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Integration of Multi Bank Account in Single Card with User Behavior Monitoring Using Hmm and Verification

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Abstract - In the EXISTING methodology, big data is an opportunity based environment. Big data analytics can lead to valuable knowledge for many organizations. In this paper, Integration of Big Data, Business analytical and RFID technology are recent trends in IT, which is a challenge oriented activity. We have MODIFIED AND IMPLEMENTED this application for developing Banking sector particularly for Debit / ATM \card section. We can use RFID smart card as ATM Card for transaction. User can create account and get the ATM card from the bank. The user can integrate all his bank accounts which can be integrated in this single card with unique PIN numbers accordingly. User behaviour is monitored through HMM Model and he can set up a formula based authentication. The user can include all his family members' accounts details to this same card. The user can withdraw cash from their accounts after successful authentication of the corresponding PIN numbers.

Keywords - *RFID Card, Formulae Authentication, Hidden Markov Model, Email Alert.*

1. Introduction

Information technology (IT) not only introduces convenience, but creates many new improvement opportunities which were impossible in the past. For example, advances of business intelligence (BI) methods and data mining techniques have brought huge improvements to modern business operations. Nowadays, in the "big data era," a massive amount of data is available for all kinds of industrial applications. For example, the cloud service can be considered as a data warehouse which provides a useful source of data. Wireless sensor networks [e.g., radio frequency identification (RFID), near field communications] can be used to collect useful data ubiquitously. An evolving topic on the Internet of things (IoTs), which consists of devices capable of communicating via the Internet environment, also provides a platform for gathering an enormous amount of data. In other words, it is now easier to collect data than ever before. That being said, extracting and utilizing useful information from such huge and dynamic databases for "big data" is far from easy. Since these data are linked to real-time events, they can be employed, if properly (e.g., via BI schemes), for rescheduling or re-planning activities in business applications which finally reduce the level of risk and improve profitability and efficiency of the operations. This undoubtedly can supplement traditional optimization techniques, which are *a priori* in nature. Such data migration problem is very important yet challenging as the volume of big data is growing quickly. Dou *et al.* Developed a service optimization model for handling big data stored in cloud systems when privacy is a critical concern (e.g., the medical data). Service quality may be compromised if a cloud server refuses to provide the data due to the privacy issue. Such optimization model can maximize the service quality and is verified by a simulation study. Another application of big data is on smart grids. Simmhan *et al.*predicted the demand of a cloud-based smart grid system and derived the optimal pricing strategy, based on the big data on real-time consumption. The approach is possible due to the data mining algorithm the authors developed. The relationship between cloud systems and

big data models will be further discussed in Section II. Owing to the importance of big data analytics for business applications, this paper is developed. With respect to the core topic on big data analytics for business operations and risk management, we organize this paper into three big sections, namely: 1) BI and data mining; 2) industrial systems reliability and security; and 3) business operational risk management (ORM). Each of these sections: 1) examines some carefully selected papers; 2) outlines the related research challenges; and 3) proposes the future research directions. To the best of our knowledge, this is the first paper in the literature which focuses on how big data analytics can be employed for reducing systems risk and enhancing efficiency in business operations.

2. Existing Work

In EXISTING SYSTEM, all ATM machines are connected to their respective bank servers and all bank servers are connected to a single interface i.e. National Finance Switch (NFS). When user swipes his ATM card at respective bank's ATM machine, then that ATM machine directly links to its bank server for validation of ATM card. If the ATM card is belonging to the same bank then transaction proceeds else connects to the respective bank's server via NFS for further transaction. In most modern ATMs, the customer identifies him or herself by inserting a plastic card with magnetic strip or plastic smart card with a chip that contains his or her account number. The customer then verifies his or her identity by entering a pass code (i.e.) personal identification number (PIN) of four digits. If the number is entered incorrectly several times consecutively (usually three), most ATMs will retain the card as a security precaution to prevent an unauthorized user form discovering the PIN by guesswork and so on. Moreover there is a limitation in transaction for the other bank customers in using the ATM of some other bank crossing the limit they have to pay transaction fees

2.1 Disadvantages:

- There is no RFID technology
- Security is less
- Every user having individual card in family

2.2 Functionalities

- **HMM (hidden Markov model):** A **hidden Markov model** (**HMM**) is a statistical Markov model in which the system being modelled is assumed to be a Markov process with unobserved (*hidden*) states. It is used in banking application to track the user's behaviour actions

- **RFID Technology: RFID Technology** can be used for identification, authentication, and data storage.[2] They also provide a means of effecting business transactions in a flexible, secure, standard way with minimal human intervention. RFID smart card readers use radio waves to communicate with, and both read and write data on a smart card. When used for electronic payment, they are commonly located near PIN pads, cash registers and other places of payment.

3. Proposed System

In the PROPOSED SYSTEM, Integration of Big Data, Business analytical and RFID like technology is supposed to be recent trends in IT. It is most challenge oriented activity. The MODIFICATION, which is our implementation, we are developing this application for a Banking sector particularly for a Debit / ATM \card section. We can use RFID smart card as ATM Card for transaction. User can create account and get the ATM card from the bank .He can integrate all his accounts in other banks can be integrated in this single card with unique PIN numbers accordingly. User behavior is monitored through HMM Model and he can set up a formula based authentication. He can include all his family members' accounts details also in the same card. He can withdraw cash from their accounts after successful authentication of the corresponding PIN numbers.

3.1 System Architecture

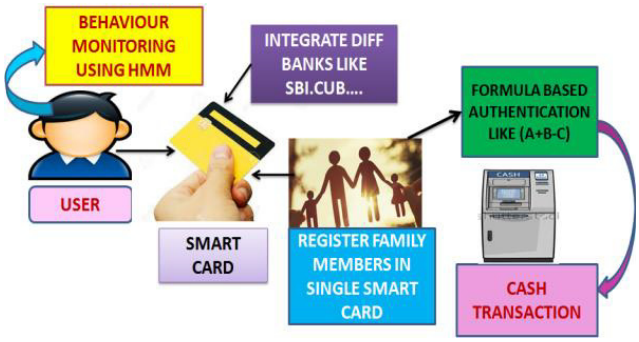

Fig: 2.1 System Architecture

3.2 Module Description:

Modules:

1. USER REGISTRATION
2. BANK SERVER
3. INTEGRATION OF MULTI BANK AND MULTI USER
4. HMM MODEL
5. FORMULA BASED AUTHENTICATION

User Registration

Here first the User wants to create an account and then only they are allowed to access the Network. Once the User creates an account, they are to login into their account and request the Job from the Service Provider. Based on the User's request, the Service Provider will process the User requested Job and respond to them.

All the User details will be stored in the Database of the Service Provider. In this Project, we will design the User Interface Frame to Communicate with the Server through Network Coding using the programming Languages like Java. By sending the request to Server Provider, the User can access the requested data if they authenticated by the Service Provider.

Bank Server

Bank Service Provider will contain information about the user in their Data Storage. Also the Bank Service provider will maintain the all the User information to authenticate when they want to login into their account. The User information will be stored in the Database of the Bank Service Provider. To communicate with the Client and other modules of the Company server, the Bank Server will establish connection between them. For this Purpose we are going to create a User Interface Frame.

Integration Of Multi Bank And Multi User

In this module, we can design and implementation of family member registration. Using single card like credit and debit for entire family members. But maintain unique PIN numbers for different banks. We will provide a button add "Family card" in our user card. Now user can add his family members bank ATM details also along with pin number details. User can include like further bank account no, bank name, pin number same way for other family members also.

HMM Model

Hidden markov model used for user behaviour analysis of cash withdrawal. Hidden markov model is applied to understand users money withdrawal sequence which means first condition is total amount withdrawal in every month. Second one is Frequency of withdrawal of money using credit card. User can withdraw the cash as per money requirement and time frequency is also monitored & recorded. During registration of the card user has to give a formula for secured authentication system user can also add multiple bank accounts in single card.

Formula Based Authentication

In this module, we provide security by using formula like (A+B-C) while registration. In this formula using alphabets and two operators like (+ and -). The formula is constant, but numbers will randomly change for every transaction. User is not required to provide the formula at any time, user is only required to submit the answer after substitution of the corresponding values in their formula. This formula based authentication is required only when user tries to withdraw money beyond the permitted 10% extra and increases the withdrawal frequency. Once user is registered by specifying his master bank account details & formula for authentication. Now user can add his family card details also.

2.3 Advantages

• This system really avoids multiple ATM card on rotation
• User can withdraw cash from one single ATM card from their family members account.
• Hidden Markov model is used for user behaviour analysis of cash withdrawal
• Security is ensured by the implementation of formula based authentication

4. Requirements

Hardware Requirements

• Processor : Corei3/i5/i7
• RAM : 2-4GB
• HDD : 500 GB
• Embedded Fabrication Kit

Software Requirements

• Platform : Windows Xp /7/8
• Front End : Java-JDK1.7
• Back End : MYSQL

• Embedded C
• Big Data : Apache Hadoop -2.5.1

5. Conclusion

There is sufficient supporting evidence to conclude that data-driven approaches would be a growing research methodology/ philosophy in business operations. Countless application domains can be influenced by this big data fad. BI systems are definitely on the list as such systems highly rely on the input data to generate valuable outputs. That being said, the scope of BI systems is so wide and related research involved the multidisciplinary knowledge. Hence it is not surprising that the research focal points have been scattered around different disciplines. Consequently, it is not easy to generalize the results from previous studies. In this connection, emerging big-data-oriented research may need some adjustments. Synergizing multiple research methodologies could be one direction. Data mining is still the core engine of BI systems but previous data mining algorithms are very application-oriented. This is not a criticism but an observation. The main reason is due to the nature of the data involved. So, soft computing techniques may be more applicable in this regard. In addition, coupling with the big data area, it may be the right time to think about mining ontology's, rather than just algorithms.

Future Enhancement:

Another future work might be to consider a situation where the elements in each bag are correlated. In time series analysis, signals are often pre-processed by removing the predictable component. The resulting innovation time series is an i.e. sequence, and this is the assumption we have made in this paper. However, considering correlation in the data could be an interesting topic for additional research.

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