



# **Video CAPTCHA – Design Based on Moving Object Recognition**

Prof. Anisaara Nadaph<sup>1</sup>, Juwairiya Shaikh<sup>2</sup>, Nikita Bodhe<sup>2</sup>, Hemlata Pingale<sup>2</sup>, Mrunali khunte<sup>2</sup>

Assistant Professor, Dept. of Computer, TCOER, Savitribai Phule Pune University, Pune, India<sup>1</sup>

B.E. Student, Dept. of Computer, TCOER, Savitribai Phule Pune University, Pune, India<sup>2</sup>

**ABSTRACT:** CAPTCHA is a mechanism which helps distinguishing Humans and computers automatically. CAPTCHA is a security system that identifies bots and allows only authorized users to log-in into the system. Now-a-days we are using different types of captchas for web security. Existing CAPTCHA systems include text based captcha, image based captcha, puzzle captchas and audio captchas. In this paper we are implementing CAPTCHA with video streaming feature. We are implementing a carrier object model. It supports variety of algorithms that generates carrier objects moving randomly forming a video. This video is passed through the carrier object plane. A point in this plane is selected by the user for authentication.

**KEYWORDS:** Security Primitive

## **I. INTRODUCTION**

CAPTCHAs are short for Completely Automated Public Turing test to tell Computers and Humans Apart. The term "CAPTCHA" was introduced in 2000 by Luis Von Ahn, Manuel Blum, and Nicholas J. Hopper. They confirm that the users are human and not any harmful computer software. CAPTCHA aims to block form submissions from automated scripts that harvest email addresses from publicly available web forms. A common kind of CAPTCHA used requires the human users to enter the string text of characters that appear on the screen in a distorted form.

CAPTCHAs means Completely Automated Public Turing test to tell Computer and Humans Apart. CAPTCHA technology has its foundation in an experiment called the Turing Test. HPI systems consider CAPTCHAS as an important branch. It is used to prevent undesirable and malicious bot s on the Internet. We briefly discuss various types of CAPTCHAS:

- 1) CAPTCHA based on Text
- 2) CAPTCHA based on Image
- 3) CAPTCHA based on Puzzle
- 4) CAPTCHA based on Audio
- 5) CAPTCHA based on Video

### **1. CAPTCHA based on text:**

The text based captcha is the one of the most widely used captcha system in different schemes. Many large web sites such as Google, Yahoo and Microsoft all have they are used their own CAPTCHA system. Pessimil Print is one main example of the first text based scheme. Baffle Text, Scatter Type are another text based schemes that generate meaningless pronounceable words.

Here for displaying the text various visual patterns are used as foreground and background. The majority of CAPTCHA are for English CAPTCHA methods. For other languages like Arabic, Chinese etc. very few Captcha are introduced.

### **2. CAPTCHA based on Image:**

Image based CAPTCHAs have been proposed as alternatives to the text media. One of the first Image Based methods is PIX and EPS. Bongo, which is created in the CMU CAPTCHA project, is described. **ASIRRA** (Animal Species Image



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Recognition for Restricting Access) is a HIP that works by asking users to identify photographs of cats and dogs. Images are randomly distorted before presenting them. Image-based CAPTCHAs are big challenge-tests in which the users have to correctly find those images that have some extent of similarities. For example: visual puzzles. In image based CAPTCHAs user is expected to identify image.

### 3. CAPTCHA based on Audio:

Audio-based CAPTCHAs are based on the sound- systems. These audio based CAPTCHAs are generated for those users which are unable to see anything. It contains sound-clips which are downloadable. In this type of CAPTCHA, first the user listens and after that submits the spoken word. The first Audio-base system ECO was implemented by the Nancy Chana student in Hong Kong from the City University. The audio-based system is based on the difference in the ability between computer machines and humans in recognizing spoken language.

The program chooses a sequence of digits and words randomly and renders the words and number digits into sound clips and distorts it. The distorted sound clip is then presented to the user to enter the right word or number.

### 4. CAPTCHA based on video:

Video CAPTCHA is an ewer and commonly seen in small scale CAPTCHA system. In video-based CAPTCHAs, three words are provided to the user which elaborates a video. The user's tag must match to set off automatically generated ground truth tags then only the test is said to be succeed. The term video CAPTCHA is used to any CAPTCHA that uses a video as its means to present information to a user. Although video CAPTCHA is limited, both commercial and academic application does exist.

## II.MOTIVATION

Tests animation CAPTCHA and improve its practicability. With the successful completion of the above study as the prerequisite, the difficulty of generating animation CAPTCHA is not large. The remaining key issue is to test and improve it. If the CAPTCHA is only to protect the safety excessively but lose the practicality, its practical value and research significance will be lost, too. In order to improve its usefulness, we intend to conduct- depth study about enhancing the user's visual effects, and select the appropriate video generation algorithms, video compression algorithms to protect the user easy-to-accept. At first, we model the movement of the carrier objects. It will be a high-dimensional models including: location $x_1/y_1/z_1$ , the direction of motion  $x_2/y_2/z_2$ , color/g /b, the shape(at least one-dimensional pending research), sizes, etc., which takes up at least10 dimensions. Then, according to principle so human vision, we analysis and determine which dimensions should be changed and how to change to make sure that user's visibility and recognition will be best. We will program it and invite a lot of user to test, and then receive the final results of this study.

#### Advantages-

- 1) Makes online shopping safer.
- 2) Language independent as it does not require text entry.
- 3) It will stop spammer's from registering on your site.
- 4) CAPTCHA is effectively used to provide various services in a security.

#### Disadvantages-

- 1) Video CAPTCHAs work as a drawback for blind people.
- 2) Shoulder Surfing.
- 3) Due to large size of file, users face problem to download video and find correct CAPTCHA.
- 4) Computation load on server.



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## III. LITERATURE SURVEY

CAPTCHA is an acronym for “Completely Automated Public Turing Test to tell Computers and Humans Apart”. The progress of Internet, Web security has become an important issue. There are too many malicious threats across the Internet which may compromise your system in the absence of any secure application which provides protection against such threats [11]. Websites present users with puzzles called CAPTCHAs to curb abuse caused by computer algorithm masquerading as people. While CAPTCHAs are generally effective at stopping abuse, they might impair website usability if they are not properly designed. A FUNDAMENTAL task in security is to create cryptographic primitives based on hard mathematical problems that are computationally intractable. For example, the problem of integer factorization is fundamental to the RSA public-key cryptosystem and the Rabin encryption.

Most captchas in commercial use today are character recognition (CR) captchas involving still images of distorted characters; attacks essentially involve building on optical character recognition advances. Audio captchas (AUD) are a distinct second category, though unrelated to our present work. CAPTCHAs also present a plausible solution to the problem of spam mails. All we have to do is to use a CAPTCHA challenge to verify that an amended human has sent the email.

## EXISTING SYSTEM

The invention of CAPTCHA is a very notable primitive. It distinguishes human users from computers by presenting challenges. In it was introduced to use both CAPTCHA and password in a user authentication protocol. This is called CAPTCHA-based Password Authentication (CbPA). CbPA counters online dictionary attack. Specifies solving CAPTCHA challenge after entering a valid pair of user id and password unless valid browser cookies received.

If invalid browser cookie is received the user has certain portability to solve CAPTCHA challenge before being had to derive access. An improvisation on CbPA-protocols propose ding states that only when the number of failed login attempts for the account exceeds a threshold a CAPTCHA will be applied and storing cookies only on user-trusted machines.

Further improved in, a small threshold is applied for failed login attempts from unknown machines but a large threshold for failed attempts from machines with previous successful logins within given time frame. Recognition Based graphical passwords were also used in, where text captcha is displayed below each image. User locates his/her own pass-images and enters the characters at specific location of captcha below each pass-image as his / her password during authentication.

For each pass image those specific locations were selected during password creation as part of the password.

## PROPOSED SYSTEM

After studying different types of captchas we understood that there are many algorithms that are used in solving the captchas automatically through some piece of codes. Thus a secure measure could be considered by involving the use of a hardware device like mouse. The click event of a mouse cannot be hacked with any code.

To implement this new concept we used the latest form of captcha – ‘Video Streaming’. Making use of an online shopping application we introduce our captcha at the transaction level.

On a single form we will pass two videos one at a time. In the first video the user is asked to click on a point in the video. Once the user clicks on a point the video will stop. That particular frame where the user has clicked on a point will be extracted and the point will be calculated. Then a threshold is applied to that point.

In the second video the user is supposed to click in the same frame in the click in the calculated threshold. When succeeded it is interpreted that the user was a human and not a bot and is allowed for transaction.

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## SYSTEM ARCHITECTURE

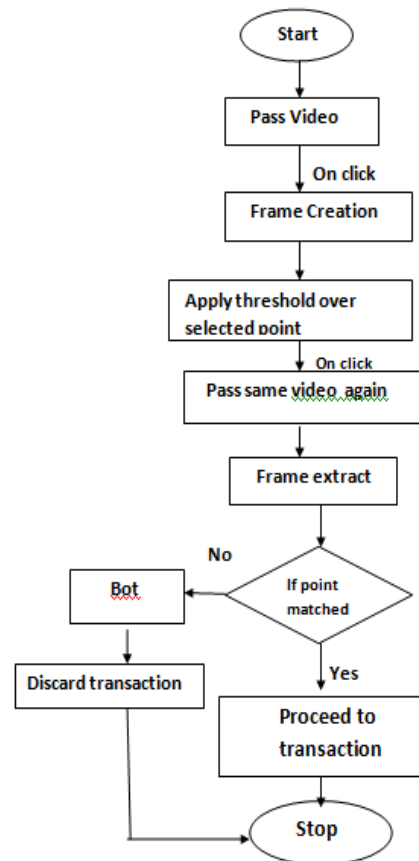


Fig: System Architecture for Video Captcha.

## ALGORITHM

- Canny Edge Detection Algorithm
- STEP I: Noise reduction by smoothing
- Noise contained in image is smoothed by convolving the input image  $I(i, j)$  with Gaussian filter  $G$ . Mathematically, the smooth resultant image is given by
- $I_{smooth}(i, j) = G * I(i, j)$
- Prewitt operators are simpler to operator as compared to sobel operator but more sensitive to noise in comparison with sobeloperator.
- **Hysteresis Thresholding:**Final edges are determined by suppressing all edges thatare not connected to a very Strong edge.
- **Non Maximum Suppression:** Only local maximashould be marked as edges.
- **Compute Gradients:** Edges should be marked where the gradients of the image has large magnitudes.
- **Smoothing:** Removing noise by convolving with Gaussian filter.
- **Start:** Read the input image.



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- **End:** Input image resulted into edge extracted image.
- **STEP II: Finding gradients**
- In this step we detect the edges where the change in gray scale intensity is maximum. Required areas are determined with the help of gradient of images. Sobel operator is used to determine the gradient at each pixel of smoothed image. Sobel operators in i and j directions are given as
  - $\begin{matrix} -1 & 0 & +1 \\ -2 & 0 & +2 \\ -1 & 0 & +1 \end{matrix}$
  - , And "  $\_ = *$
  - $\begin{matrix} +1 & +2 & +1 \\ 0 & 0 & 0 \\ -1 & -2 & -1 \end{matrix}$ ,
- These sobel masks are convolved with smoothed image and giving gradients in i and j directions.

## MATHEMATICALMODEL:

- Let  $S$  be the perspective such that
- $S = \{S, E, I, O, f, DD, NDD, success, failure\}$
- Where,
- $S$  = Initial state
- $E$  = EndState
- $I$  = Input of the system
- $O$  = output of the system
- $f$  = function
- $f(t) = w * a(t) - (1-w) * h(t)$  Where,

$(T)$  = Set of parameters determines the variant CAPTCHA generated.

$a(T)$  = probability of an attack succeeding on an instance of variant.

$h(T)$  = probability of human being able to read an instance of variant.

$w$  = weight balancing of two qualities  $DD$  = Deterministic data.

$NDD$  = Non-Deterministic data. Success = Gives desired.

## VI. PROPOSED SYSTEM

In this paper we are proposing a system that is using video streaming feature as a CAPTCHA for authentication. During log in user id and password is to be entered. A video will be shown to the user. The video will be shown in the carrier object space. The user needs to click on a desired time frame in the video. This time frame will be extracted from the continuous video and saved at the server for further authentication. For example- While e-banking the same video will be passed and the user is expected to click in the same time frame. This technique helps to distinguish whether the transaction being carried out is a human or a bot.

## VII. CONCLUSION

In password system CAPTCHAS are used to prevent dictionary attack. This helps preventing sensitive information and provides better security and provides satisfaction to user that their data will be secure. This will help us authenticate human users and them the rightful deserving facilities and block away or restrict bots from blocking these rvice and prevents malicious attacks.

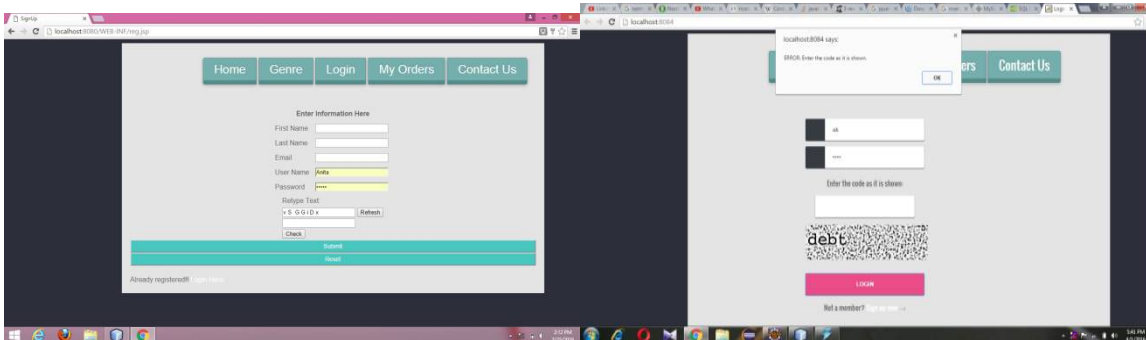
## VIII. RESULT

Our aim is to reduce the bots attack And we will make such type of captcha that can reduced bots attacks. Using CAPTCHA system Automated attack should not be more than 0.1% successful but human rate should be 90% successful.

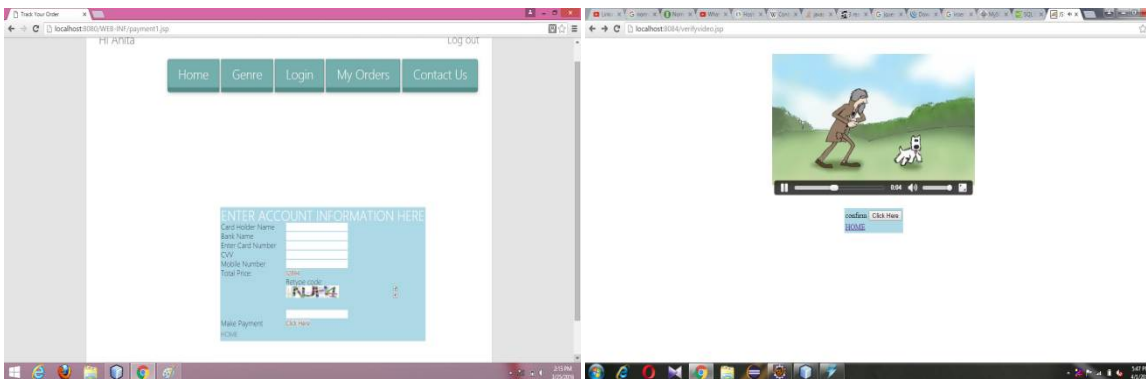
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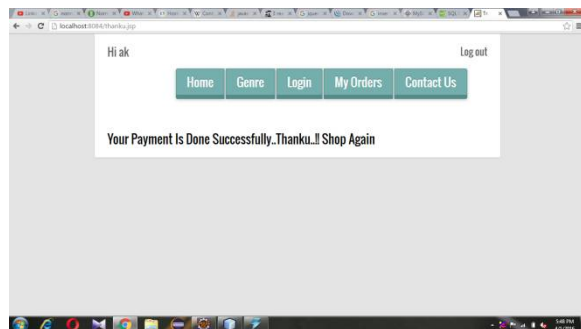
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Text Based CAPTCHA Image Based CAPTCHA



Audio Based CAPTCHA Video Based CAPTCHA



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