



# PUZZLE BASED CAPTCHA SYSTEM

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**Abstract :** With an adding number of automated software bots and automated programs that abuse and loose public web services, the user is primarily needed to go through and break a *Turing test* problem, before they're allowed to use web operations and web services. This Turing test is nominated as CAPTCHA (Completely Automated Public Turing test to distinguish Computers and Humans Apart).

CAPTCHA is an acronym of the Completely Automated Public Turing test to distinguish Computers and Humans Apart. CAPTCHA is a fashion of testing which ensures that only those people just passing the test and not the system computer generated (bots) are allowed to proceed further. The development of CAPTCHA system is to furnish creative and confirmation tests that can be fluently answered by humans and delicate for bots.[1]

CAPTCHA system based on puzzle is developed with the help of an image CAPTCHA.

This type of CAPTCHA had developed by using HTML, JavaScript/ JQuery and Cascading Style Sheet (CSS). The CAPTCHA system is developed using a sequence of phases of development that are in the methodology of Waterfall Method.

**Keywords** - CAPTCHA, bot, image, slider, puzzle, system.

## I. INTRODUCTION

There have been lots of automated software bots and automated scripts that corrupt and spam the web operations. That's why a user (human) is generally needed to break a CAPTCHA before they gain access to public web services.

It should be delicate for someone to write a computer program that can pass the tests generated by a CAPTCHA even though they know exactly how the CAPTCHA works (the only provided information is a small quantum of randomness employed to induce the tests).

The main aim of a CAPTCHA is to prevent the automated script attacks by raising the computation cost of breaking a CAPTCHA to the level that may not be profitable. Traditional CAPTCHAs ask users to write a series of letters and numbers that were converted to master the character recognition tools. The text-based CAPTCHA are sophisticatedly distorted in order to render them unidentified by the bots but still identifiable from user point of view. But still a lot of character recognition software have succeeded in decoding plain text-based CAPTCHAs. In order to overcome these weak points of text-based CAPTCHAs, Image-based CAPTCHAs was introduced.

Image-cased CAPTCHA is a technique that's considered to be more fluently resolved by the user as opposed to text-based CAPTCHA. This is because visual cues are more easily and quickly recognizable by users of the system and can capture further information than text-based CAPTCHAs.

For illustration in a slider puzzle captcha, it's needed to slide a single displaced jigsaw puzzle piece in position with the help of the given slider in order to complete the CAPTCHA. After completion, the jigsaw puzzle produces a complete picture.

CAPTCHA is a reaction test to ensure that the reaction is generated by a person and not by an self-operating machine. The CAPTCHA which is fluently generated by the computer is tough for a machine to break but can be easily answered by human (user).

A basic CAPTCHA requires the user to type some alphanumeric characters specially, Alphabets or digits from a distorted image that is displayed on the screen. The motive of the tests is to prevent unwanted bots from accessing websites.

## 1. Applications of captcha:

CAPTCHAs have several applications for practical security. Some of them are:

- Protecting Website Registration: In order to prevent the abuse of websites providing free services by automated bots, CAPTCHA must be implemented. That would prevent the spam bots from subscribing a bulk of email accounts. The solution to this problem was to use CAPTCHAs to ensure that only humans gain free accounts.
- Spam and Worms: CAPTCHAs also provide a solution against unsolicited emails and worms.
- Avoiding Comment Spam: Some automated programs submit bogus comments in order to raise search engine ranks. Such automated programs are nominated as comment spam. CAPTCHA, ensures that only humans can enter comments on a blog.
- Avoiding Dictionary Attacks: The users can be prompted to solve CAPTCHA challenges after performing a certain number of unsuccessful login attempts. [2]
- Maintaining poll accuracy: CAPTCHAs can prevent poll skewing by ensuring that each vote is entered by a human. It discourages rapid submission of multiple votes at a time by increasing the time of submission.
- Limiting registration for services: The bots can be prevented from spamming registration systems to create bogus accounts. Restricting account creation averts waste of a service's resources and reduces opportunities for deceit.
- Preventing ticket inflation: It is also used to prevent false registrations to free events. Hoarding of large number of tickets by scalpers can be prevented by applying CAPTCHA on the ticketing system.

## 2. Accessibility of captcha:

- If CAPTCHAs rely on only visual perception then the groups who commonly struggle with visual CAPTCHAs are:
- The blind
- The colour blind or partially sighted people
- Dyslexic people
- Elderly people

So, the CAPTCHAs may also give an audio interpretation of the CAPTCHA in addition to the visual method as well.

**II. METHODOLOGY**

Proposed captcha utilizes a series of mouse movements (dragging the slider) to allow a user to interactively solve captcha challenges.

The process of authentication by using CAPTCHA system based on puzzle begins with interface viewing by a user. A user should drag the slider which in turn drags the unsolved puzzle piece into position. If the image has been organized in a right sequence and place, that user will be authorized as a human. If there is an error in the placement of the image, that user will not be authorized as a human. However, that user will be prompted again with a new set of image that needs to be solved.

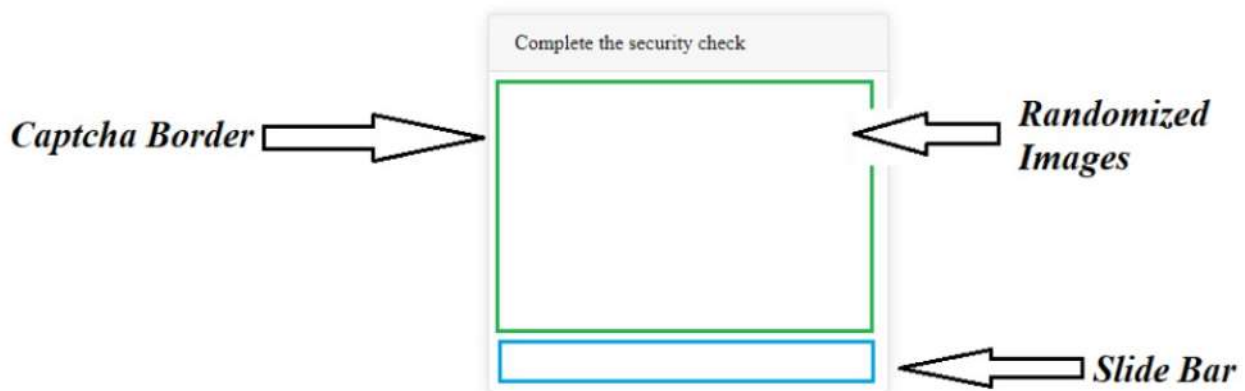


Fig. Module Interface

**III. CONCLUSION**

The model proposed is an image-based Captcha that uses a dragged image or a slider image technique using a piece puzzle. The project execution is carried out by sliding the drag slider on the webpage which in turn drags the puzzle piece to the correct location in order to complete the CAPTCHA.

Unlike other existing captcha we believe that this approach be more interactive as it can be user friendly, and time saving for the users. There is no need of typing out the content hence no keyboard is required for solving it. It is solved by dragging slider/image using mouse. This approach as observed will come out to be a user friendly, interactive and timesaving as the CAPTCHA will be solved with only a single move of mouse. Even user with less intellectual ability can solve the test. It will be treated more like a game. The evaluation of result and performance on the basis of its result calculation will be implemented as a future work.

The chief concept in developing this CAPTCHA system based on puzzle is to make a user effortless and clear on how to use it. Then, it can authenticate the user as a human not as a machine or bots. Suggestion for future usage is that we can create a

plugin which can be easily installed and integrated with a webpage. The application should also support the functionalities across various platforms such as smartphones, tablets etc.

#### IV. ACKNOWLEDGEMENT

We thank Professor A.B. Gadewar in assisting us with the creation of this review paper which greatly improved our insights. We would also like to show our gratitude to Professor Raghunath Kawale, Professor Shalu Saraswat, Professor Neeraja Jain and Professor Deepali Hirolikar for sharing their pearls of wisdom with us during the course of this research and for their so-called insights.

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