

Intelligent Border Security Intrusion Detection and Auto Destroy System using IOT

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ABSTRACT:

Border areas are more often examine as the place where a great deal of violence, intrusion and cohesion between many countries. This always leads to the danger for the lifes of employees, soldiers and the common people working and living in border areas. Moreover geographical conditions like mountains, snow, forest area, desert area, harsh weather and water bodies often leads to tough to live and to monitor border areas. The proposed system is using the thermal imaging cameras (FLIR) for the detection of various objects and intrusion. The FLIR cameras are allocated in such a way that an IP address are connected to local network to control the center. Software code captures video and eventually detects the intrusion. A motor controlled spotlight with infrared and laser gun is used to enhance under any conditions at the site. An application also integrates sound sensor to detect particular sounds and a motion sensor to detect distrustful movements. Depending on the situation, a buzzer and electric current is being fenced and initiated for the further protection. Sensors are integrated through IOT for an efficient controlling of large border area and connection between the sites.

1.INTRODUCTION

1.1 EMBEDDED SYSTEMS

Embedded systems are designed to do some specific task, rather than be a general-purpose computer for multiple tasks. Some also have real time performance constraints that must be met, for reason such as safety and usability; others may have low or no performance requirements, allowing the system hardware to be simplified to reduce costs. An embedded system is not always a separate block - very often it is physically built-in to the device it is controlling. The software written for embedded systems is often called firmware, and is stored in read-only memory or flash convector chips rather than a disk drive. It often runs with limited computer hardware resources: small or no keyboard, screen, and little memory.

Wireless communication has become an important feature for commercial products and a popular research topic within the last ten years. There are now more mobile phone subscriptions

than wired- line subscriptions. Lately, one area of commercial interest has been low-cost, low-power, and short-distance wireless communication used for \personal wireless networks." Technology advancements are providing smaller and more cost effective devices for integrating computational processing, wireless communication, and a host of other functionalities. These embedded communications devices will be integrated into applications ranging from homeland security to industry automation and monitoring. They will also enable custom tailored engineering solutions, creating a revolutionary way of disseminating and processing information. With new technologies and devices come new business activities, and the need for employees in these technological areas. Engineers who have knowledge of embedded systems and wireless communications will be in high demand. Unfortunately, there are few adorable environments available for development and classroom use, so students often do not learn about these technologies during hands-onlab exercises.

1.2.OBJECTIVE:

This paper gives us the ideology of the difficulties faced in monitoring the borders.

- We are using the various sensors to detect any kind of intrusion and serious situations occurring across the border.
- Not only detection of any intrusion is done but also we are implementing necessary methods to auto destroy the intruder.
- It is fully automated system, it doesn't require any human instructions to work on. Through this prototype we can conclude that, the detection and destruction can be done automatically without any human involvement.

2.EXISTING SYSTEM:

Border patrol system have freshly become the attentive in tackling to examine regarding national security. The border patrol systems and its techniques have recently begun to examine the national security. One of the crucial issues regarding the protection of the border is the long stretches of borders and the necessity for intensive of human involvement in patrolling locations. With the invention of different electronic patrol techniques, this involvement helps to decrease the need of such measures.

3.PROPOSED SYSTEM:

Proposed system in this paper is designed is to achieve the following features:

1. A 180- degree controllable motor to scan the area with two degrees of freedom horizontal and vertical.
2. Integration of two types of cameras, thermal FLIR(Lepton) and night cameras. The thermal cameras help us to monitor even during the fog, dark and humid environments. Night cameras helps us in aiming the laser pistol in telescope mode.
3. A warning facility is controlled by monitoring center to alter the infiltration.
4. A laser pistol is controlled by monitoring center intended to prevent hackers and to avoid direct docking with infiltrators.
5. Controlled electric shock in the border fence to block the intruder movement.

4.ARCHITECTURE:

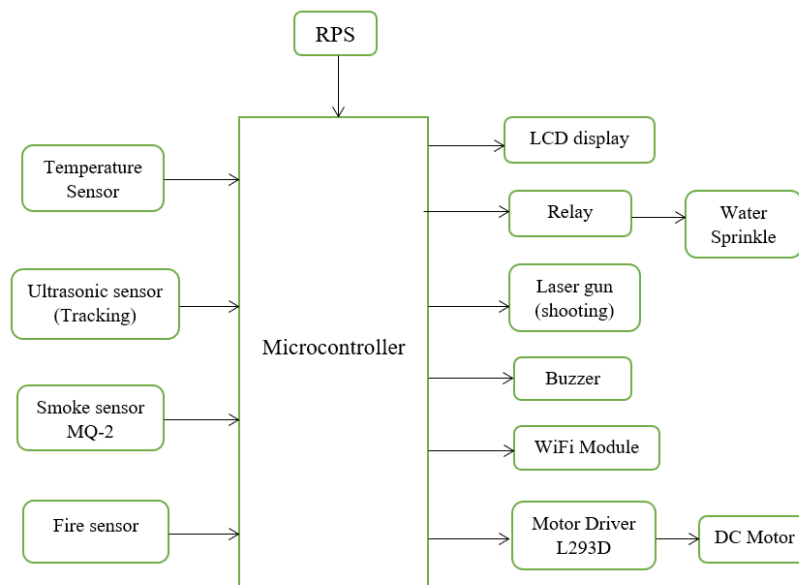


Fig1: Architecture

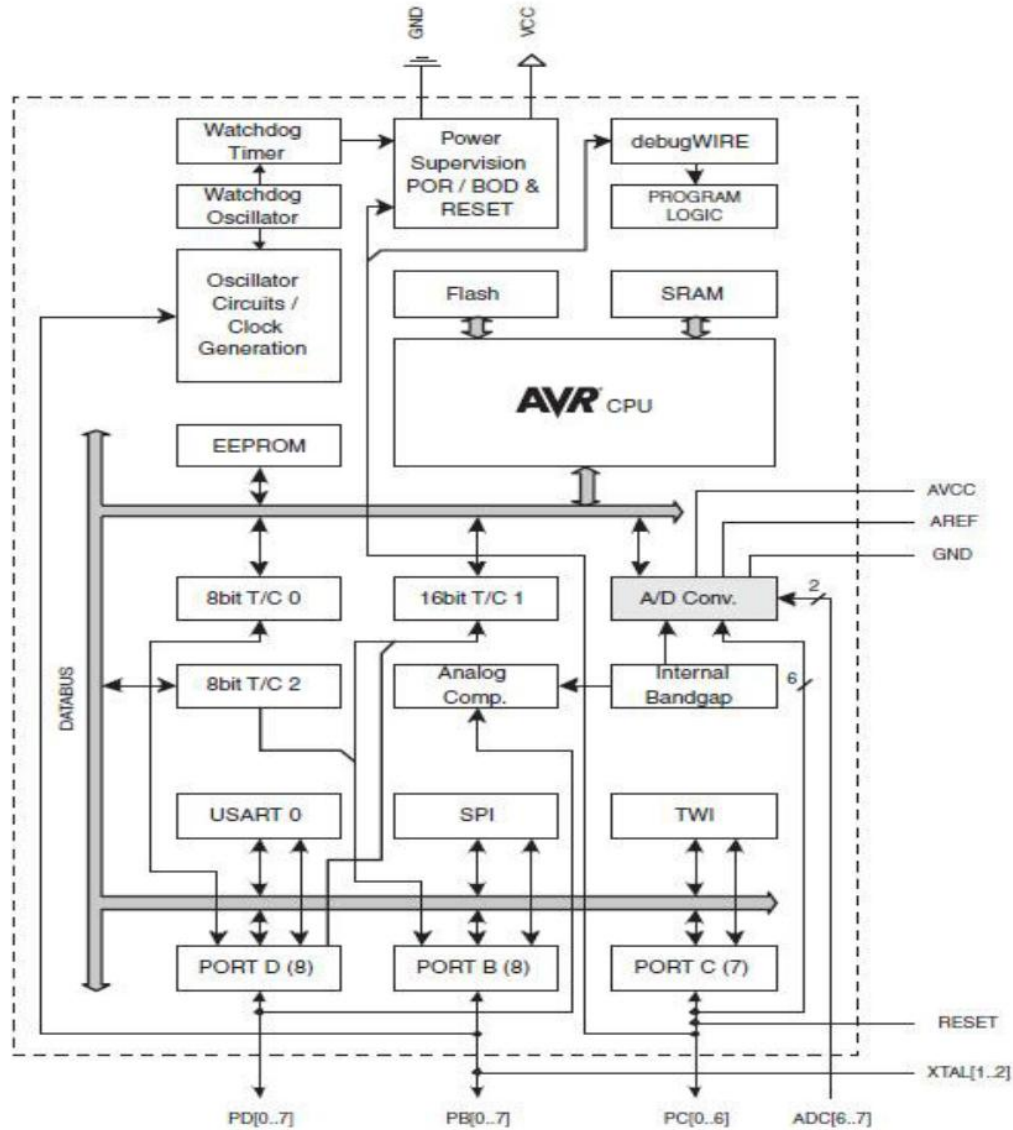


Figure 2. Block Diagram

4.1.OVERVIEW

This section discusses the AVR core architecture in general. The main function of the CPU core is to ensure correct program execution. The CPU must therefore be able to access memories, perform calculations, control peripherals, and handle interrupts.

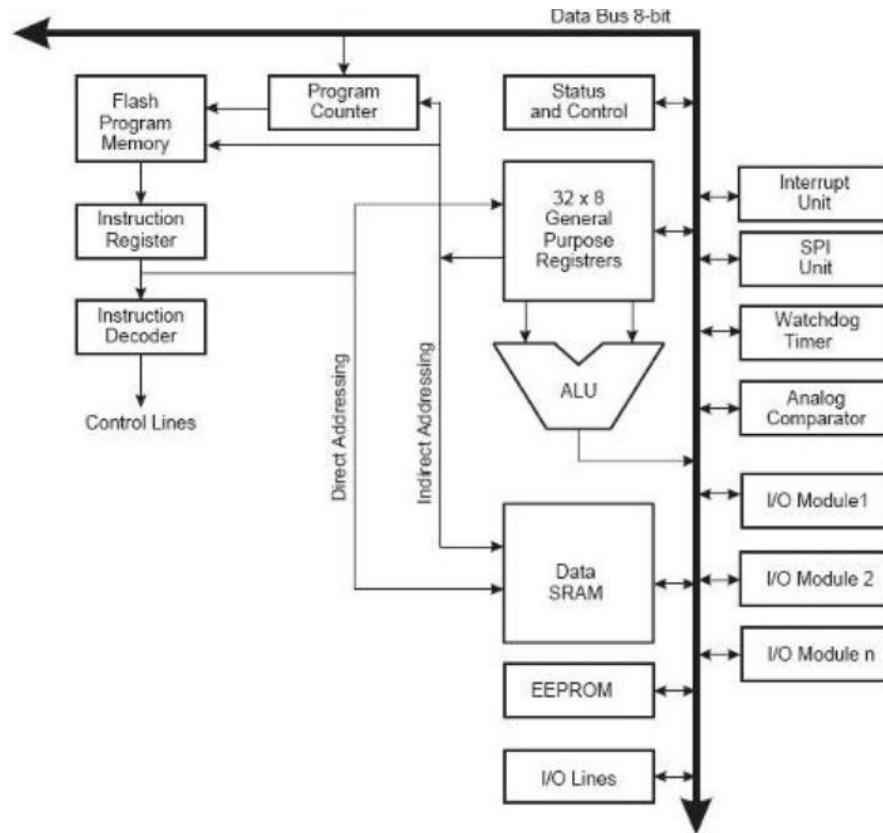


Figure 3. AVR core architecture

In order to maximize performance and parallelism, the AVR uses a Harvard architecture – with separate memories and buses for program and data. Instructions in the program memory are executed with a single level pipelining. While one instruction is being executed, the next instruction is pre-fetched from the program memory. This concept enables instructions to be executed in every clock cycle. The program memory is In-System Reprogrammable Flash memory.

5. TEST CASES

Module name: User

| S. No | Test Case | Input | Expected Output | Actual Output | Pass/Fail |
|-------|-------------|--------------------|--------------------------|--------------------------|-----------|
| 1. | View status | Request for status | Status will be displayed | Status will be displayed | Pass |

Module name: Microcontroller

| S. No | Test Case | Input | Expected Output | Actual Output | Pass/Fail |
|-------|------------------------|----------------------------|---------------------------------------|-------------------------------|-----------|
| 1. | Read smoke sensor | Retrieve remaining balance | Values must be retrieved successfully | Values retrieved successfully | Pass |
| 2 | Read ultrasonic sensor | Retrieve remaining balance | Values must be retrieved successfully | Values retrieved successfully | pass |
| 3 | Read smoke sensor | Retrieve remaining balance | Values must be retrieved successfully | Values retrieved successfully | pass |
| 4 | Read fire sensor | Retrieve remaining balance | Values must be retrieved successfully | Values retrieved successfully | pass |
| 5 | Display on LCD | Sensor values | Values must be retrieved successfully | Values retrieved successfully | pass |
| 6 | Emergency | Push the emergency button | Sending alerts successfully | Sending alerts successfully | pass |

Module name: IOT

| S. No | Test Case | Input | Expected Output | Actual Output | Pass/Fail |
|-------|-----------------|--------|-----------------------------------|-------------------|-----------|
| 1. | Retrieve data | values | Message must be send successfully | Sent successfully | Pass |
| 2. | Store in server | Values | Must be successfully sent | Sent success | Pass |

5.CONCLUSION:

This will provide an efficient communication and control operation. If the intruder is detected by the sensors an electric fence is activated. Image of the border screen is transmitted to the controller side through IOT. It provides surveillance in dark, fog and extreme weather conditions and gives report to the web application which is recorded in the database.

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