Gesture Authentication Mechanisms on Android

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Introduction

Smartphone market constitute around 85% of mobile market and it's still growing. With the increasing no of smartphone and it's application, security concerns also rises. To solve this there are lots of security tools are available like PIN based authentication, Pattern Based Authentication, Biometric.

Current Methodology

We often do online transactions like credit card payment , fund transfer, online shopping from websites that are registered to bank and when the end user want to do transaction by logging into his bank account which contains user name and textual passwords. But its quite often that credentials entered by end users can be captured by attackers using different techniques. Therefore textual passwords do not provide more security to users confidential data.

Proposed system

We are proposing a new methodology to provide end user greater security and reliability with the help of gestures. The software is an android based application that is to be deployed on touchscreen devices. The application can be operated on any touch-screen devices that have Android operating system.

Advantages

- It is gesture based authentication.
- Avoid shoulder surfing attack Avoid phishing.
- It provides people great pleasure and new experience which traditional interaction could not offer.
- Helpful for illiterate people

Project Expectation:

To use gesture property for identifying user for authentication we will be collecting user touch data like how the user is interacting with the screen and we measure several properties like pressure, pressed area, time taken for swipe, velocity of swipe between any points (x and y)etc.Because the way person type, at which velocity they draw, how much pressure they exert, how much area they cover etc and will use these properties to identify the user. As values of these properties will be different for different person and can be use to identify any person for authentication.

Conclusion

Gesture authentication app will enhanced security for mobile systems by using touch gestures as input and also will increase the usability for the user.

Additional Feature

After completing gesture authentication feature in our app we are also thinking about adding a feature like detecting the motion of the mobile like how user holds the mobile while using it and will try to identify user by the way he/she holds the mobile.

References

There are several research paper we have collected so far related to our project and which we will going to be study and will use them to create a android based gesture authentication app which will demonstrate the project.

Papers which we will be following and understanding throughout our project :

1.Modeling Free-form Handwriting Gesture User Authentication for Android Smartphones(2016 IEEE/ACM International Conference)

2.Touch Me Once and I Know It's You!: Implicit Authentication based on Touch Screen Patterns. 2012 ACM Annual Conference on Human Factors in Computing Systems (CHI), pp. 987–996, ACM, New York, USA, (2012)

3.Multi-touch User Interface Evaluation for 3D Object Manipulation on Mobile Devices. Journal on Multimodal User Interfaces 4(1), 3–10 (2010)

4.An empirical study of the naive Bayes classifier. In: Proceedings of IJCAI-01 work-shop on ”Empirical Methods in AI” (2001)

5.Implicit authentication for mobile devices. In Proceedings HotSec 2009. USENIX Association, 9-9.