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User Authentication Using Grid Computing

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ABSTRACT-Cyber security is an important issue to tackle. Various user authentication methods are used for this purpose. It helps to Avoid misuse or illegal use of highly sensitive data. Text and graphical passwords are mainly used for authentication purpose. But due to various flaws, they are not reliable for data security. Text passwords are insecure for reasons and graphical are more secured in comparison but are vulnerable to shoulder surfing attacks. Hence by using graphical password system and CAPTCHA technology a new security primitive is proposed. We call it as CAPTCHA as gRaphical Password (CaRP). CaRP is a combination of both a CAPTCHA and a graphical password scheme. In this paper we conduct a comprehensive survey of existing CaRP techniques namely ClickText, ClickAnimal and AnimalGrid. We discuss the strengths and limitations of each method and point out research direction in this area. We also try to answer "Are CaRP as secured as graphical passwords and text based passwords?" and "Is CARP protective to relay attack?".

KEYWORDS-CAPTCHA, CaRP, passwords, graphical techniques

I. INTRODUCTION

Security awareness is an important factor in an information security program. While organizations and institutes expand their use of advanced security technology and continuously train their security professionals, fraction of it is used to increase the security awareness among the normal users. As a result, today, organized cyber criminals are trying hard towards research and development of advanced hacking methods that can be used to steal money and secured information from the general public. Password authentication is one of the most common building blocks in implementing access control. Each user has a relatively short sequence of characters commonly referred to as a password. To gain access, providing right password is essential. Common attack for breaking password authenticated systems is dictionary attack. Graphical password is an option for alphanumeric password as text password is slightly hard to remember text password. When any application is provided with user friendly authentication it becomes easy to break and use that application. Cloud security can also be given by alphanumeric password but thing matter is that use of alphanumeric is not that much of secure and easy to remember. Any individual examining the password can memorize it which may lead to its misuse.

II. RELATED WORK

CAPTCHA

A CAPTCHA is a program that can generate and grade tests that: (A) most humans can pass, but (B) current computer programs cannot pass. Such a program can be used to differentiate humans from computers. There are two types of visual CAPTCHA: text CAPTCHA and Image- Recognition CAPTCHA (IRC).

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Fig: Image – Recognition CAPTCHA

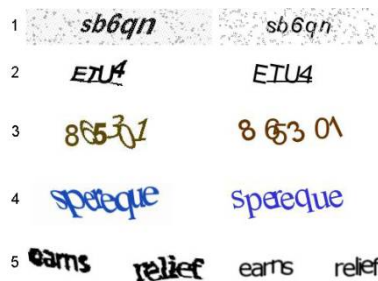


Fig : Text CAPTCHA

Graphical Password

Graphical password schemes have been proposed as a possible alternative to alphanumeric schemes, motivated partially by the fact that humans can remember images easily than text. Images are generally easier to be remembered than text. In addition, if the number of possible images is enough large, the possible password space of a graphical password scheme may exceed that of text-based schemes and thus presumably offer better resistance to dictionary attacks. Because of these (presumed) advantages, there is a increasing interest in graphical password.

III.PROPOSED SYSTEM

1.PROPOSED SYSTEM–The system is based on Recognition Technique. In this different group of image is used.For example Famous Places,FamousPeople,Reputed Company Name etc. Each group contains 25 images. User has to select at least one image from each group during registration phase. During login time user has to click on that images which is selected during registration phase. This system provide protection against shoulder surfing attack, dictionary attack, brute force attack using text password as well as graphical password.

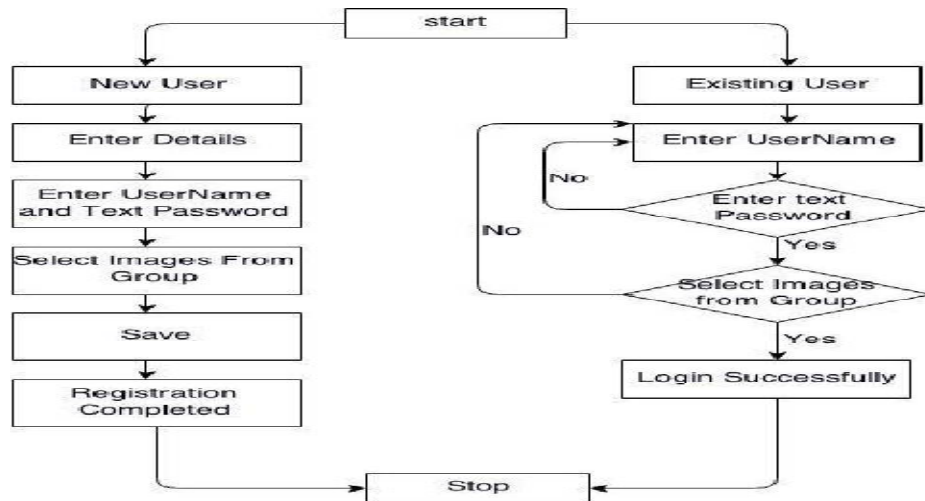
Advantages:

- 1.The proposed system offers reasonable security and usability and appears to fit well with some practical applications for improving online security.
- 2.This threat is widespread and considered as a top cyber security risk. Defense against online dictionary attacks is a more subtle problem than it might appear.

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Architecture Diagram

IV.PSEUDO CODE

AES Algorithm:

The Advanced Encryption Standard (AES) is a symmetric-key block cipher published by the National Institute of Standards and Technology (NIST) in December 2001.

Steps:-

- One-time Initialization Process
 - 1 Expand the 16-byte key to get the actual key block to be used.This steps expands 16-byte key into 11 arrays, and each array contains 4 rows and 4 columns.
 - 2.Do the one time initialization of the 16-byte plain-text block(called state).
 - 3.XOR the state with the key block.
- For each round ,do the following:
 - a. Apply S-box to each of the plain-text bytes.
 - b. Rotate row k of the plain-text block by k bytes.
 - c. Perform a mix column Operation.
- Matrix Multiplication.
 - d. Xor the state with the key block.

MODULES DESCRIPTION :

1. User Authentication using username and password
2. User Authentication using captcha images.
3. Providing services like uploading or downloading to the user after login.

V. A SURVEY ON CAPTCHA

Bin B. Zhu, Jeff Yan, Guanbo Bao, Maowei Yang, and Ning Xu proposed CaRP scheme. In CaRP i.e. CAPTCHA as graphical Passwords, CAPTCHA and graphical password is combined and used as a single entity for authentication. The CaRP schemes are actually click-based graphical passwords with the CAPTCHA technique used in a way that a new image is generated for every login attempt even for the existing user just as CAPTCHAs change every time.

On the basis of the memory tasks in memorizing and entering a password, classification of CaRP schemes can be done as follows:

recognition based and recognition-recall. The second scheme i.e. recognition – recall CaRP is a new category which works by recognizing an image and using the recognized objects as cues to enter a password. Recognition recall

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combines the tasks of both recognition and cued recall. It retains the advantages of both schemes i.e. recognition advantage of being easy for human memory and the cued-recall advantage of a large password space.

5.1 RECOGNITION-BASED CARP

In this section, we are going to see different schemes of *recognition-based* CaRP. There are two basic *recognition-based* schemes as explained in following sections and also some variations of these schemes.

Click Text

It is very basic and simple CaRP recognition-based scheme and it is built on top of text captcha. In this scheme, one of the character should be excluded which creates confusion e.g. letter 'O' and alphabet '0'. In this password is a sequence of alphanumeric characters like text captcha e.g. $\rho="IN9DI8A"$. A Click Text image is generated by captcha engine same like a text captcha but all alphanumeric characters should appear on image. During generation of image, the location of all characters gets tracked to produce ground truth. In Click Text image, characters can be arranged randomly. Fig. Shows a Click Text image of 33 characters.



Click Text Image with 33 Characters

Click Animal

We know that Captcha Zoo[4] is a scheme which uses a 3D model of horses and dogs to generate 2D animals with different color, size, and locations on disarranged background. User has to click on horses to pass test. Fig. shows a sample image.



.Captcha Zoo with Circled Red

5.2 RECOGNITION-RECALL CARP

In recognition-recall CaRP, a password is a series of some invariant points of objects. Each password point has an acceptance range that a click within the tolerance range is acceptable as the password point.

V. CONCLUSION AND FUTURE WORK

This paper presents a new security primitive based on CAPTCHA technology. The paper conducts a comprehensive survey of CAPTCHA as Graphical Password schemes. CaRP is a combination of both a CAPTCHA and a graphical password scheme. Current graphical password techniques are an alternative to text password but are still not fully secure. The usability of CaRP is further improved by using images of different levels of difficulty based on the login history of the user and the machine used to log in. Future work is based on pattern.



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BIOGRAPHY

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