Movie Piracy Tracking System Using Video Steganography

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Abstract: **Piracy protection is of increasing importance in this era of information explosion. One major source of the piracy is camcorder piracy i.e., Information are recorded by portable devices and then sold on internet and grey markets. Different techniques and strategies are explored to overcome the problem and secure the digital content, some are based on spatiotemporal modulation of light, watermarking techniques, maximizing annoyance and temporal effects. In this paper, we take an interesting look on identifying the pirates by exploiting the technology of video steganography. The unique information embedded in the video steganography serves as tracking information to reveal the one responsibility for the piracy.**

This raises the question that to what extent antipiracy actions have been effective in deterring piracy? This is a challenging issue to explore because of the difficulty to capture user behaviour. We tackle this question by embedding infrared led behind the screen through which a layer of IR rays generated aids in defecting piracy. A human viewing a screen containing information sees only the information on the screen and does not see the infrared rays being displayed simultaneously. Video cameras aimed to record a screen containing the information, though it comprises of IR filters they are unable to prevent the IR rays from interfering with recording the information. In order to track the location of the camcorder we use GSM Cellular technology used for transmitting mobile voice and data services operating at 900MHz,1800MHz frequency bands.

Keywords: **Camcorder, Antipiracy, Infrared Rays, GSM.**

1. Introduction

Movie piracy has a profound act on the motion picture industry. In the view of the law, movie piracy is considered as crime all over the world. The major problem caused by movie piracy is internet traffic. As the main source for movie piracy is piracy by insiders it is of 77% possibility. As an important source of movie piracy, the camcorder piracy accounts for about 23% of the piracy methods according to the BBC News [10]. The pirated movies can be made prior to the theatrical release date and after the date, classified as: pre-release piracy and post-release piracy. Section II below discusses the sources of piracy which gives the difference between piracy due to consumers and insiders.

2. Sources of piracy

Pirated information have differences in quality, potential impact on revenues, legal and business implications, and technologies that can be adopted to address the issues. Movie piracy is capturing a original motion picture through Several types of cameras which are having the similar CCD and CMOS sensors in the camera device. The sources of camcorder-pirated movies can be classified as pre-release piracy and post-release piracy respectively. Pre-release sources of piracy include production, post-production and pre-release distribution, where film may be shown in private screenings to critics, sponsors and VIPs. After theatrical release, motion pictures can be pirated from the theatre, during controlled small-screen releases, from DVD or video releases, Internet distribution, or from broadcast television. This method is known as Post-release. During the pre-release and post-release the piracy can be done in two ways, through cam and telesync [1]. It is the imitating of existing Content. These copies sold for the lesser price before they are officially available.
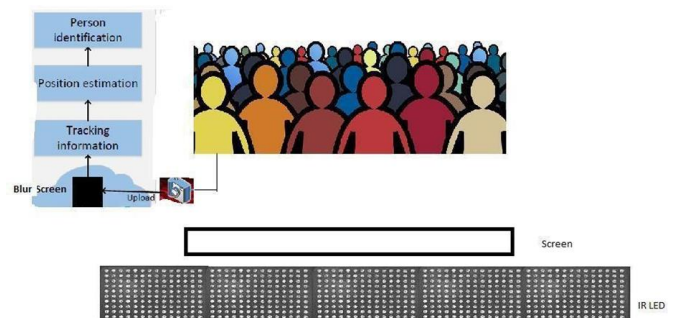
3. Existing anti-piracy scheme

Fig. 1. Working mechanism of camcorder piracy tracking by IR display technology

As a deterrent against the camcorder piracy, several watermarking technologies have been proposed [2]. This technique is to embed watermarks into the movie. The message indicates the theatre to which it was distributed, the equipment on which it was shown, the date and time of showing, and perhaps information identifying the projectionist. The content

International Journal of Research in Engineering, Science and Management
Volume-3, Issue-2, February-2020
www.ijresm.com | ISSN (Online): 2581-5792

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protection in the theatre using a new paradigm of information display technology, called temporal Psychovisual Modulation (TPVM) [1], which utilizes the differences between the human-eye perception and digital camera image forming to stack an invisible pattern on digital screen and projector. The pattern embedded in the movies can also serves as tracking information to reveal the one responsibility for the camcorder piracy.

4. Proposed system design

Figure 1 represents the working mechanism of the proposed anti-piracy scheme. This system reveals the pirates and personal Information of them who attempts to capture the information that is unofficial. This technology uses the property of CCD sensors that are present in capturing devices, these are sensitive to infrared rays but the humans cannot identify them.

A card will be issued to each user, which helps in the authentication process. The information of the user will be stored and controlled by the admin. Unique information will be generated through microcontroller which will send to user for the verification. In case error occurs during verification new information will be generated and resent to the user. If the user tries to capture the information, the IR LED's which are embedded behind the screen will avoid piracy. If the information is being distributed, the pirates can be identified with the help of details which is maintained by admin.
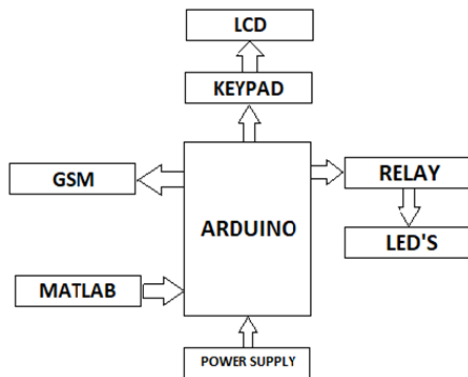

Fig. 2. Block diagram of proposed anti-piracy system.

5. Implementation

In our project we are monitoring the copy right of information.

- *Matrix keypad: T*he keypad is set of buttons arranged in a block or a pad which usually consist of alphanumerical keys.
- *Global System for Mobile Communication (GSM): T*he password which is used for authentication is generated by GSM and verified through Arduino microcontroller.
- *Microcontroller:* Since the output from the microcontroller is low, it is used for controlling the activity of other systems like authentication, verification and driver amplifies the signal and actuates the relays to control the IR LED's.

- *Alphanumerical liquid crystal: Display (ALCD)*: It helps in the directing of the users.
- *IR LED's*: The IR's are designed to sense the presence or absence of partitions such that lighting functions change to accommodate the appropriate size space. These LED's are embedded behind the screen which is initiated by microcontroller. The way this technology works is that when any capturing devices flashes on IR light the pattern will be captured instead of the information show in figure 3.

Fig. 3. IR patterns

6. Applications

By implementing this project, we can have more security in the particular field.

1) The duplication of the portraits can be avoided in museums.
2) Implementing in research centre and meetings the highly confidential information cannot be pirated.
3) The piracy can be avoided in movie theatres by using this technique.

7. Conclusion

This paper mainly deals with idea of avoiding piracy which is a major constraint of visual media. Here anti-piracy is achieved by the study of visual transparency of added interference signals to the theatre audience. The GSM transponders helps as a tracking information to reveal one who is responsible of piracy.

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Volume-3, Issue-2, February-2020
www.ijresm.com | ISSN (Online): 2581-5792

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