

INTRUSION DETECTION AND AUTOMATIC GUN FIRING CONTROL MECHANISM

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ABSTRACT

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This Paper Emphasises and focuses about the "Area under Surveillance" continuously at extreme conditions like very low temperature (-53°C), high attitude pressure, unique color, low power supply, long range distance coverage and self-activated automatic weapon system which ensure the safety. In the model, the device consists a Camera as a sensor for the purpose of monitoring the Area under surveillance and sending image as input to the Pc which is running using MATLAB coding, send the particular quadrant value to the Microcontroller which will actuate and control the Stepper motor. If the Area under Surveillance is occupied by unknown person, then a transmitter is given to deactivate the intrusion detection and automatic gun control mechanism. The receiver antenna receives and decodes the transmitted data and compares the received data. If an intruder comes with other attire the LDR based boundary control Mechanism is used to control the boundary under surveillance. The device consists of LDR which in turn is used to sense the LASER light if intruder passes the light then Microcontroller is automatically actuated and controls the stepper motor. The micro computing unit, used in the paper and after successful simulation of the Hardware, is programmed. The firmware used in the proposed model continuously monitors and automatically defends the "Area under Surveillance".

KEYWORDS: RWS , LDR, TWS, UART, MCSA, ASR, SSR

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I. INTRODUCTION

Secure border is one of the greater responsibilities of one's nation which is done by the soldiers but still soldiers are human beings and they have limitations also which can cause a hole in security especially this happens in areas of high altitude pressure and low temperature. This system not only detects intrusion but also provides a video-coverage of the secret area, for remote monitoring, via a satellite

based communication system.

It is also provided with automatic firing methods which must be used to automatically locate and fire at the target. Hence, Hundreds of kilometers of the borders, which would have otherwise required hundreds of personnel, can be monitored with less effort in this system, with only a few personnel. Since, the firing Exactly occurs only after authoritative personnel have doubly confirmed the

presence of an foreigner, chances of firing at common people are completely ruled out. As thermal cameras are used for viewing , this system is immune to changes in suitable conditions, and therefore, is equally suited for operation during the night. This project also throws light on the prototype of this system, which has been successfully developed.

From ages it has been the idea of humans to achieve the ultimate in security and make his loved ones and loved things secure. The ideas and desire that prompted him to make the boundaries and secure them too from all unseen and unknown sources. Therefore, it has been always necessary to maintain a huge people to guard and invoke alarms in cases of emergencies. To this, we suggest a mechanism observing the area under surveillance which will employ image processing in which a webcam will be continuously monitoring.

This data will be then processed by the MATLAB code running on a PC and will be able to detect a particular color (Say Red) in front of a white back ground (depicting snow). Based on this data acquired, the information about the intruder location will be sent to a (89c51) micro-controller through the Serial/Parallel port of the system and then a controlled gun with motor will be used to point in the direction of the intruder.

This mechanism will be online with Server. The gun is continuously pointing in the direction of the intruder. Further depending on range (distance from the gun) (fixed range in the proposed model) the gun can be activated and a Laser pointer will be switched On depicting on shooting the target.

The model proposed here is the prototype of the automatic intruder detection and gun control to eliminate any threat or any unwanted activity in the border area. This system along with some changes can be

used in banking or the house security systems where along with the color we can use face detection also and instead of the guns we can use anaesthetic darts to make the intruder unconscious and capture him. Actually this concept can have low importance in houses but in banks can be used for intruders.

II. WEAPON CONTROL SYSTEM

In the recent past, there has been a lot of interest in developing SGCs (Semiautomatic Gun control) to perform a variety of challenging tasks ranging from military defense, surveillance, etc. With the increase in processing speed of computers, automatic visual tracking systems have got more attention now-a-days. Now these systems are not only used in civilian areas but also in military and Naval ship applications.

This paper stresses on shape detection to observe the real object image. This paper starts by describing the process of conversion of RGB image to binary signal using MATLAB. Then the binary signal is used as an input signal for the detection part.

Correlation based template matching algorithm has been chosen for visual tracking as it is used in military applications of tracking and surveillance systems. In the algorithm, tracking is started by selecting target of interest by the user. In the following frames, it is matched with all the candidates and best match is found.

For sake of efficiency and real time implementation, the template is matched only within a search region instead of whole image frame. Morphological operators have been used for motion extraction of non-stationary object in the image frame. For motions extraction, back-differencing and combination of morphological operators on the resultant image are used to extract connected components in image frame. This stepper motor coupled microcontroller has

been implemented with semi automated system. This mechanism does not require any sensor or synchronization for tracking the object. The ground motor is fixed, while to control the other axis second motor is fixed on top of the ground motor. Hence the system has been given two sets of independent control mechanisms, each operating in isolation for each axis. To accomplish this we propose a mechanism which will employ image processing in which webcam will be continuously observing the area under surveillance. This data will be then processed by a MATLAB code which will be running on a PC and will be able to detect a particular color in front of a white background.

Depending on this process data the information about the intruder location will be sent to a microcontroller (89c51) via the serial / parallel port of the PC and then motor control gun will be used to point in the direction of the intruder. With this mechanism will be online that is the gun will be continuously be pointing in the direction of the intruder. Hence depending on the range (distance from the gun) (fixed range in this model) the gun can be activated and a laser pointer will be switched ON to depict shooting the targets.

III. IMPLEMENTATION AND RESULTS

Intrusion detection and Gun Control Mechanism can be implemented using existing web Camera under the Area of surveillance to detect the Intruders. To accomplish this we propose mechanism which will employ image processing in which webcam will be continuously observing the area under surveillance. This data will be then processed by a MATLAB code which will be running on a PC and will be able to detect a particular color in front of a white background. Depending on this processing data, the information about the foreigner's location will be sent to a

microcontroller (89c51) via the serial or parallel port of the computers and then motor control gun will be used to point in the direction of the intruder. With this mechanism will be online that is the gun will be continuously be pointing in the direction of the intruder. Also depending on the range (i.e. the distance from the gun) the gun can be activated and a laser pointer will be switched ON to depict shooting the targets.

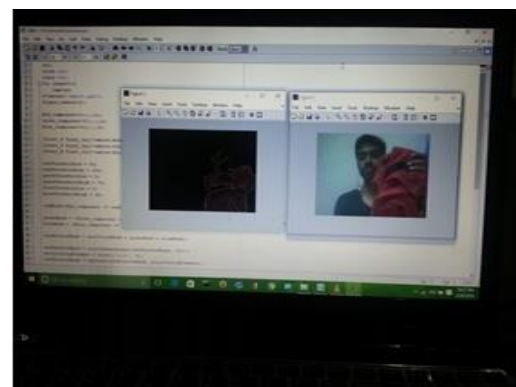


Fig.No.1 Intrusion detection in the PC
CONCLUSION

This paper is designed to safe guard the boundaries at extreme conditions, where human intervention is very difficult and save the precious live of our soldiers. It is used to reduce the power consumption of the microcontroller using OS concepts.

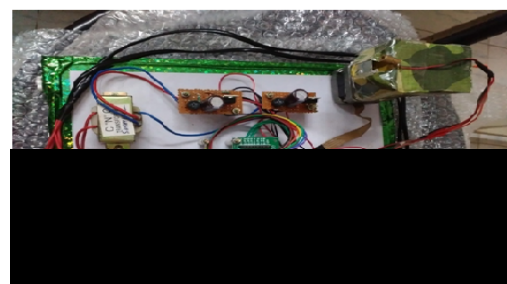


Fig.No..2.: Working Model of the Gun Control Mechanism

The direction of the LASER is accurately pointed out by alleging the camera with respect to the stepper motor. The power consumption of LASER is reduced by using relays. Concerned with the threats to the nation at the border with enemies in blasting the base camps, weapons, machinery and lot of warfare materials of high cost. This model is built in such a way that it is going to acquire the data by a high resolution camera and process, and then makes a firing

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