***Smart Camera***

***Motion Capture Video Recorder Using Raspberry Pi Mansoor Ali 2016459***

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Introduction:

Problem Area:

CCTV cameras are working fine from numbers of decades and use of these cameras is increasing day by day. But, these cameras have some disadvantages too i.e. security, data storage, cost. There is no need to record a video if it cannot stop burglary on the spot. Attackers can damage the cameras or put some sort of spray on camera lens to disturb its functioning and user will not get any alert. Cyber attackers can easily hack the entire network of an organization by injecting Distributed denial of service DDoS attacks to CCTV systems as they are not very secure or some does not support SSL/TLS encryption.

**Hardware:**

This section is about hardware components that are used to build the Smart Camera.

**Raspberry Pi 3 B**

I have use Raspberry Pi 3 B to build my project. This small credit card size device work exactly as desktop computer, and will act as the main device on which I will be woring in order to accomplish my project goal. In order to interact with it we only need to add mouse, keyboard and monitor. It use micro SD card, that work as hard drive of this small device and the operating system will be loaded into this hard drive. The operating system “Raspbian” can be downloaded freely from Raspberry Pi official website. This is not the latest version of Raspberry Pi, as there is a fourth edition of Raspberry Pi as well and that is quite similar to it except the processor speed, support different size of RAMs and support smaller HDMI ports for display.

According to Raspberry Pi foundation the specification of model 3 B is specified below:-

* Quad Core 1.2GHz Broadcom BCM2837 64bit CPU
* 1GB RAM
* BCM43438 wireless LAN and Bluetooth Low Energy (BLE) on board
* 100 Base Ethernet
* 40-pin extended GPIO
* 4 USB 2 ports
* 4 Pole stereo output and composite video port
* Full size HDMI
* CSI camera port for connecting a Raspberry Pi camera
* DSI display port for connecting a Raspberry Pi touchscreen display
* Micro SD port for loading your operating system and storing data
* Upgraded switched Micro USB power source up to 2.5A

**Motion Detector**

In this project, I am going to use PIR passive infrared motion sensor. These are mostly useful in burglar alarm systems. It emits infrared radiations, when the temperature of object/organism is above absolute zero (-273.15 C). Infrared radiations wavelength cannot be seen by human eye, but if any disturbance occur, it can be detected by motion sensors. This have nothing to do with movement of things, it works by adjusting the itself to infrared signature (temperature disturbance) of room it is in and then start watching for changes. Any movement occur will disturb the infrared signature (temperature) and then PIR sensor will detect this disturbance and we can program it to do something with this disturbance.

These can be used with lights, security cameras, and smoke detectors etc. For my project I will be using this module with raspberry pi, in order to capture motion and camera will also be added to Rpi to start taking pictures/videos.

**References:**

1. homeadvisor.com. (2019). [online] Available at: <https://www.homeadvisor.com/cost/safety-and-security/install-a-surveillance-camera/> [Accessed 7 Dec. 2019].