

ANTIPHOTOGRAPHY SYSTEM IN PHOTOGRAPHY PROHIBITED AREAS

¹Sejal Gawade, ²Kajal Tervankar, ³Supriya Shelake ⁴Shubhankar Tajwe⁵ Prof.Pramod Rodge

¹B.E. Student, ²B.E. Student, ³Head of
Department of Computer Engineering
Shivajirao S. Jondhale College of Engineering
Dombivli East, Thane, Maharashtra 421204,India.

Abstract : *Digital cameras and smart phones with cameras are common thing this days. People carry their smart phones with them wherever they go and selfies are trending nowadays Such prohibited areas have some privacy policies which should be followed. But instead of this user tries to carry their smartphones with them, which. Some places like Government places, historical monuments, temples, museums, movie theatres do not allow any kind of digital cameras or smart phones to enter into it. disturbs the piracy of the area. Thus maintaining privacy of such areas is becoming a big issue nowadays. Also film industry suffers 1/3rd losses due to movie privacy. Our system will simply detect the camera in Photography Prohibited Areas, neutralize it using the flashing device. This system provides many applications such as for preventing privacy at theatres, museums, temples, various Government places, historical monuments, jewellery shops, etc. Our system is neither a health dangerous nor it will affect the detected camera operation. It uses Object detection using the Haar feature-based cascade classifiers has being used. It is an effective object detection method proposed in 2001. Here we work with a camera detection. This detection and deactivation method of cameras can be used in defence areas for identifying the attack.*

Keyword– Image Processing, Web cam, detecting digital cameras, deactivating digital cameras, Flashing Device, Over exposure

I. INTRODUCTION

The no-photography policy is not just limited to India, but it is worldwide phenomenon. Photography is banned at places such as museums, jewellery shops, court rooms, shopping malls, historical monuments, temples, industries, defence areas, etc. Eliminating use of cameras in such places improves visitor experience. Preventing photography ensures the gift shop maintains a monopoly on selling images. Film industry also suffers 1/3rd losses due to undesired photography. Hence their arises a need to prevent this undesired photography to avoid the heavy loss This project presents solution for this undesired photography to prevent security and privacy of the site. Our solution is based on detecting the camera's that are capturing pictures of the site. After detection of camera's a strong light is focused by the exposure unit, which degrades the quality of the captured image, thus rendering the captured photograph useless.

II. LITERATURE REVIEW

The following research articles are selected for review, In 2005 a group of four people Khai N.Truong,Shwetak N.Patel,Jay W.Summet, Gregory D. Abowd published their results in Springer verlag Berlin, Heidelberg of 7th International Conference on Ubiquitous Computing. System implementation includes use of Sony digital Handy-cam video camera. This camera was held in night shot mode. The lens of this handy-cam was surrounded by IR-transmitter and narrow band pass IR filter. This arrangement projects IR radiations in field of view,due to retroreflection lens appears as a bright white circular sparkle through the handy cam (capturing device). The detected reflection in located by tracking the bright regions in handy cam above some luminance threshold. For neutralizing camera, 1500 lumens projector which emits localized light beam at each detected camera [4].

In 2014, Virendra Kumar Yadav, Saumya Batham, Anuja Kumar Acharya published their results in Electronics and Communication Systems. They used Circular Hough Transform and Local Maxima concept for detecting multiple circles. These results can be used to track circular lens of a camera [7].

The detection of digital cameras or other optical devices in the background could help military forces to detect Possible attacks. By scanning the surroundings with a laser beam, a relatively strong retro reflection signal is created by an optical sight that is pointed the direction of the laser source [5].

In 2014, Panth Shah, Tithi Vyas published their results in International Journal of Engineering Research & Technology (IJERT), which are based on interfacing between Arduino for Object Detection Algorithm. These results can be used to locate the axis value of camera's lens and passing those values by serial communication to Arduino [6].

We developed a new method for solving the problem of digital camera detection. The process of camera detection is based on Image Processing Algorithm. Here, web camera is used as an image acquisition tool. The web camera can be inbuilt camera or any other USB camera. [3].

III. PROPOSED SYSTEM

To detect cameras in the environment, we can use a web camera. This technique is useful for detecting and deactivating digital cameras in photography areas.

It consists of two parts:

- Camera detection unit
- Image deactivating unit

Camera Detection unit includes camera (web cam) interfaced with PC.

There is a camera in the photography prohibited area which is used to capture image in that prohibited areas

When any digital camera appears in the photography prohibited area, then that digital camera is detected by using image processing algorithms and camera in that area.

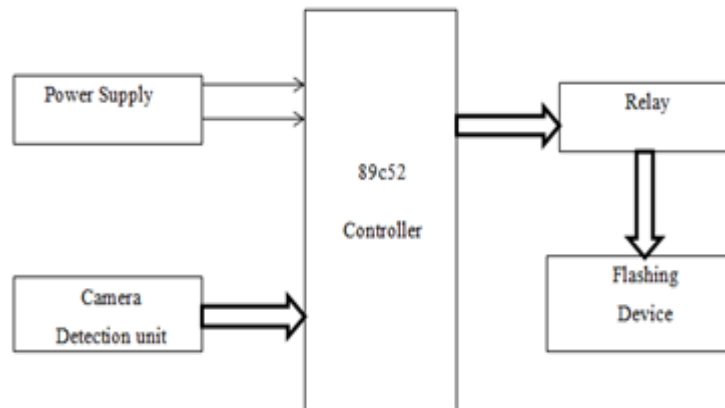


Fig. Proposed Architecture diagram of the system

Modules involved in the proposed system are as follows:

- **Web Camera:** The first stage of any vision system is an image acquisition device. Here we have used web-camera as an image acquisition device for capturing or scanning the prohibited areas. This is done as; the web-cam is to be interfaced with computer. It may be done by using any USB to interface web cam with the computer. The web camera continuously scans the prohibited areas, accordingly by using image processing algorithm the camera is detected once detected signal is given further to the micro-controller.
- **Image Processing Algorithms:** After acquisition of images from the web cam, position of lens can be detected by identifying the various features of the camera lens. This can be done by using different image processing algorithms.
- **Micro-controller:** 89c51 is an 8-bit family of microcontroller developed by Intel in the year 1981. This is one of the most popular families of microcontroller being used all across the world. Once the signal is obtained to the controller it gives signal to the relay mechanism for further exposure.
- **Relay:** A relay is an electrically operated switch many relays use an electromagnet to mechanically operate a switch but other operating principle are also use such as solid state relays. The main function of the relay is coupling between the input and output circuits.

- **Exposure light:** To destroy the captured image we uses exposure light. For exposure light we have used a lighting bulb, placed beside a object.

IV. FLOW CHART

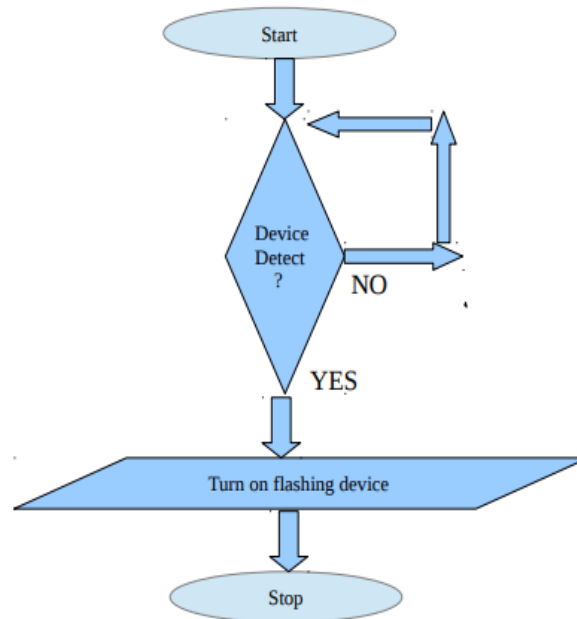


Fig.Flow Chart

- When a camera comes in prohibited areas the camera detection unit detects the camera.
- If the camera is detected signal is given to the microcontroller and then to relay mechanism. The relay mechanism according to the program feed turns on and off the flashing device and the process completes.
- If no camera is detected in the prohibited area, the detection unit continuously scans the prohibited areas till camera is detected.

V. METHODOLOGY

We developed a new method for solving the problem of digital camera detection. The process of camera detection is based on Image Processing Algorithm. Here, web camera is used as an image acquisition tool. The web camera can be inbuilt camera or any other USB camera.

A. Image Acquisition: The first step is to feed the video from the web camera. This is done by the web camera. The web-cam continuously scans the prohibited areas. The video is then converted into sequence of frames. The converted sequence of frames will undergo further image processing algorithm. Here, web camera performs role of image acquisition toolbox.

B. Detection of camera: The detection of the camera lens is done by following the image processing algorithm. The algorithm for detecting camera's lens can be written in image processing software. The written algorithm will detect the camera lens and also the position of the detected camera lens.

Microcontroller have internal pull up resistors hence when the port pin is HIGH the output current flows through this internal pull up resistor.8051 microcontrollers have an internal pull-ups of $10k\Omega$.Hence the maximum output current will be $5v/10k=0.5ma$.Microcontroller will take commands from serial communication and turn on relay.

C. Neutralizing camera: A relay is an electrical switch that turns on and off, based on an external electrical signal. It is just like a normal switch that we see in our homes. The only difference is that instead of a human being switching it on or off, the switching is controlled via an external electrical signal. When the external electrical signal is applied the relay energizes and the switch is on, and when, the external electric is not applied the switch is off.

VI. RESULT:

When camera lens will be located it has to be neutralized by using strong light source. The camera tends to be overexposed. After this effect the photograph will be distorted. This will contribute in loss of fine details of image rendering it useless. Example of overexposure on image by is shown below. Fig. 5 shows overexposed image. Figure 4 shows, when the camera is detected.

Relay Mechanism will be interfaced with 8051. An excess light will be mounted on the relay mechanism.

Relay mechanism will operate as per signals from 8051. Excess light spread strongly and give strong light source.

Use of strong light source reduce the quality of image

Because of the strong light source, the user gets the distorted image. This work will be beneficial in the areas such as theatres for prevention of piracy.

It has many applications which include maintaining secrecy at defence areas, courts, industries, government offices, research and development sectors, museums, historical monuments, religious places etc.



Fig.4 Digital camera detected

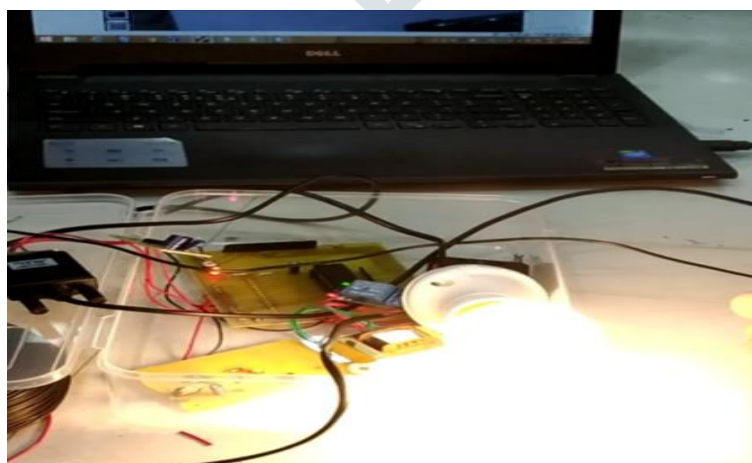
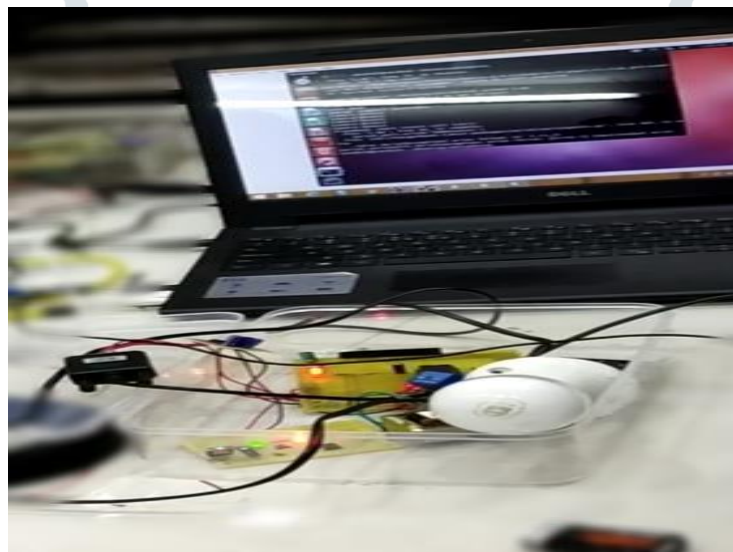


Fig.5 : Over exposure image



Fig.6 Hardware

VII. IMPLEMENTATION:



VIII CONCLUSION:

The main objective of project is to detect and disable digital cameras in photography prohibited area using image processing algorithms. The image processing techniques are used to locate the position of multiple cameras in prohibited area. With the help of our project the issue related to privacy of many area like movie theatres, historical monuments, temple, museums, etc has been solved.

Using Image Processing algorithm, the Camera lens is detected; once the camera lens is detected the signal is given to the microcontroller. Microcontroller provide signal to the Relay mechanism. The Relay then switch on the exposure light, because of which the image taken by the user get destroyed, thus we successfully implemented our project.

IX. ACKNOWLEDGMENT:

We wish to express our deep gratitude to our guide **Prof. Pramod Rodge**, for all the advice, encouragement and constant support he has given us throughout our project work. This work would not have been possible without his support and valuable suggestions.

We are grateful to **Prof. Bhavna Thakur, Project Coordinator** for giving us the necessary guidance for our project.

We are grateful to **Prof.S.A.Lonkar**, Head of the Department of Computer Engineering and the **Members of Project Review Committee** for their valuable suggestions.

We are also grateful to **Dr. J. W. Bakal**, Principal for giving us the necessary facilities to carry out our project work successfully.

We would like to thank all our colleagues for their help and constructive criticism during our project work.

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