

VEHICLE SURVEILLANCE CAMERA SYSTEM

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ABSTRACT

A vehicle surveillance camera system is a new addition to the vehicle security components which is used to secure the vehicles and help to assess liability claims when vehicle involve in an accident. The device that developed as a vehicle surveillance camera system, gives more benefits to the user. The image capturing mechanism is used to design the system. The proposed system capture stream of images instead of capturing video and it consists with two major modes for user's selection. Those are Running mode and Parking mode. Running mode captures the image when vehicle moves in the road or in normal situations in daily works and parking mode design to run the system when vehicle is parked. And it joins with vehicle security system. A sensor is used to capture human motion. If it detects a motion it's sending a message to security system and turn on the security grid.

Keywords: *Arduino, Image capturing, Vehicle surveillance, Vehicle security*

1.0 INTRODUCTION

The commercially available vehicle surveillance camera systems were developed using the DVR (Digital Video Recorder)^{1,2} concept. The cost of a single multi feature camera unit is very expensive. In this study it was attempted to develop a vehicle camera system with multiple features, which is user friendly, has a low memory usage and low cost. Image capturing system was used to develop the system. It captures stream of images instead of video. The device works under the basic functions as showed in Figure 1.

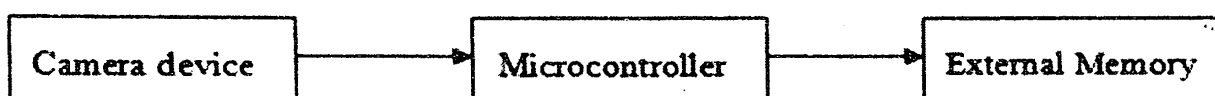


Figure 1: Basic Block diagram of the devise

2.0 EXPERIMENTAL

Arduino³ supported components were used for the system (Arduino – an open source language with highly available electronics modules). System development started with Arduino Mega2560 microcontroller⁴ development board, OV7670 Camera module and SD card module. First attempt to interface them failed because of lack of ram memory. Then external interface shield (ArduCam revolution 3 shield⁵) was used to interface modules and OV2670 camera module⁶ to develop the device. The final system was developed with two modes, Running and Parking modes that can be used for different environments like daily working environment and during parking. System performs using three layer platforms as showed in Figure 2.

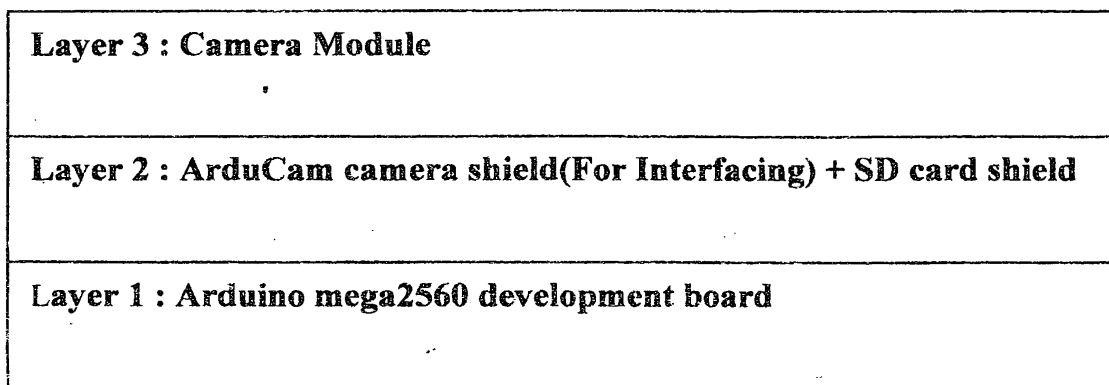


Figure 2: Layered Architecture of the developed system.

3.0 RESULT AND DISCUSSION

Developed system records stream of images according to the user command. It is capable of producing image frames with the maximum size of 2 megapixels. The difference between two continuous image frames is three milliseconds. System uses much less memory to store the image stream.

2megapixel images are much clear compared to other compatible sizes that produce from the system. But it takes more time to write the data in SD card. The matching image frame size range obtained practically was 640x480 to 1024x768 pixel images⁶. The cost around building this unit is Rs. 5000.00.

4.0 CONCLUSION

A vehicle movement detection system (surveillance) was developed at a very low cost. The device record image stream when user commands to record (Turn ON the system). This device is only capable of responding to one camera. But it can be modified to fit for any camera module available in the vehicle. The present system is not capable of real time video processing. However as the further development, this device can be improved to store more details about the vehicle (Black Box concept)⁷.

ACKNOWLEDGEMENT

Authors would like to thank all who have supported to make this project a success.

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