HIP USING MIRROR IMAGED CHARACTERS AND FINGERPRINT AUTHENTICATION FOR ON-LINE ELECTION

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ABSTRACT

In our paper we implement an "Online Voting System " in order to provide security to the votes given by the voters. For an election to remain truly democratic, it must uphold few critical properties like privacy and accuracy .In this paper we analyze the threats against the election process and give assurance to voters to ensure that their votes are handled properly in upcoming elections. In this paper, we introduce a variety of CAPTCHA (Completely Automated Public Turing Tests to tell Computers and Humans Apart) alternatively such systems can be termed as Human Interactive Proofs(HIPs).These CAPTCHAs primarily help us in avoiding denial of service attacks. Generally HIP is a type of challenge-response test used in computing to ensure that the response is not generated by a computer. In order to make the CAPTCHA hard we make use of "MIRROR IMAGED CHARACTERS" which makes online polls a secure process. Here we also introduce a "fingerprint Authentication method", so that a voter ,voted once cannot vote again, as its fingerprint will be stored in database.

KEYWORDS: *HIP, CAPTCHA, Fingerprint Authentication.*

I. INTRODUCTION

In this paper we implement an "online voting system". For an election to remain truly democratic it must uphold the following properties.
1. Privacy: - voters have the right to keep their ballots secret.
2. Accuracy: - the final tally is the actual sum of all cast ballots.

The present day election system does not permit the voter to cast his vote on the same day of elections being held if the voter is out of station for some good reason because there is no concept of on-line voting for polls being implemented in India. India being a largest democratic country of the world for the last 64 years and maintains its sovereignty by conducting elections for electing public representatives both at state and central level is still depending on Postal Ballot System to give a chance for people who could not physically present on the day of elections. It's a well known fact that in the manual system of conduction of election there were many loopholes that led to rigging of votes and in turn made way for ineligible candidates to sit in the public representative seats. One of the major problem is to identify the person when he is trying to cast the vote for the second time with some other listed name. The government did took certain measures to combat this problems such as: Issuing voter-id cards, the card also consists of photo of the person. In the early days the polling officer used to put a ink mark on the index finger of the voter to indicate he/she has exercised the vote. But people use to clean this ink mark using some concentrated liquids and would come back for voting for second time. The problem becomes more significant in case of on-line voting where we cannot identify correctly who is casting the vote. Hence we opted for recording finger print of voter when voter registers for the first time with election office.

The technological advancements are giving thousand and one mechanism to spoof any method as one can write a boot program to create bogus registrations of voters and even a program which captures the database of finger prints can automatically be run to cast votes to a particular candidate, to avoid such discrepancies we make use of Human Interaction Proof system CAPTCHA which guarantees that the one who is using the system at other end is a Human but not any program or system. CAPTCHA ia a program that can generate and grade tests that most humans can pass but current computer programs cannot pass[15].CAPTCHA is a cryptographic protocol whose underlying hardness assumption is based on an AI problem..CAPTCHA were originally developed by by AltaVista to avoid the submission of URLs to the search Engine. It contains only common English words between five and eight characters long.

II. RELATED WORK

When thinking about the security of any system, its important to think about the potential adversaries, including their skills and motivations. Voting has a very long history of adversaries, deliberating tampering with elections, regardless of the technology used. In the case of voting systems in general, threats can come from insiders such as election officials and poll workers, technology vendors and voters acting individually or inn groups. In addition, internet voting introduces as adversaries people who are not directly part of the election process, including anyone in the world with an Internet connection.

CAPTCHA stands for Completely Automated Turing Test to Tell Computers and Human Apart. It provides security against abuse of Internet services. CAPTCHA primarily exploits the difference in ability between humans and machines in reading images of text[13]. The [13] point outs vulnerabilities of reading-based CAPTCHAs to dictionary and computer vision attacks, proposes Baffle text, a CAPTCHA which uses non-English 'pronounceable words' to defend against dictionary attacks. These CAPTCHAs have one of the basic attractive property of not being computationally intractable as traditional cryptographic methods. The challenges of reading based CAPTCHA generation involves: picking a word, picking of a typeface, rendering of word using typeface in to an image, and then degrade the image. The chosen combination of above artifacts must yield a human readable – computer vision identification tough CAPTCHA. With an idea to give an overview of CAPTCHA also known as Human Interactive Proof and to strengthen the capability of existing CAPTCHAs with distorted images, In this paper we propose a novel idea of using mirror images of alphabets used to develop captcha.

In [12] we find text-based captcha algorithms exploiting human capability of making meaning out of a given English sentence .The principles behind CAPTCHA are as follows.

- The user is given with a image on which some text is displayed. This image is generated by the server using random text.
- -The user should enter the same text in the text field into the text field that is displayed in the form.
- When the form is submitted the server checks if the entered text is matching with the generated text. If yes, the transaction continues or else another image is generated and the user should enter the new code.

Basically we can specify three types of CAPTCHAs

a)CAPTCHAs containing distorted characters b)CAPTCHAs based on IMAGE identification

c) SOUND CAPTCHAs

The third variety of CAPTCHA can be useful for visually impaired people using systems.

CAPTCHAs differ from the original Turing Test in that they can be based on a variety of sensory abilities. The original Turing Test was conversational—the judge was only allowed to ask questions over a text terminal. In the case of a CAPTCHA, the computer judge can ask any question that can be transmitted over a computer network.

GIMPY is one of the many CAPTCHAs based on the difficulty of reading distorted text. GIMPY works by selecting seven words out of a dictionary and rendering a distorted image containing the words GIMPY then presents a test to its user, which consists of the distorted image and the directions: "type three words appearing in the image." Given the types of distortions that GIMPY uses, most humans can read three words from the distorted image, but current computer programs

can't. The majority of CAPTCHAs used on the Web today are similar to GIMPY in that they rely on the difficulty of optical character recognition (the difficulty of reading distorted text). Bongo. Another example of a CAPTCHA is the program we call BONGO. BONGO is named after M.M. Bongard, who published a book of pattern recognition problems in the 1970s. BONGO asks the user to solve a visual pattern recognition problem. It displays two series of blocks, the left and the right. The blocks in the left series differ from those in the right, and the user must find the characteristic that sets them apart. . After seeing the two series of blocks, the user is presented with a single block

III. PROPOSED SYSTEM

The purpose of this is to build an online polling system so that more and more voters are able to cast their votes in case they are not able to reach their polling stations. This is solely designed for the people for away from polling zone but still can vote.

It is mainly to provide security to the votes given by the voters. In this paper we introduce mirror imaged characters of "CAPTCHA"[1][2] and "fingerprint Authentication"[6] for online voting and to provide security to the voters. Our work on this proposal provides a free environment to voters for participating their right to vote by casting vote online. Voting is fundamental duty of each and every citizen but it is seen that nowhere around the country 100%people come to vote during elections. The candidates competing in elections try to bring many possible votes by hook or crook so to overcome this we implement few security steps.

- The scope of "HIP using mirror imaged characters and fingerprint authentication for online voting system" is global that is the person can vote from anywhere through internet but they need to get registered from a particular place and should have a fingerprint scanner.
- It allows the user to vote only once as the fingerprints of the voter will be stored in our local database
- It allows the user to cast the vote for a single party only once as computer program cannot understand mirror imaged characters where as human can and thus providing security to votes. The details of votes and voters include name, voterid, passwords, contact numbers, email-ids, voters address and so on.
- The details of all voters have to be clearly defined.
- Confirmation of end user identity and will verify which users are authorized to receive updates. Administrator manages the problems occurred during voting process.
- Voters are provided with a registration form to register themselves. Figure 3.2 shows the registration form.
- Separate login form for each user ,in order to vote every user must login.
- Human verification is generated during the voter registration which is used to distinguish human voters from web spiders and computer program. This is done with the help of *"CAPTCHA generation technique"*[15].
- To allow a person to vote only once, "Fingerprint Authentication"[6]is introduced.

IV. RESULTS

We could successfully implement this project and run the system for nearly 100 students of our college and all the times it generated a new CAPTCHA with mirror imaged characters and also the bogus votes were not permitted because of finger print authentication[6]. We ran this program over intranet of six labs spread over three floors of our college building to create the environment of remote voter casting a vote and the system does work as per the specifications.

Name
Unique Id
Password
ReConfirm Password
Mothers Maiden Name
Fathers Name
Mothers Name
State Select
Constituency
Enter this Image Below
Text from Image
Select the file for Upload Browse...
Register

Figure 1 Registration form

Fig.1 shows the registration form from which the user can register .

Election Dates

State	Constituency	Date_of_Election
Andhra Pradesh	Chowrasta	3/4/2011

Back

Figure 2 Viewing election dates

Election dates can be viewed as shown in Figure 2

Unique Id
Password
Mothers Maiden Name
Enter this Image Below
Text from Image
Filename Browse...
Step 2

Figure 3 Voting page

After the user viewing the election dates ,on the date of election to cast the vote,the user should enter trhe details as mentioned in the Figure 3.Figure 3.shows the mirror imaged CAPTCHA which is generated for every voting page .This mirror image cannot be read by the computer,where only human can understand and enter the text in the below text field provided.

State Andhra Pradesh
Ward Chowrasta
Retrieve

State	Ward	Election Date	Candidate	Party	Votes
Andhra Pradesh	Chowrasta	10/03/2011	nishu	Janata Dal	5
Andhra Pradesh	Chowrasta	10/03/2011	test1	Congress I	2
Andhra Pradesh	Chowrasta	10/03/2011	Manmohansingh	congress	2
Andhra Pradesh	Chowrasta	10/03/2011	jyothi	Independent	1
Andhra Pradesh	Chowrasta	10/03/2011	Jagan	loksatta	1
Andhra Pradesh	Chowrasta	10/03/2011	baswaraju saraiah	Janata Dal	1

Figure 4 Viewing Result Wardwise

State Andhra Pradesh
Retrieve

State	Ward	Election Date	Candidate	Party	Votes
Andhra Pradesh	Chowrasta	10/03/2011	nishu	Janata Dal	5

Figure 5 Viewing Result Statewise

V. CONCLUSION

In our paper we develop a website for online election using Mirror imaged captcha as a proof of Human Interaction and fingerprint Authentication[6] in order to allow to vote only once with a single fingerprint. We provide utmost security to online election as a vote is important and should be used vigilantly.

Our paper "HIP using mirror imaged characters and fingerprint authentication for online election" will be helpful for Indian Government if this is implemented in all the states where online elections are to be held.This Website could be helpful in gaining correct votes from the citizens of India.

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