

Color Pass

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Abstract— Classical PIN entry mechanism is widely used for authenticating a user. It is a popular scheme because it nicely balances the usability and security aspects of a system. However, if this scheme is to be used in a public system then the scheme may suffer from shoulder surfing attack. In this attack, an unauthorized user can fully or partially observe the login session. Even the activities of the login session can be recorded which the attacker can use it later to get the actual PIN. In this paper, we propose an intelligent user interface, known as Color Pass to resist the shoulder surfing attack so that any genuine user can enter the session PIN without disclosing the actual PIN. The Color Pass is based on a partially observable attacker model. The experimental analysis shows that the Color Pass interface is safe and easy to use even for novice users. While implementing user interface we have assigned unique colors to each numbers varying from 0 to 9. Ten colors is chosen in such a way so that each color is clearly distinguishable from other. As the color cell's position in each table is fixed so user can locate the desired colored cell quite quickly. This contributes in getting faster login time. The tables are designed in such a way so that the user interface does not look too clumsy and also the screen space is used in an optimum manner.

Key words: Color PIN, Shoulder surfing attack, User interface, Password, Partially observable

I. INTRODUCTION

Color pass is an intelligent user interface to resist the shoulder surfing attack so that any genuine user can enter the session PIN without disclosing the actual PIN. The Color Pass is based on a partially observable attacker model. In the partially observable model of secure login methods, the attacker can only partially observe the login process by the user and less chance to have attack on the user credentials. The Color Pass interface is safe and easy to use even for novice users.

The proposed Color Pass methodology implements onetime pass paradigm. Thus corresponding to four color PINs, the user gets four challenges and enters four responses with respect to each challenge. After logging in using the Color Pass authentication scheme, the system enters to the file backup and retrieval system; based on the concept of the client-server communication, where the client can backup and retrieve the files over the server machines.

For availing the secure storage of data at the server side, the data are stored at different locations, namely nodes. By this, if any fault occurs at a particular node, in which we are accessing presently; the system will select the other possible node where the other copy of the required data is residing. This will provide more availability and better storage of the data files of the user.

II. RELATED WORKS

A. Existing System:

In the current scenario, authentication technique through classical pin entry mechanism such as verification of password through mobile number, mail id etc are used. Also through biometric sensors such as fingerprint, voice clips etc. Also we can prevent unauthorized access through proper notifications. Authentication such as through registration process also performed as only the registered users can access the desired data.

Disadvantages:

- Prone to shoulder surfing attack.
- Availability of biometric sensing device is not practical at all cases.
- Prone to hacking and exploitation by intruders.

B. Proposed System:

Color pass is an intelligent user interface technique to resist the shoulder surfing attack so that any genuine user can enter the session PIN without disclosing the actual PIN. Color pass is based on a partially observable attacker model. The proposed methodology implements one time pass paradigm. Thus corresponding to four color PINs, the user get four challenges and enters four responses with respect to each challenge. After logging in using the color pass authentication scheme, the system enters to file backup and retrieve the files over the server machines. Logging session is done by hearing through an headset.

1) Algorithm 1-Generating tables in color pass:

Input: This algorithm will take array color(0,1,2,...9) as input.

Output: It will generate feature tables FT(0).....FT(9) for i=0 to 9 do

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for j=0 to 9 do
  FT(i).CELL(j).Color
  ← Color[j]
FT(i).CELL(j).Value ← (i+j)mod10 End
for
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End for

2) *Algorithm 2-Evaluating user response in color pass:*

Input: This algorithm will take array UCOL,array CLICK and array RAN as input.

Output: This algorithm will update value of array EVAL by 1 for each valid response.

For i=0 to 3 do $K \leftarrow \text{RAN}[i]-1$

Valid $\leftarrow(\text{UCOL}[i]+K)\text{mod}10$

If CLICK[i]:=Valid then

EVAL[i] $\leftarrow 1$

End if End for

3) *Algorithm 3-User authentication:*

Input: This algorithm will take array EVAL as input after executing algorithm 2.

Output: Decides whether user is allowed to login.

Initialise X: = 0

For i=0 to 3 do

If EVAL[i] :=1 then

$X \leftarrow 1$

Else

$X \leftarrow 0$

Break

End for

If X:=1 then

Allow user to login

Else

Disallow the user

End if

4) *Advantages:*

- An intelligent method to prevent Shoulder Surfing Attack(SSA) .
- Highly authenticated system.
- Easy to use and doesn't require any prerequisite knowledge.
- It provides equal password strength as compared with the conventional PIN entry scheme.

III. MODULES

The project color pass has mainly 6 modules.

A. *Color pass modules:*

- 1) Color pass registration module
 - 2) Color pass login module
 - 3) Color window generation module
 - 4) Text to voice conversion module
 - 5) File backup module
 - 6) File retrieval module
- 1) Color pass registration module:

Registered users are subjected to verification by administrator. User authentication information are send via email. Registration module is for new user.

- 2) Color pass login module:

Registered user can login with the password send to the user's mail id which is generated by the server. And the user can create new color password and can update it. After login session,user can access the file.

- 3) Color pass random color table generation module:

Using java imported packages and suitable methods Color table is generated.

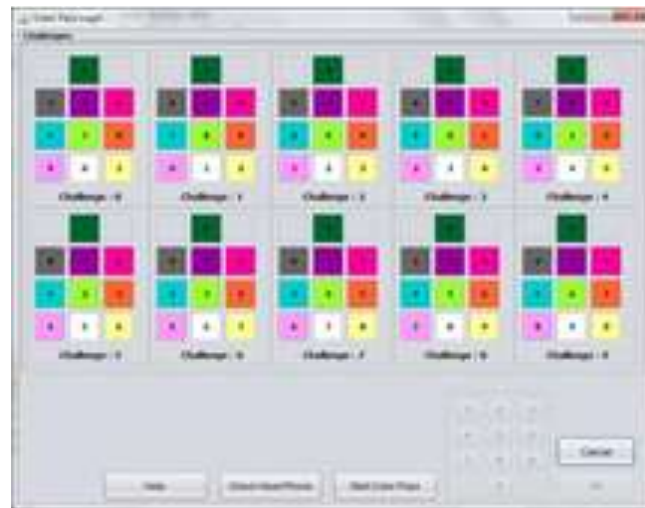


Fig. 1:

4) Text to voice conversion module

Using java imported packages and suitable methods, text is converted into voice. Freetts packages of java and dospeak method are used to convert text to voice.

5) File backup system:

File backup system of clients server and nodes. Login in user can successfully backup the file in more authenticated way.

6) File retrieval system:

Login user can retrieve the desired file from particular node securely.

IV. COLOR PASS USERS

- CLIENT
- SERVER
- NODE

A. Client:

Deals with client side operations. It consists of four operations:

- 1) Login-COLOR PASS OPTION
- 2) Registration
- 3) File Uploading Interface Module
- 4) File Downloading Interface Module

1) Login:

- Done by the client.
- Client has a username and a color password, to access data from the node or load to the node.
- User enters his/her ID then system gives 4 challenges for which the user has to respond.

2) Registration:

- Done by a new client.
- User provides his details ,these data goes to server side & server decides whether to allow new user to access data or not.
- If new user is valid , a 4 colors as password and username is generated by the server and mailed to the user.
- This allows new user to access data.

3) File uploading interface module:

- Manages file upload request of the client.
- User can click on the upload button which shows a file chooser , after choosing a file the system converts it into a file upload request and streams file to server side.

4) File Downloading Interface Module:

- Manages file download request of the client.
- User can click on a file that is displayed to be at server, application creates a request to download the file & sends to the server so that server could retrieve file from respective location.

B. Server:

- Server is the link between the client and node.
- Server is controlled by the server manager.
- It controls whole process of data transfer between the client and node.
- The module is installed in server.
- Server has following modules:

- 1) Client application connection module.
 - 2) Node connection management module.
 - 3) File uploading manager.
 - 4) File downloading manager.
- 1) *Client application connection module:*
 - Manages the connection of client applications to the server.
 - It keep the information about the clients that are currently connected to the server.
 - Executes the requests such as login , registration , file upload , file download that are send by the client.
 - 2) *Node connection management module:*
 - Manages the connection of node applications to the server.
 - It keep the information about the nodes that are currently connected to the server.
 - It manages the node as per priority that is set by the administrator of the application.
 - 3) *File uploading manager:*
 - Manages the client request to upload a file.
 - When a request is made , the server asks the client application to send file packets.
 - Server looks for the node list, check for the highest priority node and start uploading file packets into it.
 - It manages the resume capability of the file.
 - 4) *File downloading manager:*
 - Manages client request to download a file.
 - When a request is made , the server looks the node list.
 - Checks for the highest priority node and starts downloading file packets from it.
 - Manages the resume capability of the file.
- C. *Node:*
- Nodes are individual servers which are connected to server , the data is stored in these nodes.
 - Module is installed in each node.
 - Main functions:
 - Uploading files
 - Downloading files

V. RESULT

As the classical PIN entry mechanism is widely used and need to be used in public environment, the shoulder surfing attacking would be well prevented using color pass. The technique can be implemented in banking system, email id, website registrations etc.

VI. CONCLUSION

The project entitled, 'COLOR PASS' is an intelligent user interface which prevents shoulder surfing attacks. In the proposed project, a novel scheme to authenticate a user using color PINS. The scheme is known as Color Pass scheme which provides an intelligent interface for users to login into system in a public domain. In the scheme, the user remembers four colors as his PIN. The scheme works on the framework of partially observable attacker model.

From security point of view the scheme is quite robust against some possible attacks such as shoulder surfing, guessing password, side channel attack, etc. And from usability point of view the scheme is user friendly and takes very less time for login. Also the scheme can be used by both math and non-math oriented people. The proposed methodology shows significant low error rate during login procedure. In future, it can be explored how to extend this scheme for fully observable attacker model. The project application area may include Folder locker or an external gateway authentication to connect the application to a database or an external embedded device. It can also be used in banking facilities, ATM services to provide high security.

REFERENCES

- [1] "An innovative approach to resist shoulder surfing attack using color pass": International Journal IJSRD/ Vol 4/Issue 01/2016/345.
- [2] "Unsupervised color image segmentation using dual tree,som": International Journal of Computer and internet security. ISSN 0974-2247 Volume 8.
- [3] "Fully homographic encryption for cloud computing and applications in ICT" : International Journal of Computer and Security. ISSN 0974-2247 Volume 8.
- [4] H. Tao and C. Adams, "Pass-Go: A proposal to improve the usability of graphical passwords," International Journal of Network Security, vol. 7, no. 2, pp. 273-292, 2008.
- [5] Shamkant B. Navathe "Fundamentals of database Systems", 5th Edition, 2008 Pearson Education.
- [6] Rajib mall "Fundamentals of Software Engineering", 3rd Edition, 2010 PHI Learning.

- [7] H.M. Deitel “Internet & World Wide Web-how to programme”, 3rd Edition, Pearson Education.
- [8] <http://www.bioinfopublication.org/files>
- [9] <http://www.ijetmas.com/resources>