

Multi-Faction : Multi-Factor Authentication Using Object Detection, Graphical Password And Voice Authentication

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Abstract - This Multi-Factor Authentication using Object Detection, Graphical Password and Voice Authentication is being developed for a few objectives and evaluate the functionality of the proposed system. Based on the previous system, they using common log in via username and password is predictable, and text-based password is difficult to memorise. Nowadays, people use all kinds of security system to make sure their property and data is secured such as using password and User ID for protection. Unfortunately, all these security system is not secured at all because the pin code can be hacked, the ID card can be stolen and duplicated. This system is user friendly, easy-to-understand and put the security of user in the first priority. The system is safe and trustable to store all the information from the user.

1 INTRODUCTION

Now a days, there is no such thing as perfect software, often a software program may have several issues and could potentially have security vulnerabilities that can leave the computer open to attacks that compromise the computer and the data. A standalone Multi-factor authentication security system. Using object detection, graphical password and voice authentication is a security system more than one form of authentication to prevent or secure from unauthorized user. Provide layer defense from unauthorized person to access target machine such as a physical location, computing device, network or database. If one factor is compromised or broken, the attacker still has at least one more barrier to breach before successfully breaking into the target.

2. RELATED WORK

Several information security techniques are available today to protect information system against unauthorised user, duplication, destruction and virus attack. It written for various reasons, such as requesting a budget for the research they describe. System overview for implement version system the proposed model combines the positive feature. An authentication factor is a piece of information and process used to authenticate or verify the identity of a person or other entity requesting access under security constraints.

Multifactor authentication (MFA) is a system where in two or more different factors are used in conjunction to authenticate. Using more than one factor is sometimes called “strong authentication” [1]. Related articles on prevention system that has been looking for, only three articles were selected. The seven journal have been use to compare for the research. From each article has its own advantages and disadvantages. It provides an overview of previous research on knowledge sharing about existing intrusion detection system. Past research can perform as a guideline for current system investigation because it can save up time and cost by research that has gone before. There several example of article to show a strongly result of the system.

2.1 Object Detection

The eigenspace is determined using the eigenvalues (eigenvectors) of covariance matrix in order to obtain a low dimensional subspace. For an unknown input image, the recognition algorithm project this image to each eigenspace and the object is recognised using space partitioning methods which determine the object and also the position in space according with number of images that describe the position from the image[2].

2.2 Graphical Password

Users identify and target previously selected locations within one or more images. The images act as memory cues to aid recall. The purpose of method use to analyse the efficiency of tolerance value and security rate of Persuasive Cued Click Points scheme, effective at reducing the number of hotspots (areas of the image where users are more likely to select click points) while still maintaining usability[3].

2.3 Voice Authentication

Systems based on the spectrum analysis use the narrow-band filters (or digital proceeding of the voice signal) with the aim to obtain the amplitude values in the reference points [4].

3 THE PROPOSED SYSTEM

System features represent the capability of the whole system and type of operation the system can run. The capability is include the functionality of the system, the system technical and the system usability. Features on the system also represent the differentiation between existed technology and existed software in the market. The proposed of this project Multi-Faction as system login to authenticate valid user from unauthorized access.

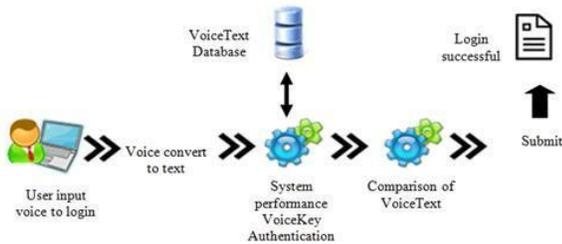


Fig. 1: Voice Authentication System diagram on how the system works

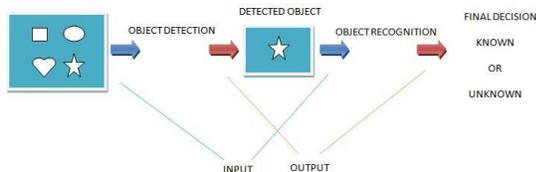


Fig. 2: Object Detection System diagram on how the system works

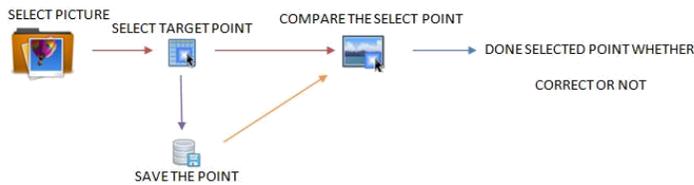


Fig. 3: Graphical Password System diagram on how the system works

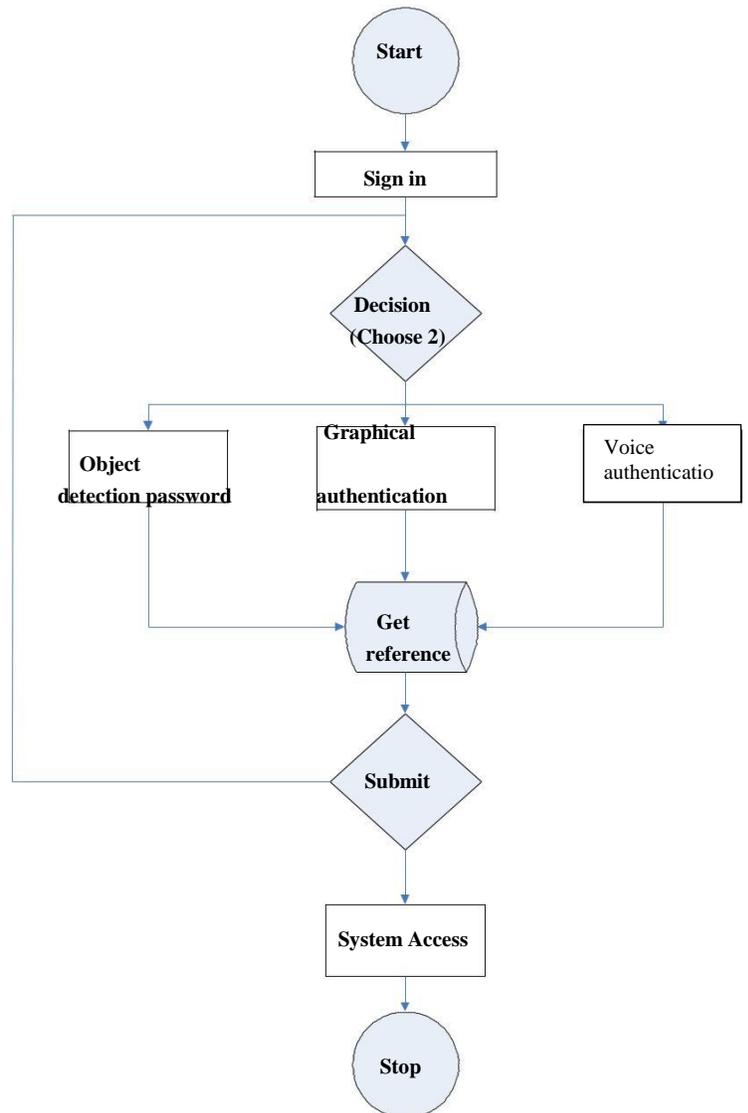


Fig. 4: Multi-FacTion System Flowchart

4. PRELIMINARY RESULT AND ANALYSIS

As for accuracy testing on camera, developer set a few type of cases to test the accuracy of Multi-FacTion on face detection and face recognition.

TABLE 1 : RESULT FOR CAMERA ACCURACY TESTING

Influent Factor	Test Case and Result		
Posture	<p>Bottom</p>  <p>Remark: Multi-FacTion unable to detect object and difficult recognize correctly.</p>	<p>Left/Right</p>  <p>Remark: Multi-FacTion able to detect object but difficult recognize correctly.</p>	<p>Center</p>  <p>Remark: Multi-FacTion able to detect object and recognize correctly.</p>

As for accuracy testing on voice, developer set a few type of cases to test the accuracy of Voice Authentication on background noise. Table 2 shows the result of Background Noise.

TABLE 2 : THE RESULT OF BACKGROUND OF NOISE

Influent Factor	Test Case and Result		
Background Noise	<p>Low</p>  <p>This system able to detect and recognize voice without any problem with low background noise.</p>	<p>Medium</p>  <p>This system not easily to detect and recognize voice with medium background noise but still can login with a few input voice.</p>	<p>High</p>  <p>This system hard to detect and recognize voice with high background noise.</p>

This system has achieve all the requirement and result in percentage for accuracy, sensitivity, and functionality.

TABLE 3 : THE RESULT OF ACCURACY, SENSITIVITY AND FUNCTIONALITY IN PERCENTAGE (%)

	Accuracy	Sensitivity	Functionality
Object Detection	49%	70%	88%
Graphical Password	90%	95%	98%
Voice Authentication	45%	67%	75%

5 CONCLUSION AND FUTURE ENHANCEMENT

A standalone Multi-factor authentication security system. Using Object Detection, Graphical Password and Voice Authentication (Multi-FacTion) is a powerful security system and it's provides to make a significant impact in information systems. It capabilities from being able to prevent unauthorized user.

Several improvements can be added in this project for future development. Due to several weaknesses in this project, some modification and additional elements must include to make sure it improves. In order to create or build up this application, all the major points that have been discussed earlier in this chapter will be used as a guideline to achieve the objective successfully for the project so that it will meet the standard requirement which has been stated.

6. REFERENCES

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