Fg Captcha Advanced

Rohith S Aggithaya[1], Samraddha[2], Rakshith M[3], Karthik Kumar M B[4]

Student, Pursuing B.E., Information Science & Engineering, The National Institute of Engineering, Mysore, India[1,2,3,4]

Abstract: A CAPTCHA (an acronym for "Completely Automated Public Turing test to tell Computers and Humans Apart") is a type of challenge-response test used in computing to determine whether or not the user is human. Most existing CAPTCHAs are text-based. The user is presented with visually distorted text and asked to type it in correctly to prove he or she is a human and not a computer. Due to recent developments in technology, users are rapidly adopting smartphones, tablets, and other non-traditional smart computing devices in lieu of desktop and laptop computers. Many mobile devices lack a physical keyboard, which makes text-based input cumbersome and error-pron. Further, most text based CAPTCHAs are (English) language-dependent and not suitable for multilingual worldwide usage. Some researchers have proposed alternatives to character recognition, in the form of image recognition CAPTCHAs which require users to identify simple objects in the images presented. The unique touch screen technology of mobile devices can be leveraged to create an additional layer of security that is both effective and user-friendly. Fg CAPTCHA proposes a novel image-based CAPTCHA that combines the touch-based input methods favoured by mobile devices with genetically optimized face detection tests to provide a solution that is simple for humans to solve, ready for worldwide use, and provides a high level of security by being resilient to automated computer attacks. It provides a set of embedded images, some of which are photographs of real human faces and others which are cartoons, sketches, or photos of animals representing face-like images to make correctly detecting human faces challenging for computers, complex background pattern designed to confuse the automatic face detection software, thereby increasing the false positive detection rate and a set of visual distortion types (e.g., blurring, contrast adjustment) and the amount of distortion to apply. The proposed genetically optimized fg CAPTCHA works efficiently on both touch screens used by tablets and smartphones and on traditional computers, achieving a high 88% human accuracy rate during evaluation. It does so without compromising performance, offering an effective 0% automated attack rate.

Keywords: fgcaptcha, existing captcha, newly added features in fgcaptcha , advantages of fg captcha.

I. INTRODUCTION

Fg CAPTCHA combines images of human faces, cartoons, and sketches on a multi-colored background. To prevent software attacks on the CAPTCHA, two visual distortions are applied to each CAPTCHA using parameters optimized by a genetic algorithm. This process ensures the best possible balance between ease-of-use for humans and resistance to machine attacks. To solve fg CAPTCHA, users must tap or click on all the human face photographs.In testing, humans were able to successfully solve 87.9% of fgCAPTCHA images with some distortions have success rates of up to 97%.

As part of the generation process, CAPTCHAs solved by face detection are automatically removed yielding a machine attack rate of approximately 0%.Graphical passwords were first proposed by Blonder. In his scheme, a password uses an image in which many small regions have been delineated. The user has to choose some of these regions as a password and in order to log in later, the user must click in each of the chosen regions (with a mouse or a stylus). The user must remember the chosen click regions and keep them secret. Several implementations of this idea were given. The information is taken from the paper written by BRIAN M. POWELL, (Member, IEEE), GAURAV GOSWAMI, (Student Member, IEEE), MAYANK VATSA, (Member, IEEE), RICHA SINGH, (Member, IEEE) and AFZEL NOORE, (Senior Member, IEEE)

Types of CAPTCHAs
1) Web Service
2) Locally-Run
3) CSS
4) Video CAPTCHA
5) Math CAPTCHA

II. NEED FOR CAPTCHA

1) Preventing Comment Spam in Blogs
2) Protecting Website Registration
3) Protecting Email Addresses From Scrapers.
4) Online Polls.
5) Preventing Dictionary Attacks.
6) Search Engine Bots.
7) Worms and Spam

III. DISADVANTAGE OF TEXT-BASED CAPTCHA

1) Sometimes very difficult to read
2) Are not compatible with users with disabilities
3) Time-consuming to decipher
4) Technical difficulties with certain internet browsers
5) May greatly enhance Artificial Intelligence.
6) Most text-based CAPTCHAs are (English) language-dependent and not suitable for multilingual worldwide usage.

IV.   EXISTING FGCAPTCHA

FgCAPTCHA Presents users with a composite image containing several visually distorted human faces along with other objects and non-real faces embedded in a complex background pattern. To prove that a user is human, users must solve the captcha by correctly selecting only the real human faces without choosing any other objects or non-real face images. If this is successfully done, the user is considered to be human and granted access to the secured resource.

Features of fgcaptcha:

1) A set of embedded images, some of which are photographs of real human faces and others which are cartoons, sketches, or photos of animals representing face-like images to make correctly detecting human faces challenging for computers.
2) A complex background pattern designed to confuse the automatic face detection software, thereby increasing the false positive detection rate.
3) A set of visual distortion types (e.g., blurring, contrast adjustment) and the amount of distortion to apply, referred to as its intensity.

Steps involved in the generation of fgCAPTCHA image
1.   Background Generation
2.   Image Selection
3.   Distortion Selection

V.   NEWLY ADDED FEATURES TO THE EXISTING FGCAPTCHA

1) Two levels authentication of fgCAPTCHA. To have two levels of fgcaptcha, after identifying the images in the first sheet go to the next sheet .
2) Identifying the gender of human images displayed on the screen. To identify the gender in the given set of images and write 'M' or 'F'in the column given below the image.
3) Selecting all the human faces displayed on the screen. Select all the human faces and only human face.

VI.   ADVANTAGES OF THE NEWLY ADDED FEATURES IN FGCAPTCHA

1) The rate at which hacking a system by a software is very low when compared to any other captcha
2) An illiterate can also use this.

VII.   CONCLUSION

The fg CAPTCHA works efficiently on both touch screens used by tablets and smart phones and on traditional computers, achieving a high 88% human accuracy rate during evaluation. It does so without compromising performance, offering an effective 0% automated attack rate.

This combination of low attack rates, high human accuracy rates, and convenient mobile device usage provides major improvements over existing desktop centric security CAPTCHAs in widespread use today. The accessing rate of the data by the software is very less compared to any other captcha

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