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CCTV footage as digital evidence

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ABSTRACT

CCTV- CLOSED-CIRCUIT TELEVISION. It's when you use videotape cameras to transmit a signal to a specific, limited set of observers. The cameras may transfer the footage to observers where it can be watched in real-time by another person, or it may be recorded for unborn viewing. CCTV records images of people in certain public places including city centers, roads, airfields, and on public transport. CCTV images can be used as substantiation in court. You can request a CCTV recording of yourself. The Indian Evidence Act has tried to convey the basic concept of the identity of a person through CCTV. CCTV footage has an important place in the Indian Evidence Act section. Those evidence are hidden from the eyes of the common man in the CCTV cameras, but it is well used in forensic science. Can be used as a notion of proving crime Prove crime with digital technology i.e. CCTV Can be used as an estimate of the extent of crimes committed by criminals Unfortunately the quality of video recording resolution was recorded and It is not easy to analyse due to the lack of light. Electronics documents are permissible as material substantiation. The computer-generated electronic records in substantiation are permissible at a trial if proved in the manner specified by section 65B of the substantiation act. In this paper, we will discuss the CCTV Footage Evidence used as Digital Evidence and its importance in the Criminal Justice System in India.

Keywords: CCTV, Footage, Crime, Scene. Digital, India.

INTRODUCTION

CCTV: CCTV Stands for Closed Circuit Television (Hariyadi *et al.* 2014), It's when you use videotape cameras to transmit a signal to a specific, limited set of observers. The cameras may transfer the footage to observers where it can be watched in real time by another person, or it may be recorded for unborn viewing. CCTV records images of people in certain public places including city centers, roads, airfields, and on public transport. CCTV images can be used as substantiation in court. You can request CCTV

recording of yourself (Medevac *et al.*2009) For full videotape surveillance systems, recorded footage is stored on an external archivist. In IP systems, these are called NVRs, or network videotape reporters. In analogue systems, they're called DVRs, or Digital Video Reporters.

USE OF CCTV FOOTAGE AS EVIDENCE

Electronic Documents are permissible as material substantiation. The computer-generated electronic records in substantiation are permissible at a trial if proved in the manner specified by section 65B of the Substantiation Act. CCTV footage (Giova, 2011) is a strong piece of substantiation which would have indicated the presence of indicated in the hostel. CCTV footage being a pivotal piece of substantiation, it's for the execution to have produced the stylish substantiation which in the instant case was missing. Elision to produce CCTV footage, which is the stylish substantiation, raises serious dubieties about the execution case.

REQUIREMENTS OF CCTV FOOTAGE AS EVIDENCE

To make it clear what's demanded for CCTV footage to be used as substantiation in court, the home office provides some helpful guidelines. These are Quality-as we've touched on over, images used from CCTV Camera systems need to be good enough (Reith *et al.* 2002) to be suitable to identify anybody being recorded. Storage- Safeguarding of the CCTV system and recorded images need to be strict to avoid unauthorized viewing or altering of footage. Export-CCTV system should be suitable to resettle, and import captured footage with ease, and be Playback-A CCTV system should be accessible in a way that enables investigators to renewal the images and ensure the authorization(Stephenson, 2003) carries the necessary weight and credibility in court proceeding.

CATEGORIES OF CCTV CAMERA:

1. Inner vs. Out-of-door Cameras: Inner and Out-of-door cameras are basically the same in terms of style, size and shape. The top difference is that out-of-door cameras contain some form of rainfall- evidence casing or case.
2. Night vision and Day/ Night Cameras: There are two cameras technology result in low light situation. In total darkness the only way left is infra-red technology, which is known as night vision.

TYPES OF CCTV CAMERA USED IN INDIA:

- Dome Camera
- Box Camera
- Infra-red Camera
- Bullet Camera
- Wireless Camera
- Pan Tilt Zoom Camera
- Hidden Camera

Dome Camera:

Dome Cameras is a suitable choice because of their protean dome shape. They can be placed fluently on utmost walls and shells and their round design has made it the most "Fashionable" of all security cameras styles. Utmost pate cameras have 3 axis, hence they can be fluently acclimated formerly mounted. Dome Cameras can be installed fluently- generally 2 screws are sufficient. As Dome Cameras have an enclosed lens, the direction the camera is pointing to is hidden. Polls can give infra- red for Night Vision.

Box Camera

A fixed or a box camera is the most common choice for video surveillance, as they feature an industry- standard C/CS- mount which allows them to use a variety of lenses. This makes these cameras a fit choice for any video surveillance in commercial indoor environments. Enclosed in a weatherproof housing, they are frequently used outdoors too.

Infra- red Cameras

The distances that infra-red cameras have the capacity to see is based upon its illumination.

These cameras have LED's, which take out into the darkness. Realistically, a good rule of thumb is 1 foot for each LED. Therefore, if a camera has 30 LED's then it probably can see about 30 feet.

Bullet Cameras

Bullet cameras are small. The category of internal boards and lens is limited. Accordingly, the image excellence of the bullet cameras will not be compared with other outdated cameras, which have double layer boards and camera function controls.

Wireless Cameras

These are very popular cameras which do not need wires to connect the camera with the receiver, and can be

installed and moved from one location to the other easily. Without the wire, we can save on installation by not worrying about lengthy or complex wire runs. Also, wireless cameras give us the ability to incorporate video surveillance in discrete areas where other security cameras would be difficult to place.

Pan Tilt Zoom (PTZ) Camera

Pan, Tilt, Zoom cameras cost anywhere between five-ten times the cost of a fixed camera. The Pan, Tilt, Zoom camera will not cover or look. We cannot pan, tilt or zoom after it has been recorded (this can only be done with a 360 degree camera). These cameras can execute many functions which is not possible with a fixed camera. We can regulate it and also zoom in optically up to 52x and after digitally up to 12x giving zoom abilities. These have built-in auto tracking features which makes the camera automatically track any movement and it does so by panning, tilting, and zooming in on the subject.

Fig. 1: Type of CCTV Camera

Fig. 2: CCTV Video

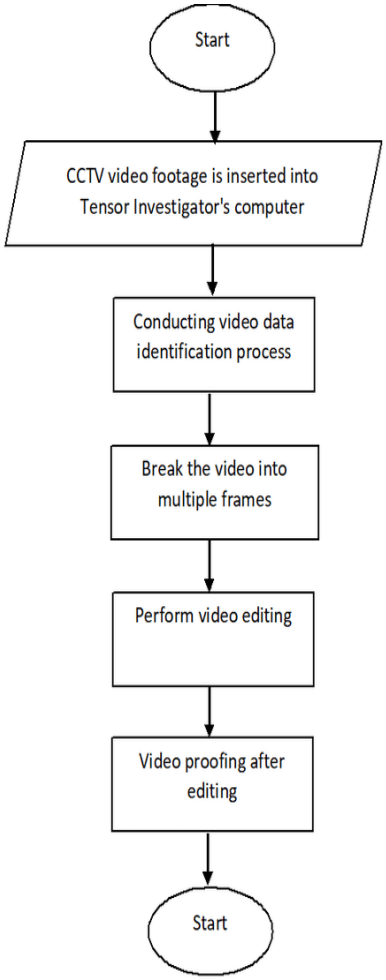

Fig. 3: Research Methodology

Hidden Camera

They are also known as covert or spy cameras. These are security cameras which can be used for discreet video surveillance anywhere, either indoor or outdoor as per the type and model used. These devices can be made in the guise of common household items such as smoke detectors, clocks, sunglasses, and baseball caps. Household items are rarely suspected of housing a video recording device. Business houses also sometimes use hidden cameras, to keep an eye on the employees or customers.

Video quality in every camera

The directors of the CCD's substantially form 2 or 3 introductory grades of products in terms of camera lines of resolution. There's a standard resolution for colour cameras (that are quoted as anywhere between 330 Television Lines to 380 TV Lines), a high resolution for colour cameras (which are quoted as anywhere between 450 Television Lines to 480 Television Lines) and a new standard between 520 Television Lines to 550 Television Lines. The further the lines of resolution in the picture, the advanced the excellence of the image.

Summary

CCTV cameras help to monitor many different parts of a property at the same time, and they are also used to keep a record of activities or incidents. Cameras are well fitted heaters as well as blowers to respond the environment, and other elements that can be placed in outdoor enclosure.

The infrared part of the spectrum has a several to technological uses, comprising target acquisition and following by the military; remote temperature detecting; short ranged wireless communication and for our purposes night-vision. Processing is any method applied to the digital CCTV evidence in which the result is chiefly graphic in nature and do not need further interpretation or reporting.

METHODOLOGY

Pertaining to the former forensic protocol element, there are general way that can be defined abstractly to produce models that are not dependent on certain technologies or electronic crime.

Stationary forensic analysis has limitations that is it can't describe events directly in agreement with their factual conditions (Mrdovicetal). The base of this model is to determine the pivotal aspects of the protocol mentioned over and ideas from traditional forensics, specifically the protocol for physical crime scene searches (Reithetal, 2002). Handling Digital Substantiation with system related to CCTV is increasingly complex. This is told by Digital and Optical systems that have developed from time to time. The crime scene this case is truly vital because it will have a significant effect on the course of exploration. The onion skin route is executed in the crime scene related case. In the disquisition of (Hariyadieta.,), the CCTV accession model divided into two stages, videlicetpre- accession and core accession. Pre-acquisition is a problem that investigators must consider when he's at the scene. In the pre-acquisition phase it emphasizes the medication and identification of all matters relating to CCTV systems.

RESEARCH METHOD

Start □Search Warrants □ Identification of cases Recorded by CCTV □ Identification of CCTV Devices Including Configuration □ Identification of Connectivity with Storage Media □ Identification of Actual Time Difference with Timestamps □ Core Acquisition.

REPORT

At the reporting stage the content attached contains the whole exploration from beginning to end, all charts, forms of validation, methodology and conclusions (Stephenson, 2003). In this study the author only emphasizes the essential aspects of the Time Stamp aspect. Time stamp is the notation of important times where the validation in the form of CCTV is recording suspicious objects.

CONCLUSION

Pre-Acquisition and Core-Acquisition are the main stages in the disquisition and analysis of Digital Substantiation. In the analysis of Digital Forensic Examinations requires the integrity of the authenticity of the substantiation from the time it's plant, acquired, anatomized until the reporting stage in agreement with the principle of the chain of guardianship. Technically the integrity and authenticity of the substantiation can be proven by calculating the hash value. In this case with substantiation in the form of CCTV, it also requires the capability to use

multimedia aspect to dissect digital substantiation. This digital forensic analysis can not condemn a crime but only reinforces factual prospects. The weakness in this study is that multimedia manipulation can only clarify objects with poor light but cannot directly compare the composition of objects on the screen with objects in the real world.

Conflicts of interest: The authors stated that no conflicts of interest.

REFERENCES

Epg Pathshala Paper No.7: Criminalistics and Forensic Physics, Module No. 32: Use of CCTV for Forensic Evidence, FSC_P7_M32.

Giova, G, (2011). Improving chain of custody in forensic investigation of electronic digital systems. International Journal of Computer Science and Network Security, 11(1): 1-9.

Hariyadi, D., Nastiti, F. E., and Aini, F. N. Framework for acquisition of CCTV evidence based on acpo and sni iso/iec 27037: 2014

Mrdovic, S., Huseinovic, A., and Zajko, E. (2009). Combining Static and live digital forensic analysis in virtual environment. In 2009 XXII international symposium on information, Communication and Automation Technologies, pages 1-6 IEEE.

Reith, M., Carr, C., and Gunsch, G. (2002). An examination of digital forensic models. International Journal of Digital Evidence, 1(3):1-12.

Stephenson, P. (2003). A comprehensive approach to digital incident investigation. Information Security Technical Report, 8(2):42-54.