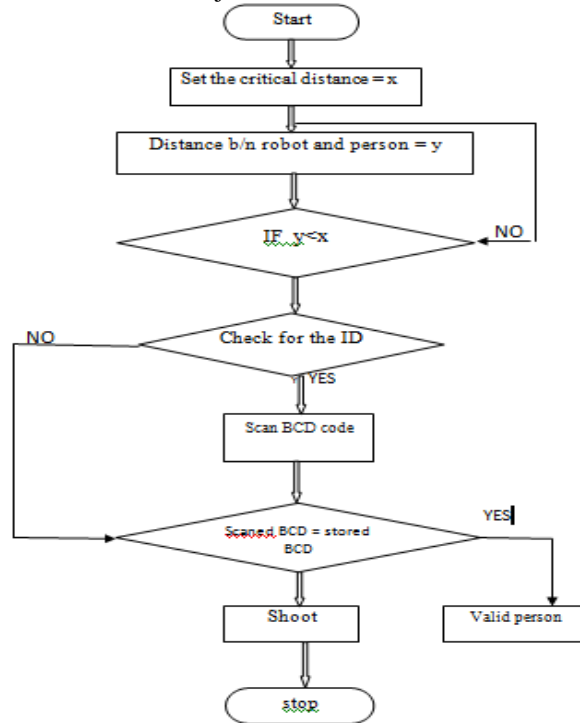

Fig. 3: Flow Diagram

The flow diagram of proposed system is shown in figure 3. After giving the power supply we set the critical distance (i.e distance between the border and the robot) say 'x' for specify the border region by ultrasonic sensor. When any person enter in border region or come in range of ultrasonic sensor then ultrasonic sensor measure the distance between person and robot say 'y'. If distance 'y' is smaller than distance 'x' (i.e person present inside the border area). In this case the ultrasonic senor scan the person's ID card and generate a BCD code, every ID have a unique BCD code no for the security purpose. If the scan BCD code matches with the BCD code stored in microcontroller AT89S52 then the person present in border area is valid person and there is no preventive action taken by proposed system. Similarly if the distance 'y' is equal to distance 'x' then also in this case the above prevented action taken by proposed system. In other case if the scan BCD code do not matches with the BCD code stored in microcontroller AT89S52 or the person have no ID then the person present in border area is invalid person and there is a preventive action taken by proposed system(i.e the laser shooter is activated and shoot the suspected person inside the border region). If 'y' is greater than 'x' (i.e the person present outside the border region) in this case laser shooter is not activated. Here the proposed system replaces the human effort at the border area and increase the accuracy in terms to prevent the illegal activities at border area.

IV. CONCLUSION

Artificial intelligence based border security system is designed successfully and works efficiently for further improvement enhance the working environment of the proposed system. Proposed system operates under low power consumption.

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REFERENCES

[1]   http/en.wikipedia.org/wiki/Border security force Retrieved 10 December 2014

[2]   K.Sri Krishna Aditya,T and Surya Kavita, "Detecting Sudden Pedestrian Crossings and Avoiding accidents Using Arm 11" ISSN:2248-9622, vol.3, Issue 5, Sep-Oct 2013,pp.1213-1216

[3]   Jaya Bharathi chintalapati1, Srinivasa Rao," Remote computer access through Android mobiles", IJCSI,Vol. 9, Issue 5, No 3, September 2012

[4]   Sumit Kumar,"Development and Research Implementation of Remote Object Monitoring through Video Streaming Based on Android Mobile", (IJIC), ISSN No: 2231 – 6965,Vol-1, Issue-2, 2011

[5]   Android.http://www.android.com Retrived march1st 2011

[6]   B. Moghaddam, A. Pentland, "Probabilistic visual learning for object representation", IEEE Trans. Patt. Anal. Mach. Intell. 19, 696-710, 1997

[7]   D. M. Gavrila and S. Munder, "Multi-cue pedestrian detection and tracking from a moving vehicle," Int. J. Comput. Vis. (IJCV), vol. 73, no. 1, pp. 41–59, Jun. 2007

[8]   P. Dollár, C. Wojek, B. Schiele, and P. Perona, "Pedestrian detection: A benchmark," in Proc. IEEE Conf. CVPR, 2009, pp. 304–311

[9]   Sans institute infosec reading room, Understanding Intrusion Detection System, Internet, sans institude ,1 to 9, 2001

[10] Karen Scarfone, Peter Mell, Guide to Intrusion detection and prevention systems (IDPS), NIST, 1 to 127, 2007

[11] Tiwari Nitin, S. R. Singh and P. G. Singh, Intrusion Detection and Prevention System (IDPS) Technology- Network Behavior Analysis System (NBAS), International Science Congress Association , 51-56, July (2012)

[12] B. Raju1 and B. SrinivasNetwork Intrusion Detection System Using KMP Pattern Matching Algorithm, IJCST,33-36, January 2012

[13] C. U. Chauhan and V.A.Gulhane, Signature Based Rule Matching Technique in Network Intrusion Detection System, internet, 412-416, April 2012

[14] Faisal Mahmood , INTRUSION DEECTION SYSTEM using Sax 2.0 and wireshark 1.2.2, Internet, 1-19, 10/6/2009

[15] Davis, S. Mermelstein, P. (1980) Comparison of Parametric Representations for Monosyllabic Word Recognition in Continuously Spoken Sentences. In IEEE Transactions on Acoustics, Speech, and Signal Processing, Vol. 28 No. 4, pp. 357-366

[16] X. Huang, A. Acero, and H. Hon. Spoken Language Processing: A guide to theory, algorithm, and system development. Prentice Hall, 2001