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A Novel Video CAPTCHA Technique To Prevent BOT Attacks

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Abstract

With the expansion of Web services, denial of service (DoS) attacks by malicious automated programs (e.g., web bots) is becoming a serious problem of web service accounts. CAPTCHA (Completely Automated Public Turing test to tell Computers and Humans Apart) is a human authentication mechanism that generates and grades tests to determine whether the user is a human or a malicious computer program. These tests are easier for humans to solve and tough for automated bots. We present a novel video CAPTCHA technique based on advertisement recognition. Our CAPTCHA provides a video which contains a predefined advertisement. The user has to identify the product that relates with the advertisement presented in the video by selecting the multiple choice options provided. If the user chooses the right option we can guess that the user is a human and not a bot.

Keywords: Video CAPTCHA; Human Interractive Proof, BOT attacks;

1. Introduction

Now a day's people are accessing online services such as email services, forums and well known specialized interest groups. Illegal usage of services like using a 'bot' to register legal accounts can mislead the valuable resources and distribute malicious information thereafter. Thus it is important for a service provider to differentiate a bot from human users. For this purpose CAPTCHA systems are widely used. CAPTCHA stands for "Completely Automated Public Tests to tell Computers and Humans Apart [1].

The idea is to launch a difficult AI problem so that either the purpose of differentiating bots and legitimate users is served or that an AI break-through is attained. A number of difficult artificial intelligence problems including natural language processing, character recognition, speech recognition and image understanding have been used as the basis for CAPTCHAs.

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2. Related Works

Captchas are categorized as

1.Text based captchas 2.Image based Captchas 3.Audio based Captchas 4.Video based Captchas

Text-based Systems

Generally text-based Captcha systems ask the user to discern the letters or numbers which are displayed in the distorted form. Most of the text-based Captchas had been developed using Baffle Text [2], Pay pal's Captcha[3],reCAPTCHA[4],Microsoft's Captcha[5] etc. Assaults on text-based systems mostly utilize OCR (Optical character recognition) algorithms. Increasing the complexity of text-based systems by elevating the noise and distortion to make the challenge difficult for bots which makes them less user friendly and also less usable to users. Samples of some text-based CAPTCHA techniques are shown in figure 1.
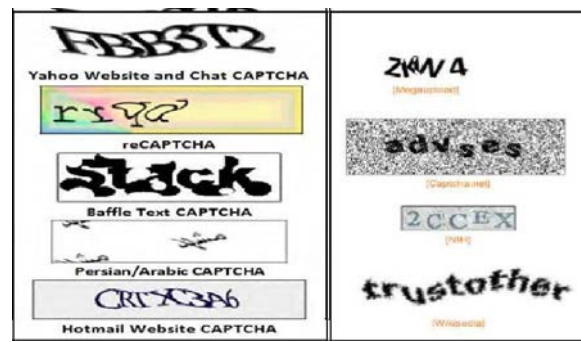

Fig. 1. Samples of some text-based CAPTCHA techniques

Image-based CAPTCHA systems

Image-based Capctha systems were proposed to increase the utility of CAPTCHA systems. However, many current state-of-the-art image-based systems suffer from the lack of flexibility and adaptability. Different image –based CAPTCHA schemes include ESP-PIX CAPTCHA [6], Bongo [7], Microsoft Asirra [8],Image Block Ex-Change [9] and Face Recognition [10] captcha. Samples of some image-based CAPTCHA techniques are shown in Figure 2.

Fig. 2. Image-based CAPTCHA