

# Credit / Debit Card Transaction Survey Using Map Reduce in HDFS and Implementing Syferlock to Prevent Fraudulent

R.Anbuvizhi<sup>1</sup>

V.Balakumar<sup>2</sup>

Department of computer Science and Engineering, Dhanalakshmi Srinivasan Engineering College Perambalur, TamilNadu, India

## Abstract

“Big Data” is a term that has jumped overnight from its roots. It can be described as an innovative technique and technology to save, distribute, manage, visualize and analyze larger-sized data with extreme velocity and methods to manage unstructured and structure incapable amount of data. Big data has high capacity to predict conclusion, with low cost consumption, increase efficiency and enhance decision-making in various fields like finance management, fraud control and to improve business transaction. In existing system the amount of customers, services and online transaction has grown rapidly, often suffer from scalability and inefficiency problems when processing or analyzing such large-scale data. Nowadays fraud transactions in real time are increasing, so identifying large-scale patterns across many transactions or detecting anomalous behavior from an individual user can change the fraudulent in online transaction. Thus banks are turning to analytics to predict and prevent fraud in real times. Fraud detection traditionally focused on the factors such as known bad IP addresses or unusual login times. In this project, proposed system deals with Credit / Debit card management to improve its scalability and efficiency in big data environment, it is implemented on (HDFS) Hadoop distributed file system, a widely-adopted distributed computing platform using the Map Reduce parallel processing paradigm that stores large files (typically in the range of gigabytes to terabytes) across multiple machines. On the other hand, nowadays fraudulent and web attacker are increased to steal the password. In order to overcome those, proposed system implements SyferLock concept to add more security to Credit card transaction. The changes include a stronger user authentication tool, SyferLock that will require associates to follow a few new steps when logging into the network remotely. SyferLock patented, random number generation authentication solutions provide next generation One-Time Passwords/PINs (OTPs) for secure access to computers, networks and the Internet. SyferLock has engineered an enhanced authentication methodology and system using device-less OTPs that provides users with a simple, more secure way to access information leveraging their existing passwords. It uses a

one-time password that expired once used. This added security strengthens the ability to protect the applications and systems.

## Key words:

*Analysis, Big Data, Credit Card, GridPin, Hadoop, Map Reduce, Report, Security, Syferlock*

## 1. Introduction

### 1.1 Big Data

Big data is a buzzword, or catch-phrase, used to describe a massive volume of both structured and unstructured data that is so large it is difficult to process using traditional database and software techniques. In most enterprise scenarios the volume of data is too big or it moves too fast or it exceeds current processing capacity. Despite these problems, big data has the potential to help companies improve operations and make faster, more intelligent decisions. Is Big Data a Volume or a Technology? While the term may seem to reference the volume of data, that isn't always the case. The term big data, especially when used by vendors, may refer to the technology (which includes tools and processes) that an organization requires to handle the large amounts of data and storage facilities. The term big data is believed to have originated with Web search companies who needed to query very large distributed aggregations of loosely-structured data. An Example of Big Data An example of big data might be petabytes (1,024 terabytes) or Exabyte (1,024 petabytes) of data consisting of billions to trillions of records of millions of people—all from different sources (e.g. Web, sales, customer contact center, social media, mobile data and so on). The data is typically loosely structured data that is often incomplete and inaccessible. Big Data and Types of Business Datasets When dealing with larger datasets, organizations face difficulties in being able to create, manipulate, and manage big data. Big data is particularly a problem in business analytics because standard tools and procedures are not designed to search and analyze massive datasets. This data, when captured, formatted, manipulated, stored, and analyzed can help a company to gain useful insight to

increase revenues, get or retain customers, and improve operations.

## 1.2 Syferlock

SyferLock is an innovative provider of next-generation authentication and security solutions. SyferLock's patented software-based authentication and security solutions enable enterprises and government organizations to cost-effectively address strong authentication / 2 factor authentication to secure every access point, including computers, networks, online access and mobile devices, across a range of applications including proprietary networks, cloud computing and mobile devices. SyferLock's user friendly software-based solutions deliver two-factor and multi-factor authentication through token less one-time passwords or PINs (OTPs) without the need for any additional hardware, tokens or client-side software, providing superior security along with greatly reduced Total Cost of Ownership (TCO). SyferLock's authentication solutions are available in enterprise and cloud editions. SyferLock's flexible methodology is easy to deploy, is extremely lightweight and can be deployed in a High-Availability (HA) cluster. Increasingly, enterprises are turning to SyferLock and its superior software-based two-factor and multi-factor authentication solutions to strengthen security, eliminate hardware tokens and to reduce TCO.

## 2. Literature Survey

### 2.1 Bigtable: A Distributed Storage System for Structured Data; 2008

Bigtable is a distributed storage system for managing structured data that is designed to scale to a very large size: petabytes of data across thousands of commodity servers. Many projects at Google store data in Bigtable, including web indexing, Google Earth, and Google Finance. These applications place very different demands on Bigtable, both in terms of data size (from URLs to web pages to satellite imagery) and latency requirements (from backend bulk processing to real-time data serving). Despite these varied demands, Bigtable has successfully provided a flexible, high-performance solution for all of these Google products. In this paper we describe the simple data model provided by Bigtable, which gives clients dynamic control over data layout and format, and we describe the design and implementation of Bigtable. **Drawbacks:** This has not been implemented in real time application, and it is not sure how it handles tera bytes of data as HDFS is not used in this system.

### 2.2 The Next Frontier for Innovation, Competition, and Productivity, J. Manyika et al., 2011

The amount of data in our world has been exploding, and analyzing large data sets—so-called big data—will become a key basis of competition, underpinning new waves of productivity growth, innovation, and consumer surplus, according to research by MGI and McKinsey's Business Technology Office. Leaders in every sector will have to grapple with the implications of big data, not just a few data-oriented managers. The increasing volume and detail of information captured by enterprises, the rise of multimedia, social media, and the Internet of Things will fuel exponential growth in data for the foreseeable future.

**Drawbacks:** This project had not deals with security in team of real time application.

### 2.3 Big Data: How Do Your Data Grow; Nature, vol. 455, no. 7209, pp. 28-29; 2008

Data can be 'big' in different ways. National and international projects such as the Large Hadron Collider (LHC) at CERN, Europe's particle-physics laboratory near Geneva in Switzerland, or the Large Synoptic Survey Telescope planned for northern Chile, are frequently cited for the way they will challenge the state of the art in computation, networking and data storage.

**Drawbacks/Challenges:** No drawbacks, need to apply the concepts in real world and make it usable

### 2.4 Towards Privacy-Aware Cross-Cloud Service Composition for Big Data Applications, W. Dou, X. Zhang, J. Liu, and J. Chen, HireSome-II, 2013.

In this method, to enhance the credibility of a composition plan, the evaluation of a service is promoted by some of its QoS history records, rather than its advertised QoS values. Besides, the k-means algorithm is introduced into our method as a data filtering tool to select representative history records. As a result, HireSome-II can protect cloud privacy, as a cloud is not required to unveil all its transaction records. Furthermore, it significantly reduces the time complexity of developing a cross-cloud service composition plan as only representative ones are recruited, which is demanded for big data processing. Simulation and analytical results demonstrate the validity of our method compared to a benchmark. **Drawbacks/Challenges:** No drawbacks, need to apply the concepts in real world and make it usable

## 2.5 Implementing Spam Detection Using Bayesian and Porter Stemmer Keyword Stripping Approaches; 2013

Unsolicited or spam emails are on the rise, where one's email storage inbox is bombarded with emails that make no sense at all. This creates excess usage of traffic bandwidth and results in unnecessary wastage of network resources. We wanted to test the Bayesian spam detection scheme with context matching that we had developed by implementing the keyword stripping using the Porter Stemmer algorithm. This could make the keyword search more efficient, as the root or stem word is only considered. Experimental results on two public spam corpuses are also discussed at the end. **Drawbacks/Challenges:** Key work search is not efficient

## 3. SYSTEM ANALYSIS

### 3.1 Existing System

Year by year credit card usage and credit card transactions are increased rapidly. Existing system uses structured data, which is in SQL or oracle, analyzing structured data (10 TB) cost high for processor and transmitting data in internet is time consuming process. Credit card fraudulent is increasing day by day, through there is OTP. Receiving OTP in mobile phone provides benefit, but in some cases, it will be a consuming more time and implementation cost and maintenance cost is also higher. It is difficult to receive OTP if the user is in not reachable area, during this time it is difficult to access the account.

#### 3.1.1 Existing System Disadvantage:

- Attackers might hack/guess the pin
- Takes more processing time
- Implementaion cost is high
- CPU usage is high
- Uses only structured data
- Processing cost is high

### 3.2 Proposed System

Credit card transtion are analysed using map reduce logic in HDFS, which is efficient way to analyze the data and respond quickly. This system uses MapReduce program to calculate the Input Keyword. MapReduce is a programming model for processing large data sets with a parallel, distributed algorithm on a cluster. A MapReduce program is composed of a Map () procedure that performs filtering and sorting and a Reduce () procedure that performs a summary operation. **Example:** Analyzing each credit card

holder spend how much in different areas like shopping, grocery, hotels, petrol, this analysis will be useful for the bank to judge where customer is spending more amount , this will increase the revenue of the bank. Implemented **SyferLock** security for Credit/debit card transaction. There is no use in tracking the password because this password will be used only one, each transaction has different pin, it is not required to remember the pin each and every time. This system doesn't use additional OTP which user receives in mobile, instead it uses grid system that generate random password and displayed on the screen. User has to uses the random password based on their position to log in to the system. SyferLock concept is first time used in this Credit card management

#### 3.2.1 Proposed System – Advantage

- Secured, Time consuming, Processing cost is low
- Applied Map reduce Concept – Big Data
- Unstructured data - HDFS
- Application oriented
  - Easy analysis / reports for Business
  - Reusable, Make Profit for business

#### 3.2.2 Proposed System – Overcomes

- Shoulder Surfing,Screen Grabbers/Recorders
- Video Recording, Keystroke Logging Malware or Hardware
- Man-In-The-Middle Threats, Browser Proxy
- Social Engineering, Phishing.

## 4. System Implementation

### 4.1 SYFERLOCK

#### 4.1.1 Introduction

SyferLock system provides patented authentication and security solutions. SyferLock delivers two-factor authentication solutions utilizing patented software-based grids to convert static passwords/PINs into secure one-time passwords/PINs (OTPs). SyferLock's software-based authentication solutions provide token-less OTPs, offering a simple, more secure way to access information while leveraging existing passwords and password infrastructure. SyferLock's flexible, adaptable solutions enable enterprises to cost-effectively address two-factor and multi-factor authentication across a range of use cases and with a range of platforms. SyferLock is market validated with a growing customer list and a number of awards from independent

research firms and industry publications. SyferLock and its superior software-based authentication solutions to strengthen security, eliminate hardware tokens and to reduce Total Cost of Ownership (TCO). Key Features & Advantages of SyferLock's Authentication Solutions Software-based/token-less OTP authentication

- Superior authentication and security
- Enterprise & Cloud editions
- Ease of deployment and use
- Greatly reduced TCO, both for direct and indirect costs (no tokens or token administration)

#### 4.1.2 Grid View

SyferLock's unique methodology covers the authentication spectrum providing two-factor and multi-factor authentication utilizing patented software-based grids to convert static passwords/PINs into secure one-time passwords/PINs (OTPs) at each log-in without the need for any additional hardware, tokens or client-side software. SyferLock addresses the weaknesses of the traditional static password without the need for any additional hardware. SyferLock eliminates or mitigates a range of attacks like Key-Logging, Replay, Shoulder Surfing, Automated Attacks, Brute Force, Dictionary, Sniffing, Interception, Stored Browser Passwords, Cross Site Scripting, and Man-in-the-Middle

#### 4.1.3 Position

User has to choose the position of the virtual password during register, which is applied during real time use.

#### 4.1.4 Radom number Generation

At log-in, a grid (as shown below) of cells is shown, each cell containing a static number or symbol in the center, and Random numbers in the corners that change with each authentication. User inputs the numbers corresponding to their pre-selected corner position in place of associated static password/PIN characters as their one-time password/PIN (OTP).

#### 4.1.5 Password comparison

With a static PIN of "2490" and a pre-selected corner of "top left", the user would input a Grid PIN of "3347" for this log-in attempt. Upon every refresh and/or new log-in, the corner numbers randomly change, creating a new OTP. These single cells with number in the corners that change with every log-in are the foundation for SyferLock's patented software-based grids that are used to convert static passwords/PINs into secure one-time passwords/PINs (OTPs).

#### 4.1.6 Secure log in

The password one used cannot be re used again, thus this system considered as a secured log in. And password stored in the database is encrypted. Cryptography algorithm is used to encrypt/decrypt the password

### 4.2 BIG DATA

#### 4.2.1 Loading data to Hadoop/Hive

Hive is a component of Hortonworks Data Platform (HDP). Hive provides a SQL-like interface to data stored in HDP. In the previous tutorial we used Pig which is a scripting language with a focus on dataflows. Hive provides a database query interface to Apache Hadoop.

#### 4.2.2 Apply Map Reduce

MapReduce is a programming model for processing large data sets with a parallel, distributed algorithm on a cluster. A MapReduce program is composed of a Map() procedure that performs filtering and sorting (such as sorting students by first name into queues, one queue for each name) and a Reduce() procedure that performs a summary operation. The "MapReduce System" orchestrates by marshalling the distributed servers, running the various tasks in parallel, managing all communications and data transfers between the various parts of the system, and providing for redundancy and fault tolerance. Three steps in Mapreduce are Map Reduce and Finalize. **Key Points:** The SQL solution normally takes around 100 seconds (just 1 sec for view creation and rest for grouping and joins. Using a temp table/indexes would speed this up). **Map Reduce will only take 6 seconds to execute.** There are other SQL and MapReduce solutions to this problem.

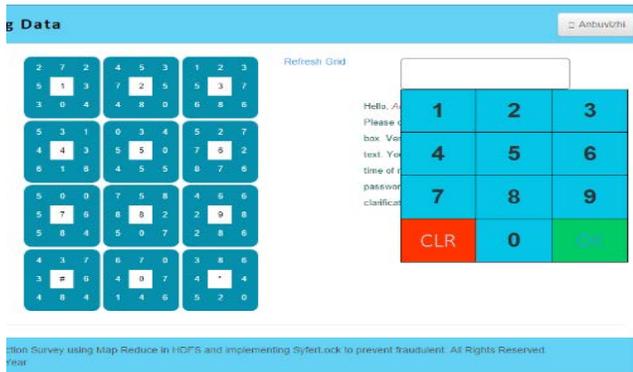
#### 4.2.3 Generate charts / Reports

Using the result of Map reduce result reports are created and charts are generated. There are report generate can be used by individual user and business people. Reports are converted into HTML code and those will be mailed to individual customer and Business.

## 5. Conclusion

This project provides secure log in without any external OTP generation, as this uses pattern logic with random grid PIN. Also the transaction log that logged in Credit / Debit card transaction is analyzed using Microsoft Azure HDFS. As HDFS uses Map Reduce logic, analyzing Big Data for Credit / Debit card is easier, which is help full for the Business to grow better.

## APPENDIX-SCREENSHOT



### Acknowledgement

I give all glory and thanks to our God almighty for showering upon, the necessary insight and grace for accomplishing this project work phase I.

I am in debated to our honorable Chairman and Founder of Dhanalakshmi Srinivasan group of Institutions, shri. A.Srinivasan, for his kind encouragement. I am very much happy to thank our beloved Principal, Dr.T.Elango, M.E., Ph.D., for his unflinching devotion and continuous encouragement motivated me to complete this project work phase I.

I am thankful to our Vice Principle and Head of the Department, Prof.S.Nandhakumar, M.Tech, (Ph.D), who encouraged me a lot to complete my project work phase I successfully.

I am greatly thankful to the project coordinator Mrs.J.Sasidevi, M.E., (Ph.D.), and my internal guide MR.V.Gokulakrishnan, M.E., MBA. Assisant Professor.

### References

- [1] Big Data and IT-Enabled Services Ecosystem and Coevolution
- [2] C. Lynch, "Big Data: How Do Your Data Grow?" Nature, vol. 455, no. 7209, pp. 28-29, 2008.
- [3] F. Chang, J. Dean, S. Ghemawat, and W.C. Hsieh, "Bigtable: A Distributed Storage System for Structured Data," ACM Trans.Computer Systems, vol. 26, no. 2, article 4, 2008.
- [4] G. Linden, B. Smith, and J. York, "Amazon.com Recommendations:
- [5] <https://azure.microsoft.com/en-us/documentation/articles/storage-monitor-storage-account/>
- [6] [http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=4597240&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs\\_all.jsp%3Farnumber%3D4597240](http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=4597240&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D4597240)
- [7] Item-to-Item Collaborative Filtering," IEEE Internet Computing,vol. 7, no. 1, pp. 76-80, Jan. 2003.
- [8] i2MapReduce: Incremental Map Reduce for Mining Evolving Big Data
- [9] Internet of Things and the Credit Card Market
- [10] J. Manyika et al., "Big Data: The Next Frontier for Innovation, Competition, and Productivity," 2011.

- [11] KASR: A Keyword-Aware Service Recommendation Method on Map Reduce for Big Data Applications
- [12] "The Internet of Things", ITU Internet Reports, 2005
- [13] Towards a Restful,"Plug and Play Experience in the Web of Things".
- [14] W. Hill, L. Stead, M. Rosenstein, and G. Furnas, "Recommending and Evaluating Choices in a Virtual Community of Use," Proc.SIGCHI Conf. Human Factors in Computing System (CHI '95),
- [15] W. Dou, X. Zhang, J. Liu, and J. Chen, "HireSome-II: Towards Privacy-Aware Cross-Cloud Service Composition for Big Data Applications," IEEE Trans. Parallel and Distributed Systems, 2013.
- [16] Y. Chen, A. Cheng, and W. Hsu, "Travel Recommendation by Mining People Attributes and Travel Group Types from Community- Contributed Photos," IEEE Trans. Multimedia, vol. 25, no. 6, pp. 1283-1295, Oct. 2013.
- [17] Z. Zheng, X. Wu, Y. Zhang, M. Lyu, and J. Wang, "QoS Ranking Prediction for Cloud Services," IEEE Trans. Parallel and DistributedSystems, vol. 24, no. 6, pp. 1213-1222, June 2013.

### AUTHORS

**First Author** – R.Anbuvizhi, ME-CSE in Dhanalakshmi Srinivasan Engineering College, Perambalur- 621212, TamilNadu, India.

**Email Address:** [r.anbuvizhi@gmail.com](mailto:r.anbuvizhi@gmail.com)

**Second Author** – V.Balakumar, Completed BE-CSE in Dhanalakshmi Srinivasan Engineering College, Perambalur- 621212, TamilNadu, India @ 2011. Working as System Engineer in Tata Consutancy Service, Chennai, since Feb 2012.

**Email Address:** [bala101289@gmail.com](mailto:bala101289@gmail.com)