

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 1, January 2020

A Review on Different CAPTCHA Techniques that Previously Implemented

Sushant Kumar¹, Chinmay Bhatt², Versha Namdeo³

P.G. Student, Department of Computer Engineering, SRK, Bhopal, M.P, India¹

Professor, Department of Computer Engineering, SRK, Bhopal, M.P, India²

HOD, Department of Computer Engineering, SRK, Bhopal, M.P, India³

ABSTRACT: In today's digital world, security plays an important role in the field of web applications. It is required to protect the website or user data from different kind of machine attacks. To ensure the security, CAPTCHA is a tool through which a turing test can be performed and identify whether the user is human or a robot. CAPTCHA stands for Completely Automated Public Turing Test to tell Computers and Human Apart. Machine based attacks can harm the database by enrolling junk entries and an account can be hacked through brute force attack. By having these problems on mind, there are so many CAPTCHA techniques have been introduced such as text based CAPTCHA that involves 3D text, moving text, distorted text other than text CAPTCHA there are also graphical CAPTCHA, Audio CAPTCHA and one time password based CAPTCHA have been carried out for better security concerns. The motive of this paper is to review the previously proposed systems that may have some bugs and complicated for human to solve in less time. The paper also emphasizes the proposed solution or system that replaces the existing system and provides better level of accuracy.

KEYWORDS: CAPTCHA, Artificial Problem, Turing Test, Attacks, Web Security.

I. INTRODUCTION

In this modern era there are so many CAPTCHA forms are available that challenges machine based attacks. For protecting from junk entries of fake information that may consume data space and slower down the operating server. The traditional CAPTCHA is in the form of distorted string where user will have to recognize that and type over there. Then the system becomes advanced and 3D CAPTCHA has been proposed that possesses high complexity for users to understand. Furthermore it has been upgraded to moving letters which belongs to poor security in front. Then graphical CAPTCHA arrived that proposes sequences of similar images and user will have to click over similar kind of images but there is no penalty for wrong clicks which leads system towards less secured premises. Gaming CAPTCHA is a trending approach where user needs to play an artificial game which is based on some logics that can be understood by human and almost impossible for robots. Some gaming CAPTCHA may have penalty and some does not have. There are so many gaming CAPTCHA possesses simple logics where user will have to solve by dragging object to the target place and some of them are often difficult for human to solve because of its difficulty level. A CAPTCHA should be as simple as that human can answer within few seconds. Here, the proposed system is able to provide better level of accuracy as compare to the existing CAPTCHAs.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 1, January 2020

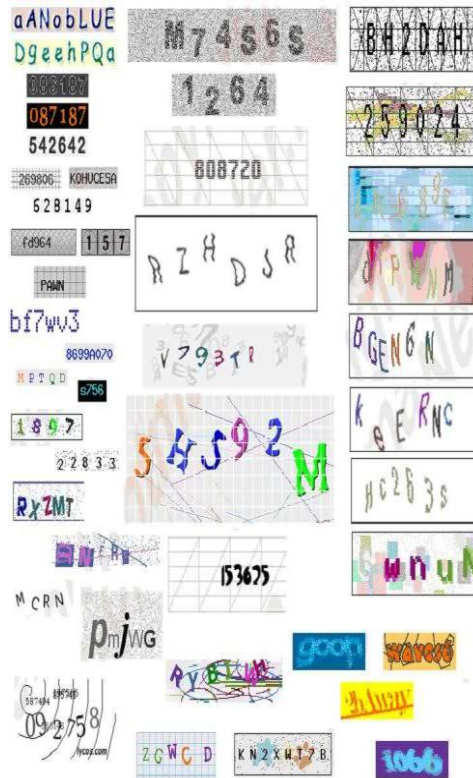


Fig. 1 CAPTCHA

II. RELATED WORK

JingSong et al. proposed a CAPTCHA that serves moving alphabets along with complicated background. A client who wants to access the web pages requires proving his identity by recognizing it. The system which has been proposed in this paper is hypothetical that is impossible for a robot to solve it. The complexity level of this system is not up to the mark but it can be cracked if a still image has been captured. Image processing is a tool which is able to recognize text string whether it is in distorted form. Motion is in hanging posture which is bit easier to understand for human and machine based attack also becomes liable to acquire it using various techniques.

6. nucaptcha



Fig. 2 Motion CAPTCHA [1]

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 1, January 2020

Jing-Song et al. emphasizes the weakness of 2D CAPTCHA which is often easier to recognized and machine based attack can affect it. Here system proposes 3D animation CAPTCHA where alphabets move over a complicated background which creates heavy confusion even for human. It is hard to recognize the correct string which may irritates human. CAPTCHA should be as easy as possible for human and almost impossible for bots.

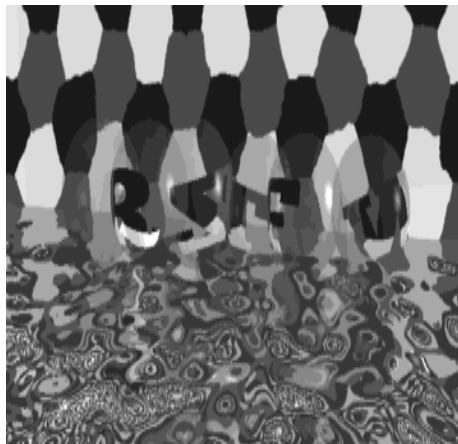


Fig. 3 3D Animation CAPTCHA [2]

Ibrahim et al. proposed a system in which user will have to rotate the cube and identify the respective colors whereas marked with question marks. Once the user is able to rotate and identified the character mentioned over 3D cube, system allow user to get accessed otherwise a new problem will be served and color model will get changed and a new challenge proposes. Text box and 3D cube both have identical colors and user requires to match both the colors and recognize the correct letter and type over there for successful turing test.

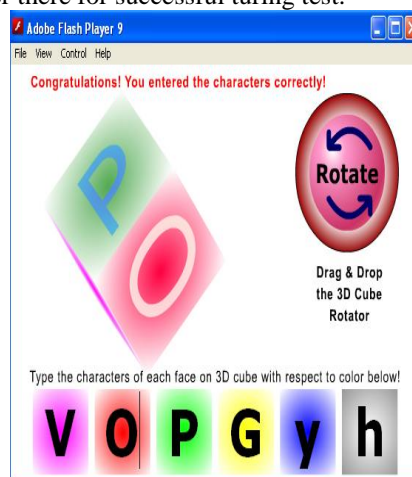


Fig. 4 3D Cubic CAPTCHA [3]

Aadhirai et al. proposed a system which is based on vision where user will have to identify the object based on distance. Proposed system serves an image of real world where different kind of objects relies. System raises an artificial problem where user will have to recognize a particular object which is farthest from a specified object. It may difficult to recognize for those person who has poor vision because there is a hazy appearance which is difficult for normal

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 1, January 2020

human also. If it is possible to observe then it can be only done by human not by bots. It is highly secured CAPTCHA which having difficult artificial problem which is impossible to solve by bots.

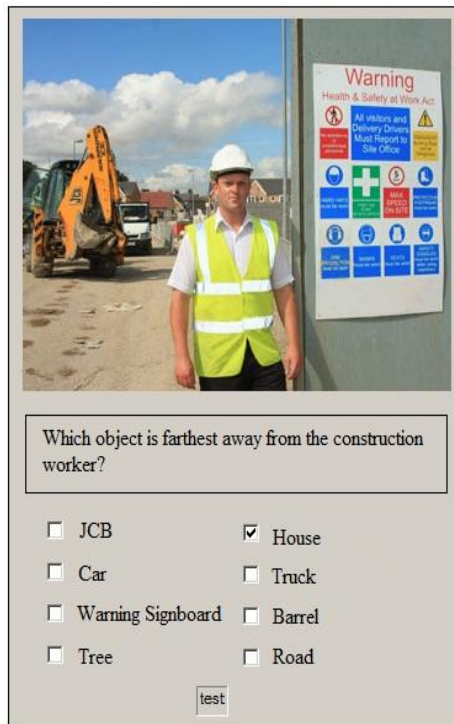


Fig. 5 Distance based CAPTCHA [4]

Song Gao et al. proposed a security strand for gaming CAPTCHA such as relay attack that can affect the security of drag and drop based games. There are so many image processing attacks or approaches are available that can separate the foreground and background that easily recognizes the object over the plane backgrounds.



Fig. 6 Gaming CAPTCHA [5]

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 1, January 2020



Fig. 7 Gaming CAPTCHA [5]

Seyed Mohammad Reza et al. proposed a CAPTCHA which is one of the most accepted CAPTCHA used by some renowned organizations like Google, Yahoo, and Facebook etc is reCAPTCHA. Method used in this CAPTCHA is like an example in the figure shown below which consists of two different words taken from old text book and to prove your identity, user needs to recognize those two words and write it on the given text box. This technique can be cracked by an intelligently trained neural network system and OCR. This CAPTCHA is time consuming and challenging at times that could be annoying for a user.

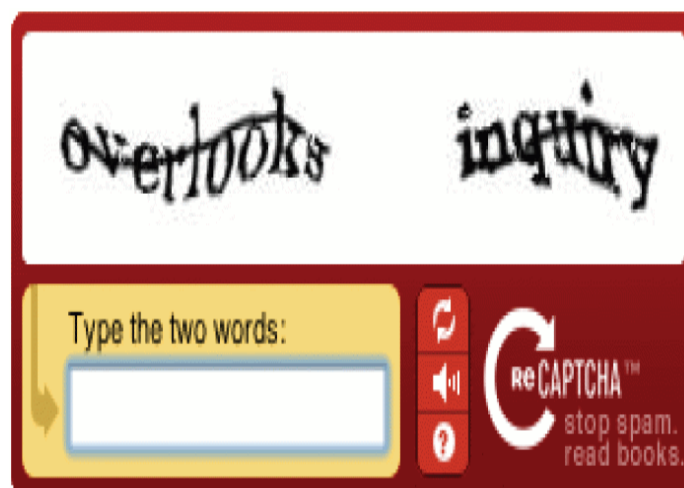


Fig. 8 reCAPTCHA

Cao Lei et al. proposed a CAPTCHA which is based on finger guessing game where user will have to recognize particular gesture which has been asked for. There were several images have been shown with different kind of gestures where user will have to identify the correct gesture as per queried out.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 1, January 2020



Fig. 9 Finger Guessing Game CAPTCHA [7]



Fig. 10 Finger Guessing Game CAPTCHA [7]

S. Ashok Kumar et al. (2017) proposed a system which is based on mini games which are designed using HTML5 and Java Script. There are four different games were designed in this project. These games are fundamentally web based. The application designed in HTML and JAVA script are web based and their coding can easily be extracted because of its availability in URL (Uniform Resource Locator) due to which web attacks can affect the security premises.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 1, January 2020



Fig. 11 Bird Shooting CAPTCHA [8]

III. CONCLUSION

As per the review of previously proposed systems, there are certain bugs which may confuse human or often easy for bots. So, this paper shows some finding over the traditional approaches which needs to enhance in future that can be solved within few seconds but proposed best level of security in the field of internet. This paper covers various approaches of turing test to identify whether user is human or a robot. The motive of this paper is to find and replace the existing systems with suitable artificial problem that may takes few seconds but provides best level of security. Technique can be enhanced in future by representing hard AI problem that can be solved within few seconds but often stronger than earlier systems. Here system requires an easier CAPTCHA which should be so easier for human and almost impossible for bots. A system would be proposed that transform a system which may uses speech recognition along with image spoofing that can provide better level of security.

REFERENCES

- [1] JingSong Cui, LiJing Wang, JingTing Mei, Da Zhang, Xia Wang, Yang Peng, WuZhou Zhang, "CAPTCHA Design Based on Moving Object Recognition Problem" in IEEE 2009.
- [2] Jing-Song Cui, Jing-Ting Mei, Xia Wang, Da Zhang, Wu-Zhou Zhang , "A CAPTCHA Implementation Based on 3D Animation" in International Conference on Multimedia Information Networking and Security of IEEE 2009.
- [3] Ibrahim FurkanInce, YucelBatu Salman, Mustafa ErenYildirim and Tae-Cheon Yang, "Execution Time Prediction For 3D Interactive CAPTCHA By Keystroke Level Model" in Fourth International Conference on Computer Sciences and Convergence Information Technology of IEEE 2009.
- [4] Aadhirai R, Sathish Kumar P J and Vishnupriya S, "Image CAPTCHA: Based on Human Understanding of Real World Distances" Proceedings of 4th International Conference on Intelligent Human Computer Interaction, IEEE 2012.
- [5] Song Gao, Manar Mohamed, Nitesh Saxena and Cheng cui Zhang, "Gaming the Game: Defeating a game CAPTCHA with efficient and robust hybrid attacks" in IEEE 2014.
- [6] Seyed Mohammad Reza1, Saadat Beheshti2 and Panos Liatsis3, "How Humans Can Help Computers to Solve an Artificial Problem survey", international conference, IEEE 2015.
- [7] Cao Lei, "Image CAPTCHA Technology Research Based On The Mechanism Of Finger-Guessing Game", Third International Conference, IEEE 2015.
- [8] S. Ashok Kumar1, N. Ram Kumar2, S. Prakash3 and K Sangeetha4, "Gamification of Internet Security by Next Generation CAPTCHAs" International Conference on Computer Communication, IEEE 2017