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Graphical security system by using CAPTCHA

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ABSTRACT

In this system we propose authentication schemes which consist of graphical password based captchas. It consists of both a captcha and a graphical password schemes. To boost the security aspect to the next level, we contribute some captcha schemes that provide user high security at time of login. Our system provides choice of various authentication schemes to user at time of login. Along with these schemes session based authentication is also provided which will protect system from unauthorized access. We extend the use of captcha as human present recognition as well as graphical password hence it provides all benefits of captcha and make system more powerful from security point of view.

Keywords: Graphical Password, CaRP, CAPTCHA, Authentication, Security.

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I. INTRODUCTION

These days web goes about as an imperative part. Each individual will peruse to get their separate necessaries. Web is valuable in various ways. Everybody wants to peruse safely that is they require their own things to be guaranteed like passwords or any content record. As the utilization of web builds up the programmers are additionally conceived, i.e. client's close to home archives or passwords are hacked by the third individual for the most part called programmers. As utilization of web is critical in like manner ensuring our personals is additionally something imperative. Here intend to state that there ought to be an execution of security for the client's close to home archives.On account of the programmers, each client's close to home reports or passwords will be hacked. So then those programmers may utilize those personals to the terrible thing or will impart to others for their benefit. To beat these things a solid security ought to be actualized.

There are distinctive routes for giving security. Here what we presented is one of the new strategies for the security reason. Another insurance crude is indicated in view of hard AI inconveniences, in particular, another group of graphical secret word plans based over Captcha innovation, which is known as Captcha and Graphical Password (CaRP). Here a client while get login to their individual records or sites there a picture will be created. The client should tap on that picture or on any piece of that picture as a secret key and that picture or clicked specific part will be put away as their graphical watchword and those pictures are distinctively created for various clients.

Considering that produced graphical picture as a secret word alongside the client's standard watchword for advance logins. Subsequently present a security for the clients so they can peruse securely and their personals will be sheltered.

CAPTCHA's code is a progression of characters (capitalized and lowercase) and numbers.

Various randomizing capacities are utilized to create an irregular code (stream of characters and numbers) in each test so as to make it not helpless to a dictionary assault.

The length of the code is varied (minimum length is 6 characters-numbers).

Multiple font types are handled to prevent intrusion using image processing techniques when a consistent font is used.

The text image is blurred using a specific technique in order to make CAPTCHA difficult for malicious software.

II. LITERATURE SURVEY

[1] L. V. Ahn, M. Blum, Nicholas J. Hopper and J. Langford, CAPTCHA: Using hard AI problems for security,

In the Proceedings of Eurocryypt'03, pp.294311,2003, available at: http://www.captcha.net/.
Description: He introduce two families of AI problems that can be used to construct captchas and we show that solutions to such problems can be used for steganographic communication. captchas based on these AI problem families, then, imply a win-win situation: either the problems remain unsolved and there is a way to differentiate humans from computers, or the problems are solved and there is a way to communicate covertly on some channels.

[2] R. Biddle, S. Chiasson, and P. C. Van Oorschot, ―Graphical passwords: Learning from the first twelve years,‖ ACM Computing Surveys (CSUR), vol. 44, no. 4, p. 19, 2012
Description: He review usability requirements for knowledge-based authentication as they apply to graphical passwords, identify security threats that such systems must address and review known attacks, discuss methodological issues related to empirical evaluation, and
identify areas for further research and improved methodology.

[3] D. Davis, F. Monrose, and M. K. Reiter, On User Choice in Graphical Password schemes. In the 13th USENIX security Symposium, 2004.
Description: He show that permitting user selection of passwords in two graphical password schemes, one based directly on an existing commercial product, can yield passwords with entropy far below the theoretical optimum and, in some cases, that are highly correlated with the race or gender of the user. For one scheme, this effect is so dramatic so as to render the scheme insecure. A conclusion of this work is that graphical password schemes of the type we study may generally require a different posture toward password selection than text passwords, where selection by the user remains the norm today.

[4] Dhamija, R., Perrig, A. (2000), Déjà vu: A User Study. Using Images for Authentication, 9th USENIX Security Symposium.
Description: He examine the requirements of a recognition-based authentication system and propose, which authenticates a user through her ability to recognize previously seen images. This is more reliable and easier to use than traditional recall-based schemes, which require the user to precisely recall passwords or PINs. Furthermore, it has the advantage that it prevents users from choosing weak passwords and makes it difficult to write down or share passwords with others.

[5] ParthaPratim Ray, "Ray's Scheme: Graphical Password Based Hybrid Authentication for smart hand held devices,"Journal of Information engineering and Applications, ISSN 2224-5782(print) ISSN 2225-0506(online) vol2, no. 2,2012.
Description: In this paper, he proposed a new hybrid graphical password based system. The system is a combination of recognition and pure recall based techniques and that offers many advantages over the existing systems and may be more convenient for the user. This approach is resistant to shoulder surfing attack and many other attacks on graphical passwords. This scheme is proposed for smart hand held devices (like smart phones i.e. PDAs, ipod, iphone, etc) which are more handy and convenient to use than traditional desktop computer systems.

III. SYSTEM OVERVIEW

Recognition based CaRP Following are the types of recognition based CaRP, where a password is a sequence of visual objects.

3.1 Click Text Click Text image is similar to a Captcah image and is generated by Captcha engine. A Click Text password is a sequence of characters in the alphabet, e.g. "CD23MT@7". The CaRP alphabet characters should appear in the image. In ClickText images, characters are randomly arranged on 2D space as shown in Fig. 1. The figure contains alphabet of 4-5 characters. While entering the password user clicks the character on the image in the same order, for example, "C","D","2","3","M", for the password ρ="CD23M".

IV. ALGORITHMS

1.System Algorithm Steps:

```
Step 1:  Start
Step 2:  User can register by username, password, Email-id Contact no.
Step 3:  Computer generate graphical captcha for registered user
Step 4:  User will select Captcha
Step 5:  Authentication of User: User will enter his details Which he entered at the time of registration.
Step 6:  Computer program ask the user to choose the correct graphical Captcha
Step 7:  User selects the graphical captch
Step 8:  Is selected image captchasteps is correct?
1.  If Yes
Step 9:  User can access his account.
Step I:   User can use online transfer secure amount to another.
2.  if NO
Step 10:  User can login again
Step 11:  Stop.
```

2.Random CAPTCHA generation algorithm:

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Step 1:  Initialize alphabets (A-Z,a-z) and numbers(0-9)
Step 2:  Get username as Input
Step 3:  Analyse username to generate CAPTCHA
Step 4:  Password for that username is fetched
Step 5:  Generate CAPTCHA  containing 1st letter of Password
Step 6:  Provide CAPTCHA to client
Step 7:  Client click appropriate character of CAPTCHA
Step 8:  Repeat step 5 to step 6 until complete the password
Step 9:  Complete verification password
Step 10:  If verification valid then access is granted
Step 11:  Verification invalid go to step 2.
Step 12:  Stop.
```

V. SOFTWARE REQUIREMENT SPECIFICATION

We have created system in java programing. Data is stored in mysql database. We have created a web application with local server. Web application that communicates with local server and Trustee Server using REST API. We have uploaded image on cloud, add profile, post comment, apply security, privacy on online network.

System architecture:

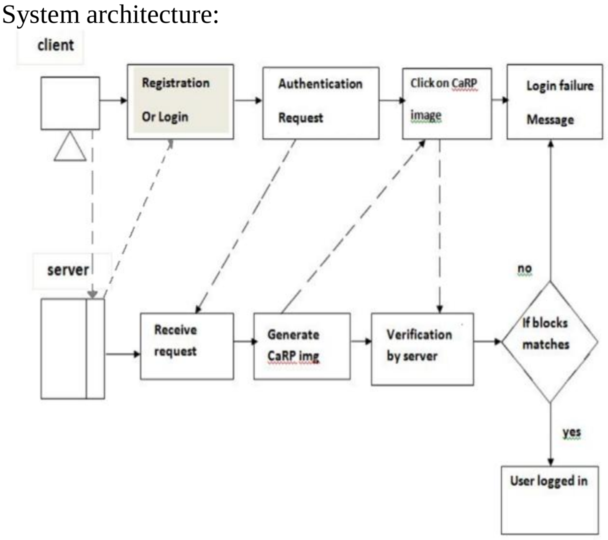


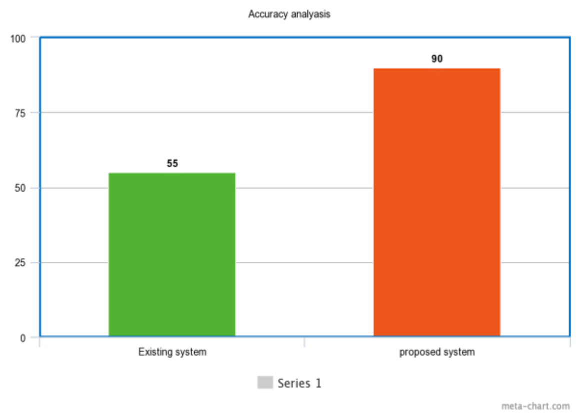
Fig1: Architecture Diagram

VI. MATHEMATICAL MODEL

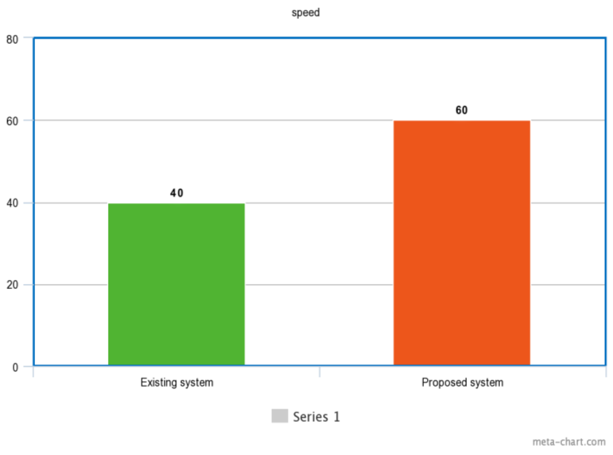
System Description:
S = {I, O, F, FF,CaRP}. where,
S = System.
I = Register information ,CaRP click.
O = Authentication successful msg or failure msg.
F = Failure : wrong click,click invalid.
FF = read ,write()
Read() = Server side varification of user input
Write() = client given input.
CaRP = Click based CAPTCHA provided to client ,Random CAPTCHA generation.

VII.RESULT

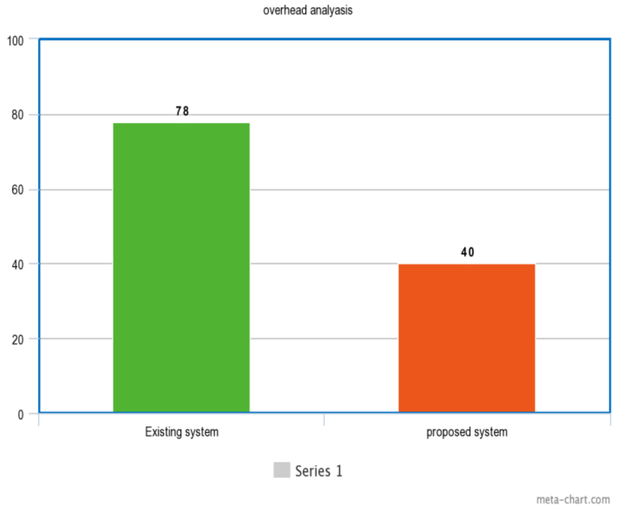
1. Accuracy Analysis:



2. Speed analysis



3. Overhead Analysis



VIII. CONCLUSION AND FUTURE SCOPE:

Conclusion :

CaRP is new technique to provide security to the password using hard AI problems. As it is combination of both Captcha and Graphical password it makes it very hard to guess the password to the intruders or bots. Effective use of both the techniques makes it useful to use it for smartphones and computers accessing the secure applications such banking, mailing.

Future scope:

1. In future we will provide radio button to select character from CAPTCHA.
2. Image of character can be used.

IX. ACKNOWLEDGMENT

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