

Movie Piracy Reduction using Automated Infrared Transmitter Screen System and Steganography Technique

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Abstract— Cinema is a major entertainment for people in today's life. Because of this a lot of investment is put on this area by the film makers. Piracy is one of the biggest problem faced by film makers as it causes huge loss and make their efforts go in vain. Main source of movie piracy is camcorder piracy in which movies are recorded using portable devices in theaters and traded in gray markets. In this paper we are proposing a method which helps in reduction of movie piracy, an unseen light is projected from screen which doesn't disturb the viewers but when that infra-red light falls on the camera, it sensitizes the quality of the recorded video and RFID tags are used to avoid the unauthorized person from playing the movie if the movie is being pirated then the concerned authority is forewarned using GSM and location can be traced via GPS.

Keywords—infra-red light; RFID ;GSM;GPS;

I. INTRODUCTION

Nowadays flourishing of internet has caused major variation, because of this any kind of information and can be found effortlessly, and this gives access to copyrighted contents too. In this paper we are mainly centralizing the piracy which happens in cinemas .

As movie piracy is major issue in film industry and camcorder piracy is main cause of piracy in cinema. Using portable device movies can be recorded effortlessly and later the same video can be uploaded in the internet as theatre prints.

Another problem faced by movie makers is that , there are chances of movies getting pirated even before it gets release in theaters, As so many peoples like working agents theater operators etc are associated in movie making process, they can copy and pirate the movie at good condition . later the same video can be sold illegally.

In this paper we use a technical method to reduce camcorder piracy which happens by recording movies in theatre using cameras. This problem can be reduced by embedding infrared LED's along theater screens . infrared light is invisible to human eye so it doesn't create any problem to the audience but when the same IR light falls on the camera it creates glares and causes disturbance in the recorded video using this method we can degrade the quality of the recorded video this results in reduction of camcorder piracy.

Cinema is huge industry as lot of people are associated with it ,Movie Piracy can happens before its release in theaters this can be over come by a technical method , in this we make use of RFID tags, unique RFID tags are assigned per movie and using these cards only authorized person can play the movie ,if any any unauthorized person tries to play the movie then this system will send message to authorized person. steganography is a technique which is used to hide the information within the normal file , here we make use of steganography to hide the data of the RFID cards which are given to authorized persons because of this duplication of these cards cannot be done .

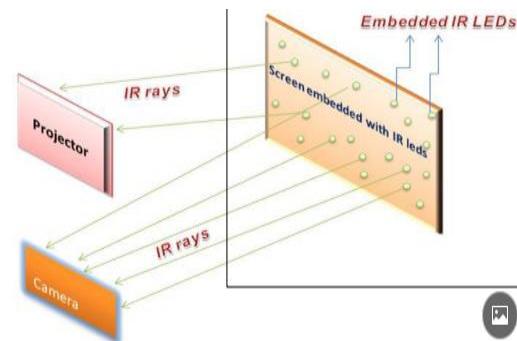


Fig.1 Overview of implementation

II. LITERATURE REVIEW

Earlier works in this topic are studied thoroughly and many interesting works are reported in the literature review. Yuta nakashima et al[1] proposed an Watermarked movie soundtrack finds the position of camcorder in a theater i.e. estimate the recording position in a theater using spread spectrum audio watermarking for the multichannel movie track . Vishwanath et al[2] design a method on card based anti-piracy screening system. They proposed a IR Transmitters installed in movie theaters in order to make the captured videos useless .

Yuanchun chen et al[3] proposed a TPVM method to realize the content protection in the theater using a new paradigm of information display technology. Rohit M N et al[4] designed RFID techniques to defeating the camcorder piracy by exploiting the human eye and camera.

After studying the literature considering the prototype system of defeating camcorder piracy in movie theatre, the following objects were set

- IR LEDs is used to affect the camera recording in theatre regions. The camera recording will be blurred utilizing IR transmitters.
- GSM based immediate alert to concerned authority to alert about Piracy Position using GPS

III. METHODOLOGY

The Block Diagram of this project is shown in fig.2. On switching on the Micro controller through relay the RFID reader is connected to RFID tag which contains some unique code that has been predefined and this data is hidden using steganography technique.

The smart card is possessed by theatre officers. The use of the RFID reader in the project to made to secure the authorization of the person trying to play the movie. One Tag is assigned per movie The card is verified and It checks whether card is valid or not after the card is scanned, the card number is displayed on the LCD, if it is valid card then LCD display shows "movie is ready to play" otherwise alert message is sent to the owner with GPS location and shows "movie is not played". So this invisible light disturbs the acquisition functions of the camera.

On placing IR LED's behind and around the screen in the cinema theatre, the video playing on the screen becomes blur or scrambled. Therefore, the audience will be able to watch the movie without any disturbance but since the camcorders are sensitive to IR light the video becomes unfit to watch

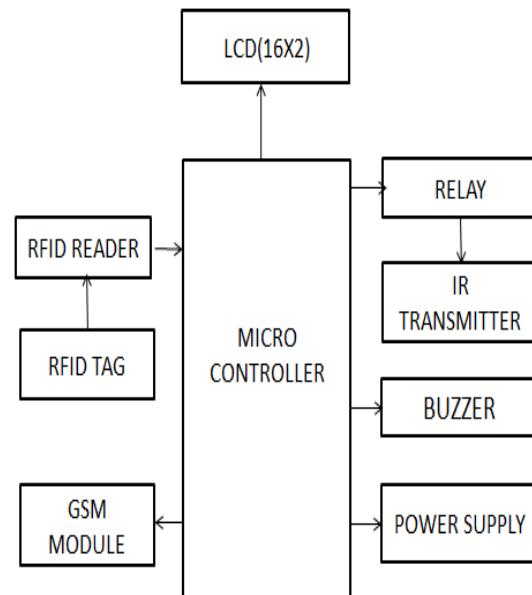


Fig.2Block Diagram

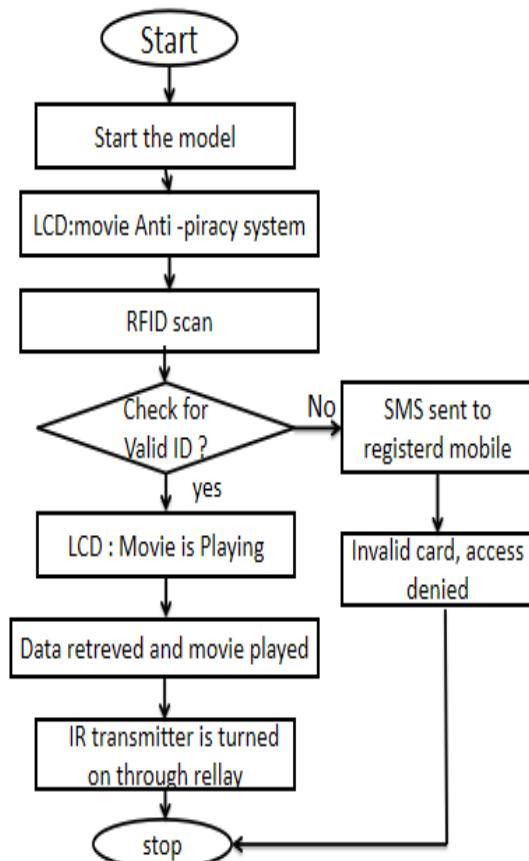


Fig.3Flow Chart of the proposed work

As shown in Fig 3, The use of the RFID reader in the project is made to secure the authorization of the person trying to play the movie. One Tag is assigned per movie, after the card is scanned the ID is displayed on LCD, it checks whether the card is valid or not if it is valid the LCD screen shows movie is played, only on the correct swipe of the card the movie plays, else there is an SMS delivered to the registered mobile number through GSM including the GPS location stored.

In this method, the light which is not visible to naked eyes is projected, that is only visible light can be identified by human eyes, light rays such as UV and IR cannot be seen by naked eyes, but cameras can easily identify them. So, while projecting the movies in theaters, we send visible rays that help audience see in theaters as movies along with a combination of other indistinguishable light rays.

In this project design, we make use of IR LED transmitters and these transmitters are mounted along the corners of the screen and these LED's emit high intensity of infrared rays along with the movie projection. Because of this reason when the movie is recorded using camcorders, the signals are transmitted by IR LED's placed along the parameter of screen. IR signals from the IR LED's disturb the recording function of any camcorder piracy without causing any disturbance to the audience. Technically, infrared rays incorporated with the visible light with site portion.

The visible light ranges from 400nm-700nm, IR light ranges from 700nm-1000nm. And infrared ranges from 700-780nm where the camera lenses are designed to cut-off. Lower rays 400nm, higher range of rays more than 700nm, but these designs will not be accurate at near rays ranging 700nm-780nm wavelengths. The range of infrared rays defeat the camera sensors the recording.

To reduce the piracy which is prior to the theatrical release we use of RFID tags. RFID tags are given to authorized person so only authorized persons can play the movie, if unauthorized person tries to play the movie it shows message as movie is not played and alerts owner by sending GPS location via message.

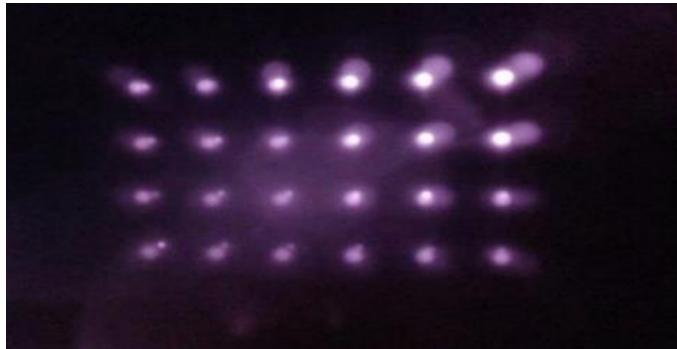


Fig.4 IR LED embedded screen

As shown in the above figure 4, when the movies is

recorded using portable devices the IR LED screen system the recorded video becomes blur by this quality of the recorded video can be degraded. By this camcorder piracy can be avoided.

IV. RESULTS

The results of the implementation is as explained in the Fig 5, Fig 6 and Fig 7. The main aim of this method is to prevent forbidden recording of cinemas, Thus targeting the grey market of piracy. There are numerous applications of this system which requires high degree of privacy and safety such as highly sensitive conferences, meetings etc.

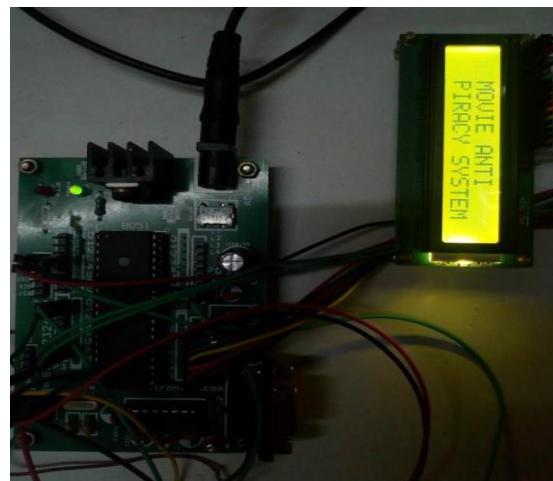


Fig.5 LCD when system turned on

As shown in the above fig 5 the RFID tag is used to prevent the unauthorized person from playing the movie, when relay is turned on it activates the system and the system and LCD shows "MOVIE ANTI PIRACY SYSTEM".

This system poses two cards one is valid and another one is invalid card. When the valid card is swiped it detects the user ID and lets the user to play the movie. When the invalid card is swiped it stops the user from playing the movie.

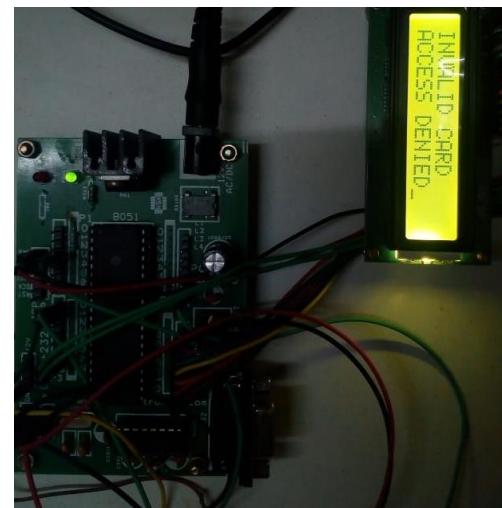


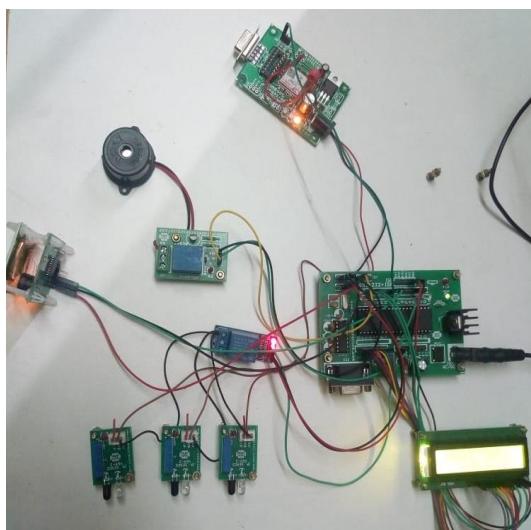
Fig.6 LCD when invalid card is used

As shown in the Fig 6 when the invalid card is swiped across the model it detects the card and LCD shows message as INVALID CARD ACCESS DENIED and by this movie can not be played using invalid card.and the SMS is sent to authorized person using GSM including the GPS location as shown in the Fig7. By this it will alert the film maker and results in reduction of pre release piracy of the movie



Fig.7 anti-piracy alert

When the unauthorized card is detected and SMS sent ,it is programmed in such a way that the LCD shows message as INVALID ID ,ID SMS SENT TO AUTH . by this the user knows the system is working properly and user will get intimation about the alert .



[9] Fig8 Integration of Hardware model

The Fig8 shows the integration of Hardware model ,Software and hardware model was integrated and the results were obtained for movie anti-piracy application by this system both pre release and post release piracy can be reduced .

The main goal of this work is to develop an anti-piracy system for cinemas. An exclusive RFID tags are given to authorized person to forbid unauthorized person from playing the film . The prototype is implemented using LCD Screen, Bunch of IR LED's and GSM. The entire model was assemble on the technology of embedded system which makes the system secure, authentic and trouble-free to use.

V.CONCLUSION

Focusing on illegitimate business of cinemas.The camcorder recording will be blurred using IR transmitters this will make the recorded video unavailing. RFID tags are utilized to secure the authorization of the individual trying to play the film. The added advantage of this system for high degree of privacy and security such as confidential meeting, conferences, research centers, religious spots, obstruction regions, endeavors, inventive work sections, enhancements stores, chronicled tourist spots, changing rooms at strip malls.

REFERENCES

- [1] BeYuta nakashima, ryuki tachibana, noboru babaguchi "Watermarked movie soundtrack finds the position of the camcorder in a theatre" IEEE Transactions on Multimedia (April 2009).
- [2] Kerry-Ann , Bharat rao, Louis "A Qualitative Examination of Movie Piracy Behaviours and their Impact". PICMET 2010 Technology Management for Global Economic Growth.July 2010.
- [3] Guangtao Zhai,Xiaolin Wu "Defeating camcorder piracy by temporal psychovisual modulation" Journal of Display Technology,2014
- [4] B. NEWS, "The fact and fiction of camcorder piracy,".2015.
- [5] Khalid A. Al-Afandy, El-Sayed M. EL-Rabaie, ElSayed M. EL-Rabaie, Gh. M. El-Banby, High Security Data Hiding Using Image Cropping and LSB Least Significant Bit Steganography, IEEE.2016
- [6] Y Chen, G Zhai, Z Gao, Ke Gu, W Zhang, M Hu, J Liu "Movie Piracy Tracking using Temporal Psychovisual Modulation", in IEEE conference 2017.
- [7] Lindawati, Rita Siburian, Steganography Implementation on Android Smartphone Using the LSB to MP3 and WAV Audio International Conference on Wireless and Telematics.2017.
- [8] Rohit MN "RFID based anti piracy" IJSRD Journals 2017