



IJEAST

INTERNATIONAL JOURNAL
OF ENGINEERING APPLIED SCIENCE
AND TECHNOLOGY



VOLUME : 1 ISSUE : 9 Print / Issue Publication Date: 09-Oct-2016



ISSN : 2455-2143



Indexed In



WWW.IJEAST.COM

editor@ijeast.com



IMPROVED TECHNIQUES FOR CAPTCHA AND RECAPTCHA

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Abstract - Captcha means Completely Automated Public Turing Test to Tell Computers and Human Apart. Captcha is a program to verify that the user input is given by human or Computer. Captcha is a program which protects websites from bots. Captcha technique helps to protect website registration, E-mails address, online polls, online booking from scrapers. reCaptcha is similar to Captcha which is a free service that protect websites from spam and abuse. recaptcha is released by Google for the better experience. Through this paper I propose new tricks or methods for reCaptcha with the known Captcha techniques. This paper comprises of introduction of Captcha, recaptcha, known Techniques and new tricks or method proposed.

Keywords: Captcha, reCaptcha, slide text captcha, Timer, Dice Captcha

I. INTRODUCTION

The exponential Internet has changed the life of people in various ways like education, shopping, banking, advertising etc. With growth of online Services and businesses, websites security has become the most important issue. As the use of web services there are greater chances of attacks. There are many techniques or software programs developed by intruder that can replace human to do a job like generate data automatically. Attacker uses the automated software to generate multiple requests to cause load on server. Mostly attacker attack on registration forms, online polls and websites like gmail, yahoo, hotmail etc. Captcha “Completely automated Public Turing Test To Tell Computers and Humans Apart” is a techniques to ensure that the input or response given by human not by machine. Captcha is a verification test that is used by most of websites like yahoo, hot mail etc to ensure that registration form filled by human not by automated software. The main aim of this paper to provide some

new techniques or tricks of captcha for the security of web services.

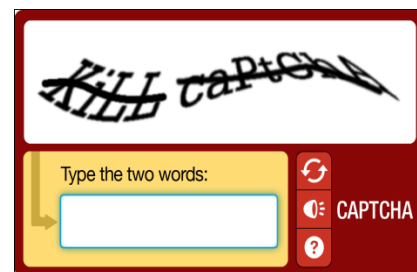
II. CAPTCHA

Captcha likes an image of disorted letters .It is displayed in such a format that only a human can recognize. For example when user fills online form at registration time then there is captcha image displayed and user is asked to write the same characters that appear on captcha image in given field. The automated software or robot fails to recognize them.

III. TYPES OF CAPTCHA

Text based Captcha:

Text based Captcha is mostly used by websites. This is very easy way to implement. Text based Captcha contain alphabets and numbers in various ways like disfigure form , striking with lines, corrupted form etc. For example the captcha in [figure 1] contain two words .user have to write these words in given field.



[Figure 1]

Audio Captcha:

Audio Captcha developed to handle the visually impaired users. Through Audio captcha user first listen to audio clip and then submit the word which is sounds in audio clip.

Video Captcha:

In Video based captcha a video will be displayed to user and user is asked to type the letter that are moving or showing in video. For example in [figure2] a video in which the letters are moving with white and red character and user may asked to type the red letters in given box.

Slide Captcha:

In slide Captcha user can only submit data after unlock the slide which is in locked form. This captcha take very less time because user just have to move the slide button from one end to another end. The slide Captcha helpful to protect blogs from spams.



[Slide Captcha]



[Figure 2 Video Captcha]



[Audio Captcha]

Math Solving Captcha:

In this captcha user is asked to solve basic math. Math based captcha is very helpful to secure server from spams if they designed properly.

Puzzle based Captcha:

In puzzle Captcha the image or picture is divided into various parts or segments. The user is asked to combine these parts or segments to complete the picture or there can be different types of math based puzzle can also be given.

$$1 \square 2 \square 3 = 6$$



[Puzzle Captcha]

reCaptcha

reCaptcha was created at Carnegie Mellon University, home to the CAPTCHA pioneers. Now run by Google, it uses scanned text that optical character recognition (OCR) technology has failed to interpret. reCaptcha use the new dictionary words that can not be easily handle by the machine.



IV. USES OF CAPTCHAS

- Protect E mail accounts
- Protect Online services from spam
- Web registration protection
- Online Polls protection
- Used by yahoo, gmail, hotmail etc to protect their users accounts.
- To protect online booking from intruders.
- Prevent spamming in blogs

V. PROPOSED TRICKS OR TECHNIQUES

Identification Image Captcha

In this Captcha user will asked to identify object and answered some question asked by this captcha. For example in following [figure 3] user will asked to

identify the object and asked some questions like how many object are in this image, colour of object, letter write on object etc. different time different types of images will be displayed by server. This technique can be helpful for identifying that the response is given by human not by software program because human can easily identify the object in less time than machine.



What is the colour of centre object and identified the object.
Type here:

[Figure 3]

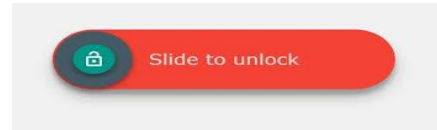
Advantages of this method:

- Pattern recognition of image is difficult for robot.
- It becomes the difficult for machine to find the object and to understand what are asking about concern object.
- This method can ensure the security.

Slide Text Based Captcha:

This Captcha is proposed for the enhancement of security of Text Captcha and to ensure that response is given by human rather than software program. In this captcha the user will first asked to move the slide to end and then the text will be appeared and user have to fill that short text into given field. This type of Captcha double time ensured that human is doing the job. There are less chances that robot can attack because it is not easy for robot to make automated programs
For such type Captcha.

Step 1



Step 2

Type the characters you see in the picture below.

dastjrus

Type given text into uppercase

VI. ADVANTAGES:

- It is very difficult for machine to design programs for first unlock slide and then Recognize the text pattern.
- Easy method for human but time consuming for robots.

VII. CAPTCHAS WITH TIMER

Captcha with timer can be very helpful. Users have to solve the captcha within timing. It will be very difficult for automated software programs or robots to recognize the captcha pattern or design the programs within that time. Captcha with timer can be applied on all types of captcha like Textcaptcha, reCaptcha, audio and video Captcha etc.
Advantages:

- Human can easily solve Captcha within Time.
- It can increase the security of existing Captchas.
- Challenge for robots.

Dice Captcha:

This will be the better captcha for the identification of human or machine. Users have to count dice values and then add them. Then user has to put the result in given field.



Text Audio captcha



This technique is combination of existing techniques like text based captcha with audio. In existing text based method user have to type the letters shown in given area but there can be chance of attack through OCR method. In this method a new concept is proposed that user give input through audio not by typing. User should have to speak those words through recorder which are shown in text captcha.

Dot Captcha

Dot Captcha offers many types of dot pattern that can be of like colorful dots, dots of different shapes. Users just have to identify what is asked about them and write answer in input field. This is interesting trick that can be easy for human but can be difficult for machine.



How many dots are of green colour?

VIII. RECAPTCHA IMPROVEMENT TECHNIQUES:

ReCaptcha can be designed by asking people about their hobbies, favourite colour, identified their friends, with timer or reCaptcha with alternate email id.

These tricks can enhance the security level using following features:

- Use of Multi Fonts or Font face
- Distortion
- Blurring the letters or image
- Rotating the characters with different angles.
- Rotate characters in waving fashion.
- Add extra lines to prevent attacker from knowing what are real characters

IX. CONCLUSION

Captcha reCaptcha are designed for the protection of web services, mail account, registration forms, and personal information from attackers. The purpose of this paper was to give the basic knowledge about

captcha and what kind of captchas are available along with new tricks or methods. The methods that are proposed can enhance the security of captcha.

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2455-2143