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VISUAL SURVEILLANCE STUDY BY USING ABSOLUTE DIFFERENCE MOTION DETECTION

J. SALAI THILLAI THILAGAM*, P. J. INDHIRA KUMAR, R. MONISH, and R. PAVAN KUMAR

Department of ECE, Aarupadai Veedu Institute of Technology, CHENNAI (T.N.) INDIA

ABSTRACT

Video means moving objects and surveillance refers to observation and analyzation on a certain thing for safety and business purposes. The motivating points for the video surveillance camera usages are safety, law and order crime control concerns. Cameras which do surveillance of moving objects are utilised in retail shops, public market places, organized banks and automatic money collecting machines. Nowadays, researches experience continuous developments in surveillance newtworks. The reason behind is the unstable incidents that are happening all around the world. Hence, there is a need of a novel smart system for surveillance governing intelligently that captures data in real time, transmits, processes and understands the information related to those monitored. Hence, these systems ensure high level of challengeable security at remote usually crowded public places. Since video cameras are available at good price in the market, hence video surveillance systems have become more popular. Video surveillance plays vital role in security systems.

Key words: Motion detection, Sensor, Surveillance, Visual Sensor.

INTRODUCTION

Surveillance cameras can be an effective technique to protect public safety and detect criminal activity. Surveillance cameras are increasingly being installed inside and outside of public buildings like elevators, hallways, entrances, etc., on streets, home, highways, in parks and public transportation vehicles. Nowa days, it is seen that surveillance cameras are already prevalent in commercial establishments, with camera output being recorded to tapes that are either rewritten periodically or stored in video archives. To extract the maximum benefit from this recorded digital data, detect any moving object from the scene is needed without engaging any human eye to monitor things all the time. Real-time

*Author for correspondence; E-mail: salaithillai@gmail.com

detection of moving regions in image sequences is a fundamental steps and applications. The video captured image is being processed by the MATLAB program that helps in motion detection. Frame difference calculates the differences between two frames at every pixel position and store the absolute difference. It is used to view the moving objects in a sequence of frames. This is done according to threshold value when the video recorder is still working.

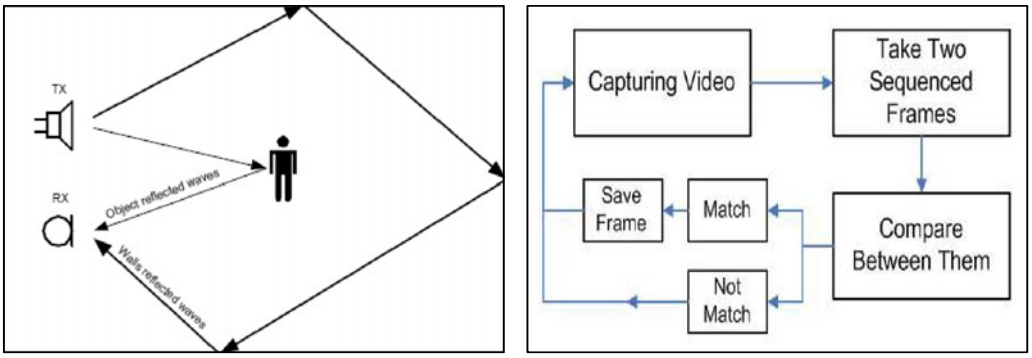

Fig. 1: Motion detection diagram and block diagram of the system

EXPERIMENTAL

Literature survey

Main purpose of motion detection is to extract moving object area in image sequences. There are total four methods used to detect the motion that are temporal difference, background subtraction, optical flow analysis and spatial temporal entropy method. Some papers describe this is given here. ZazilahBinti May et al describes temporal difference method by comparing consecutive frames on a pixel by pixel basis and background subtraction method used for detecting moving objects in videos from moving camera using region based model[1]. Wei Shuigen, et al describes temporal difference and optical flow field method[2]. But this method is sensitive to illumination changes and in the background. So, a newer system is proposed here.

Proposed system

External GSM modem is connected to a computer via serial cable or USB. The GSM/GPRS modem requires a SIM card to operate and is configured using AT commands. In special scenario GSM provides us a wide scope in controlling things remotely from any place just with our finger tips. GSM also provides ease to easily communicate in a more

robust way. The propose system uses MATLAB as environment to detect motion in real time video. The process of detection occurs by taking two sequenced frames (for example frame 1 and frame 2 after converting them to gray) and compares to find the mismatching between them according to a specific threshold which will be described later. The Graphical user interface which also contains two buttons to pause and resume the video capturing.

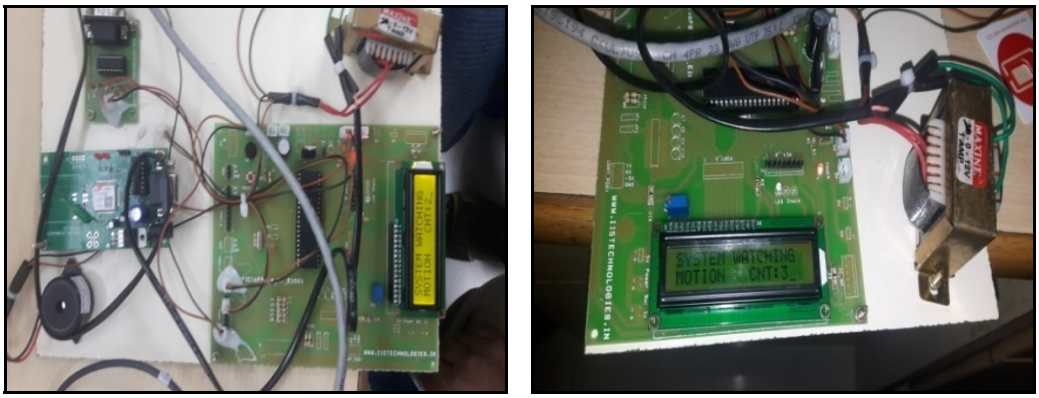

Fig. 2: Prototype of the system

The comparison starts between frame 1 and 2 then frame3 and 4 and so on, thus by using this method there is no reference image or background of detection which is compared sequentially with all video frames; so this proposal system can be applied in any place.

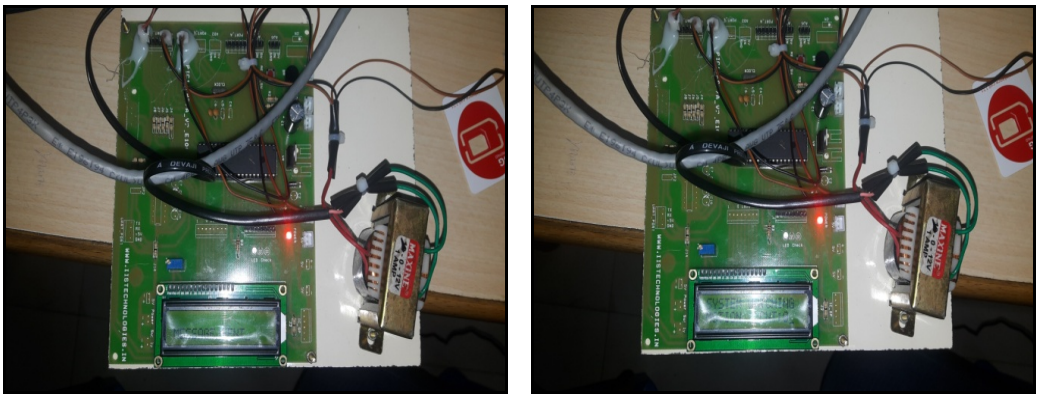

Fig. 3: Temperature sensor, PIR sensor and metal detector diagram of the system

Once the motion is detected an alert is generated and if user wants he can enable the SMS Notification option to get the SMS from the surveillance system when an object is detected causing motion.

RESULTS AND DISCUSSION

The objective of visual surveillance system is to find out the motion made by any object in the surveillance area and generate the alert and allow user to get SMS notification once the motion is taking place in that area.

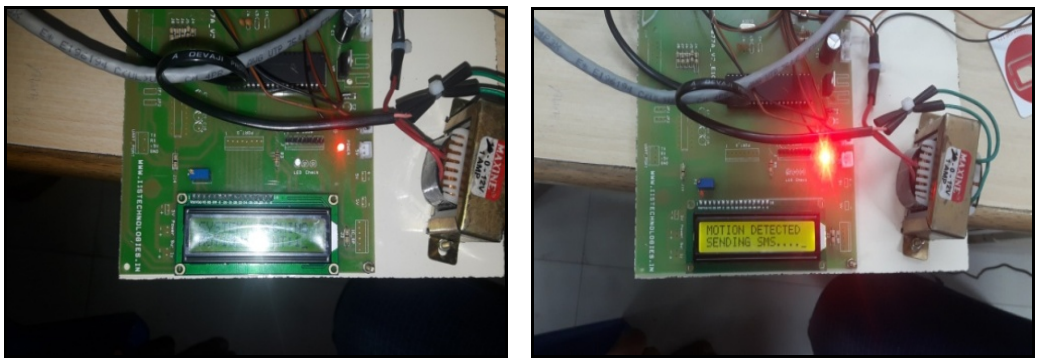

Fig. 5: Output of the system and its indication

CONCLUSION

Trying human motion (slow and fast) with different error threshold values for the same motion; the results show that the appropriate value is between 1.3 and 1.5 especially if several motions (medium changes) occur in the scene; this will give less number of saved images that contain false or wrong detections. If the case and the threshold are not standard; we can specify a threshold according to our location that we want to monitor.

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