

**Net Pay Money Transaction System with Fraud Detection using  
Datamining Technique**

**BY**

**MD. Shahriar Hossain**

**ID: 192-25-770**

This Report Presented in Partial Fulfillment of the Requirements for the  
Degree of Master of Science in Computer Science and Engineering

Supervised By

**Ms. Subhenur Latif**

Assistant Professor

Department of CSE

Daffodil International University



**DAFFODIL INTERNATIONAL UNIVERSITY  
DHAKA, BANGLADESH**

## APPROVAL

This Project **Net Pay** Money Transaction System with Fraud Detection using Datamining Technique, submitted by Md. Shahriar Hossain, ID No: 192-25-770 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of M.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 9.7.2020.

### **BOARD OF EXAMINERS**



---

**Dr. Syed Akhter Hossain**  
**Professor and Head**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University

**Chairman**



---

**Gazi Zahirul Islam**  
**Assistant Professor**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University

**Internal Examiner**

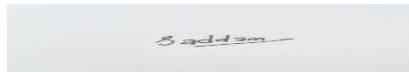


---

**Abdus Sattar**  
**Assistant Professor**

Department of Computer Science and Engineering  
Faculty of Science & Information Technology  
Daffodil International University

**Internal Examiner**



---

**Dr. Md. Saddam Hossain**  
**Assistant Professor**

Department of Computer Science and Engineering  
United International University

**External Examiner**

## DECLARATION

I hereby declare that, this project has been done by me under the supervision of **Ms. Subhenur Latif** , **Assistant Professor, Department of CSE** Daffodil International University. I also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

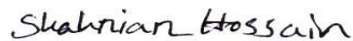
### Supervised by:



---

Ms. Subhenur Latif  
Assistant Professor  
Department of CSE  
Daffodil International University

### Submitted by:



---

**Shahriar Hossain**  
ID: 192-25-770  
Department of CSE  
Daffodil International University

## ACKNOWLEDGEMENT

First, I express my heartiest thanks and gratefulness to the almighty God for His divine blessing made us possible to complete the final year project/internship successfully.

I really grateful and wish our profound our indebtedness to Ms. Subhenur Latif, Assistant Professor, Department of CSE Daffodil International University, Dhaka. Deep Knowledge & keen interest of our supervisor in the field of “**Data Mining**” to carry out this project. His endless patience ,scholarly guidance ,continual encouragement , constant and energetic supervision, constructive criticism , valuable advice ,reading many inferior draft and correcting them at all stage have made it possible to complete this project.

I would like to express my heartiest gratitude to Dr. Syed Akhter Hossain and Head, Department of CSE, for their kind help to finish our project and also to other faculty member and the staff of CSE department of Daffodil International University.

I would like to thank my entire course mate in Daffodil International University, who took part in this discussion while completing the course work.

Finally, I must acknowledge with due respect the constant support and patience of our parents.

## **ABSTRACT**

The purpose of the document is to describe all the requirements for the targeted system-Net Pay. Interested to make this project because in Bangladesh there is no smart way to transfer money. People have to go to many third party or bank to transfer there money. Fast Development in electronic trade has led to increase in the use of credit card payment mode and online transaction. Frauds related to credit cards are also increase with usage of credit card payment mode. Data mining techniques are used to disclose fraudulent activity in credit card payment mode online transaction. Data mining process is to extract information from a dataset and transform it into an understandable structure for future use.

# TABLE OF CONTENTS

<b>CONTENS</b>	<b>PAGE</b>
Board of examiners	i
Declaration	ii
Acknowledgements	iii
Abstract	iv
<b>CHAPTER</b>	
<b>CHAPTER 1: Introduction</b>	<b>1-3</b>
1.1 Introduction	1
1.2 Motivation	1
1.3 Objectives	2
1.4 Rationale of the Study	2
1.5 Research Questions	3
1.6 Expected Outcome	3
<b>CHAPTER 2: Background</b>	<b>4-9</b>
2.1 Introduction	4
2.2 Related Works	4
2.3 Research Summary	4
2.4 Comparative Studies	6
2.5 Scope of the Problem	7
2.6 Challenges	8

<b>CHAPTER 3: Research Methodology</b>	<b>10-13</b>
3.1 Introduction	10
3.2 Research Subject and Instrumentation	10
3.3 Data Collection Procedure	11
3.4 Statistical Analysis	11
3.5 Implementation Requirements	12
<b>Chapter 4: Experimental Results and Discussion</b>	<b>14-15</b>
4.1 Introduction	14
4.2 Experimental Results	14
4.3 Descriptive Analysis	15
4.4 Summary	15
<b>Chapter 5: Conclusion and Implication for Future Research</b>	<b>16-16</b>
5.1 Conclusions	16
5.2 Implication for Further Study	16
<b>REFERENCES</b>	<b>17-17</b>
1. Data collection	17
2. About Naïve Bayes classifier	17

## **LIST OF FIGURES**

### **FIGURES**

### **PAGE NO**

Fig: 3.2 internal measurement tools

4

Fig: 4.2 Fraud Result Graph

11



# **CHAPTER 1**

## **Introduction**

### **1.1 Introduction**

This is a naturalistic, exploratory study designed to understand all the requirements for the targeted system Net pay a Money Transaction System with Fraud Detection Using Data mining Techniques. I am interested to make this project because in Bangladesh there is no smart way to transfer money securely and easily in the fastest way. People have to use some backdated systems or banks to transfer our money, pay the bill, utility bill, as well as mobile recharge, which is very time consuming and is not as secure as the proposed system.

### **1.2 Motivation**

In Bangladesh, there is no advance and secure way to transfer money. Frauds and money hacking occurred every year. In other transaction systems like- Bkash, Dutch Bangla Mobile Banking they are not providing better security. They are not using any fraud detection techniques to make strong security for money transactions. If any fraud transaction occurs they do not know about that.

### 1.3 Objectives:

1. **Reduce direct use of money:** By using this application users do not need to carry money all the time on his/her pocket. This application will provide any kind of money transaction or payment.
2. **Transaction Amount:** There is no transaction limit. Users can transfer any amount as per need.
3. **Instant Product Finder:** By using our application, the user can scan any product code from the shop and make the payment from the shop instantly. Every shop needs to have a shop account on the Smart Cash website as a seller account.
4. **Mobile Recharge:** It provides mobile recharging options by which anyone can pay his/her mobile bills.
5. **Fraud detection:** Naive Bayes classifier used to detect frauds and some other functionality to protect our user's privacy and valuable money.
6. **Crisis area:** Users can donate to the affected area and thus help the people who are in crying need.
7. **Utility Bill:** All kinds of utility can be pay through this application.

### 1.4 Rationale of the Study:

I building a secure system that can be used to transfer money easily to the users. Users can use this system in many ways. It can be used to transfer money, make any payment, shop online, help peoples who are in problem, Pay daily utility bills through this system such as electricity bill, gas bill, mobile recharge, buy tickets online, pay bus routes fees, and many more.

### **1.5 Research Questions:**

Fraud becomes a major problem in the trade of modern age. I am trying to make a secure money transaction system including fraud detection. The system can detect fraud from any kind of transaction in real-time.

Information mining strategies come in two principle frames: a managed approach and a solo methodology. Regulated mining procedures are suitable when you have a particular objective worth you might want to foresee about your information. Along these lines, a solo methodology used to identify misrepresentation identified with online exchanges. Unaided techniques don't utilize marked records (recently happened fakes). It recognizes the adjustments in conduct or abnormal Exchanges

### **1.6 Expected Outcome**

In this project, I am making a transaction system. It will work as a device to the device process. There is no need to use any kind of third party application or services to complete transactions. Anyone who uses this application they can transfer any kind of amount, send or receive payments pay utility bills. It representing money as 1tk.

This application provides maximum functionality –transaction money, online shopping, billing, payments, mobile recharge, and crisis response.

This application can detect fraudulent transactions and reduce the percentage of fraud.

## CHAPTER 2

### Background

#### 2.1 Introduction

In Bangladesh, there is no advance and secure way to transfer money. Frauds and money hacking occurred every year. In other transaction systems like- Bkash, Dutch Bangla Mobile Banking they are not providing better security. They don't provide strong security for money transactions. If any fraud transaction occurs they do not know about that. By implement, this method in my project can predict the maximum likelihood of Fraud transaction. And this supervised learning provides us the best results to detect the frauds thus we can provide the customers with better security in the future.

#### 2.2 Related Work:

There are some other apps available in other countries. Paytm is the most used apps in India. Paytm is a bill payment service that lets users transfer money from a bank account to the digital wallet, enabling them to make payments without the credit card or debit cards. Users can use it to make a data card payment, DTH payment, or pay other utility bills (electricity, water, etc.) as well as for mobile recharge.

Web site link: <https://paytm.com/>

Google play store link: <https://play.google.com/store/apps/details?id=net.one97.paytm>

#### 2.3 Research Summary:

There are scarcely any distributed works about extortion recognition inside the space of internet banking. This is in all likelihood because of the protection, the mystery, and the business interests concerning this area, as opposed to the nonattendance of examination. In this manner, because of the restricted trade of thoughts, the advancement of new misrepresentation location techniques in the financial region is troublesome. Most distributed work is identified with the area of Mastercard, PC interruption, and versatile correspondence. Some pertinent chips away at misrepresentation location are checked on straightaway. Charge card cheats A large portion of the takes a shot at forestalling and identifying Mastercard extortion were completed with exceptional accentuation on

information mining and neural systems. Aleskerov, Freisleben, and Rao depict a neural system based database mining framework in which a neural system is prepared with the past information of a specific client, and the current spending designs are handled to identify potential oddities. Notwithstanding, Bolton and Hand proposed a discovery procedure where a breakpoint investigation is utilized to distinguish changes in spending conduct.

PC Interruption identification approaches in PCs are comprehensively arranged into two classifications dependent on a model of interruptions: abuse and oddity discovery. Abuse location endeavors to perceive the assaults of recently watched interruptions as an example or a signature and afterward screens such event. Oddity location attempts to set up a chronicled typical profile for every client, and afterward utilizes an adequately huge deviation from the profile to show potential interruptions. Denning presents a factual model for ongoing interruption discovery situated in oddity identification. Ghosh and Schwrtzbard portray a methodology that utilizes fake neural systems utilized for both irregularity and abuse discovery. Portable correspondence fakes - Misrepresentation in correspondence systems alludes to the illicit access to the system and the utilization of its administrations. Cortes and Pregibon characterize factual outlines, designated marks, of clients more than double cross windows, to be specific, current and authentic, separately. The current system movement is contrasted and the recorded action for any deviation. Fawcett and Executive present standard based techniques and neural systems for recognizing deceitful calls dependent on profiling endorser conduct. In all areas previously mentioned, fraudsters will in general adjust to new avoidance and discovery measures. Similarly, authentic clients may continuously change their conduct over a more drawn out period. Consequently, extortion identification strategies should be versatile and to develop to maintain a strategic distance from bogus alerts. Models can be refreshed at fixed time focuses or persistently after some time. Panigrahi, Kundu, Sural, and Majumdar depict a structure for extortion recognition in portable correspondence systems utilizing a standard based deviation strategy. The primary concern of this paper is the definite portrayal of the utilization of Dumpster-Shafer hypothesis to join the proof of extortion given by two principles.

## 2.4 Comparative Studies:

In this day and age Visas and online exchanges are utilized as an installment mode. Visas and online exchanges are utilized worldwide as they are acknowledged in a large number of spots at home and abroad. Because of an expansion in use of Mastercards and online exchanges, fakes identified with it are additionally increment. Fakes are unlawful and unapproved utilization of record for individual increase and furthermore a deception of record data to acquire merchandise or potentially benefits. So it is important to identify misrepresentation. Information mining is a procedure of extricating concealed and valuable data from the information and the information found by information mining is already obscure, conceivably helpful, and legitimate and of high caliber.

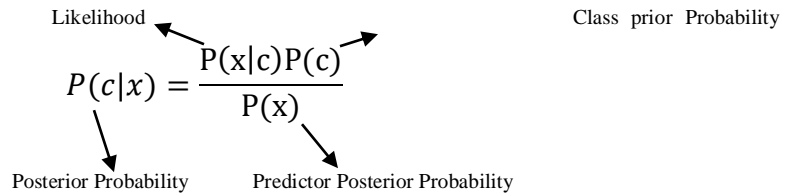
Information mining procedures come in two fundamental structures: an administered approach and a solo methodology. Directed mining strategies are fitting when you have a particular objective worth you'd prefer to foresee about your information. Cheats conduct can't be anticipated so Mastercard extortion identification utilizes an unaided methodology for location of fakes. Solo techniques don't utilize named records (recently happened cheats). It distinguishes the adjustments in conduct or surprising Exchanges.

Naive Bayes is a straightforward method for building classifiers: models that appoint class marks to issue examples, spoke to as vectors of highlight esteems, where the class names are drawn from some limited set. It's anything but a solitary calculation for preparing such classifiers, yet a group of calculations dependent on a typical rule: all credulous Bayes classifiers expect that the estimation of a specific component is free of the estimation of some other element, given the class variable.

In Bangladesh, there is no development and secure approach to move cash. Cheats and cash hacking happened each year. In other exchange frameworks like-Bkash, Dutch Bangla Portable Financial they are not giving better security. They don't give solid security to cash exchanges. In the event that any extortion exchange happens they don't think about that. By executing this technique in our venture we can anticipate the most extreme probability of Extortion exchange. What's more, this regulated learning gives us

the best outcomes to identify the cheats therefore we can furnish the clients with better security later on.

Naïve Bayes approach:



$$P(x|c) = P(x_1|c) \times P(x_2|c) \times \dots \times P(x_n|c) \times P(c)$$

- $P(c/x)$  is the posterior probability of class ( $c$ , target) given predictor ( $x$ , attributes).
- $P(c)$  is the prior probability of class.
- $P(x/c)$  is the likelihood which is the probability of predictor given class.
- $P(x)$  is the prior probability of predictor.

### 2.5 Scope of problem:

The proposed software product is Phone pay a Money Transaction System with Fraud Detection Using Data mining Techniques for the Institute of Daffodil International University. It will be used to transfer money, utility bill pays, make payments, online shopping, and donate for crisis area. Admin panel system maintains the User account and all the functions related to website and application. Admin can view all transactions and detect the maximum percentage of fraud transactions from the admin panel. Users will be able to view their overall transactions and daily update and notification from their control panel.

The admin of the system will be able to create new users, account recharge, block the user, and take any kind of action if any user tries to make a crime. If the user needs to send money to the bank, the admin confirms and completes the process.

## **2.6 Challenges**

These days data innovation characterizes how we convey and do our business universally. THE enhanced IT division has changed our advanced assistance conveyance and correspondence example or framework with Clients and customers. Our nearby industry has begun gathering the advantage of data innovation venture. The venture expanding at a high rate as it is empowering the business to arrive at a greater number of clients rapidly than contenders. It likewise gives the business to serve a greater number of clients more productively than previously.

Every one of those upper hands are legitimately supplementing income and primary concern. These days other than innovation specialist co-ops, money related enterprises are placing momentous interest in innovation. During the underlying years, global mechanization was a need. Presently they are contributing more to broaden increasingly helpful involvement with client care, for example, web based banking, charge/Visas, web banking. Here we are offering a sublime application named "Telephone pay a Cash Exchange Framework with Misrepresentation Identification Utilizing Datamining" to simpler the customer's day by day way of life with tremendous advantages. Electronic money through the card or with an application industry has given the main period of the experience of web based business or for online exchanges to our clients. We are going to dispatch a remarkable brilliant application to guarantee day by day exchange forms. Bangladesh Bank is wanting to dispatch the passage to encourage cash utilized on the web. It is unnecessary to specify that online business will carry broad chances to traders and money related organizations. The expense of administration conveyance is serious as a result of the thickness. The neighborhood culture is as yet open to get advancement. Be that as it may, all open doors accompany a few difficulties.



Beginning from every minute of every day client care to basic back-office incorporation, all administrations are relied upon to be ready for action with zero personal time. On head of that client, inclination will be changing every once in a while. Client relationship the executives will be increasingly perplexing and dynamic. The difficulties of decreasing value-based and activity costs will likewise become possibly the most important factor. It will bring a test for the controller moreover. Bangladesh bank previously began some e-banking administration and confronting some portion of difficulties. The difficulties incorporate the harmony among comfort and security, structuring items that offer a harmony between serious valuing and usefulness, staying up to date with the dynamism of client needs and development, and absence of an appropriate authoritative system to help the development of e-banking.

# CHAPTER 3

## Research Methodology

### 3.1 Introduction:

Information in reality is grimy, uproarious, conflicting, and inadequate. So I need to do preprocessing. I use standard higher dangerous IP addresses dataset which is open on MAXMIND.COM. My dataset contains 2 properties and 600 occasions.

I likewise gathered my constant 15 days day by day exchange dataset which is gathered and overseen. The dataset contains 11 characteristics and 600 occurrences. Out of 11 characteristics, I am utilizing 4 properties. The qualities are straight out.

### 3.2 Research Subject and Instrumentation

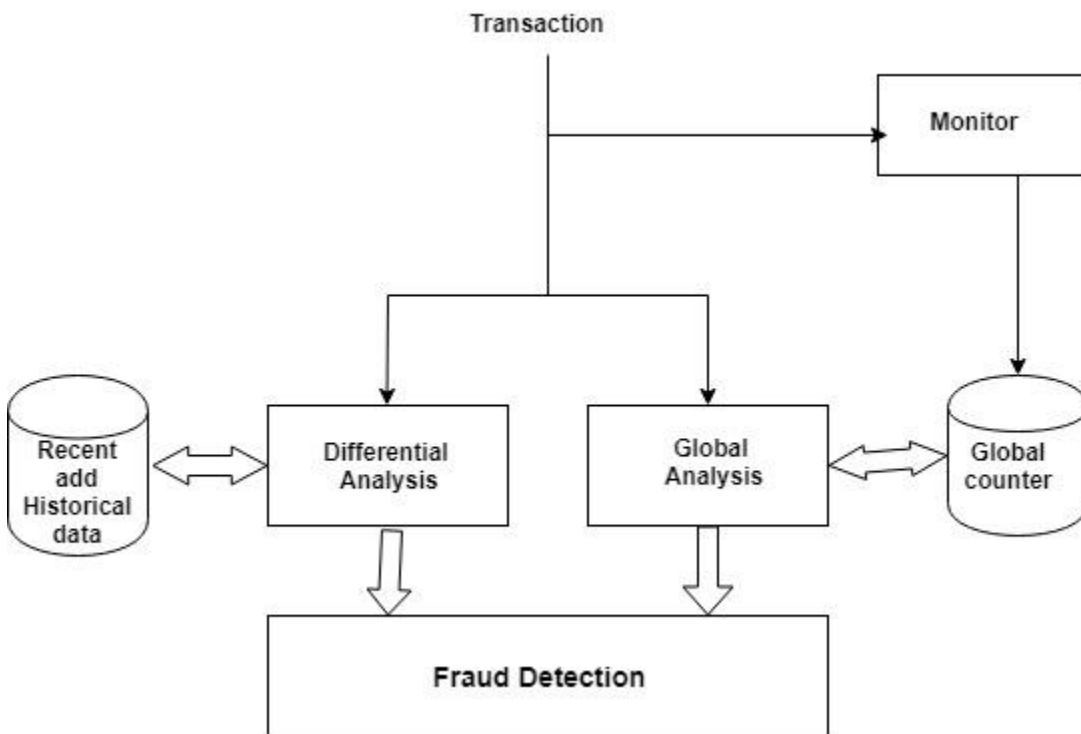


Fig: 3.2 internal measurement tools

Research instruments are measurement tools designed to obtain data on a topic of interest from the research subject. Therefore, instrumentation also a specific term concerning a

threat to internal validity in research. This entry discusses instrumentation about the data collection process, internal validity, and design.

### 3.3 Data Collection Procedure

I utilize standard higher risky IP addresses dataset which is accessible on MAXMIND.COM.

My dataset comprises of 2 attributes and 600 instances.

I also collected our real-time 20 days daily transaction dataset which is collected and managed. My dataset comprises of 11 attributes and 600 instances. Out of 11 attributes I using 4 attributes. The attributes are categorical.

Attribute Name	Attribute Type
Transaction Type	categorical
Account Type	categorical
Credit Transfer Rating	categorical
Fraud	categorical

Preprocessing:

Information in reality is grimy, uproarious, conflicting, and fragmented. So I need to do preprocessing. I need to do information cleaning and information decrease in my custom framework device.

### 3.4 Statistical Analysis

To prepare a guileless Bayes classifier from marked information, it's conceivable to develop a semi-directed preparing calculation that can gain from a blend of named and unlabeled information by running the regulated learning calculation in a circle.

The attributes are categorical. I collected our real-time 15 days daily transaction dataset which is collected and managed. My dataset comprises of 11 attributes and 600 instances. Out of 11 attributes I using 4 attributes.

To detect fraud I use some conditions to classify the data in running time.

## **3.5 Implementation Requirements**

### **3.5.1 Operating Environment:**

The Phone pay implemented both on a web-based website. Thus, anyone having a browser can hit the specific function and can get access to it. Thus it will ensure its best usage and will ease the means of getting access to the system. Moreover, it will give the user a good user experience because it is available in two platforms.

### **3.5.2 Software Language Use:**

The application developed using ASP.NET. The used language is C# and front-end designed using HTML, Bootstrap. Besides for eye soothing user interface experience CSS, 3 will also be used.

### **3.5.3 Development Tools:**

For the development purpose, Visual Studio is used. For handling different database operations Use SQL Server Management Studio.

### **3.5.4 Database Support:**

The database used SQL Server Management Studio-2018. Entity Framework 4.1 will be used from the end of the application to insert, update, and delete the data.

### **3.5.5 Hardware Dependencies**

To operate the system the following hardware dependencies are needed:

1. Runs on any x86-64 machine.
2. Depending on the number of users it serves, it'll need a reasonably powerful machine to perform its tasks.
3. Every user must have internet connectivity devices to use the system.

### **3.5.6 Browser Dependencies**

The system based on the web therefore, no custom-tailored client is required to access it. However, Phone pay is compatible with any JavaScript enabled open standard browsers,

and it also supports Internet Explorer (IE), Mozilla Firefox (any latest version), Chrome (any latest version), and other compatible browsers.

## CHAPTER 4

### Experimental Results and Discussion

#### 4.1 Introduction

After successfully training the algorithm I valid the algorithm on test data. The result is visualized and briefly described below.

#### 4.2 Experimental Results

After running this fraud detection algorithm I found that it performs better than other traditional approaches. Here in Fig: 4.2 is showing the result of our fraud detection algorithm.



Fig: 4.2 Fraud Result Graph

High-hazard IP identifies All IP address nations acknowledged naturally. My framework can recognize the IP address nation dependent on the client's IP address. (Despite the fact that this check gives positive outcomes in 94% all things considered, this IP check depends on remotely gave IP postings. There is a slight danger of mistake, as I depend on the exactness of this rundown). I can set a specific hazard for each IP nation. There are 3 possible categories to classify an IP country:

High risk 2. Medium risk 3. Low risk

Fraud Detection Using Naïve Bayes: After applying the proposed algorithm, I get 5 frauds and 31 normal transactions out of 36 instances. As it is, a system will depend on customer input. Number of frauds it will detect depends on the customer 'Transaction Type', 'Account Type', 'Credit Rating'.

### **4.3 Descriptive Analysis**

Fig 4.2 is visualizing the accuracy of the fraud detecting algorithm, which I apply in this project. I get 94% accuracy. It performed comparatively better than other fraud detecting algorithm.

### **4.4 Summary**

The principle philosophy for extortion discovery proposed in this proposition I tried and analyzed utilizing an informational index containing true Visa exchanges. Trials which additionally directed with an AI technique (Supervised-learning).

## **CHAPTER 5**

### **Conclusion, and Implication for Future Research**

#### **5.1 Conclusions**

Fraud cannot be detected by 100%. I get 94% accuracy. To detect the fraud accurately and efficiently, the real data must be available.

The future work will be to use a different algorithm to increase accuracy. For this, the different datasets should be available to improve fraud detection from an online transaction.

#### **5.2 Implication for Further Study**

Apply the k-mean algorithm for better results and detect more types of fraud.



## References:

1. Collect high risk IP from Maxmind.com available at <<[https://www.maxmind.com/en/high-risk-ip-sample-list?pkit\\_lang=en](https://www.maxmind.com/en/high-risk-ip-sample-list?pkit_lang=en)>> last accessed on 02-01-2020.
2. Learn more about Naïve Bayes classifier from Wikipedia available at <<[https://en.wikipedia.org/wiki/Naive\\_Bayes\\_classifier](https://en.wikipedia.org/wiki/Naive_Bayes_classifier)>> last accessed on 15-11-2019.
3. Analysis on credit card fraud detection methods  
<< <https://ieeexplore.ieee.org/abstract/document/5762457>>> last accessed on 02-01-2020.
4. Effective detection of sophisticated online banking fraud on extremely imbalanced data learning <<<https://link.springer.com/article/10.1007/s11280-012-0178-0>>> last accessed on 05-01-2020.
5. Session-Based Fraud Detection in Online E-Commerce Transactions Using Recurrent Neural Networks << [https://link.springer.com/chapter/10.1007/978-3-319-71273-4\\_20](https://link.springer.com/chapter/10.1007/978-3-319-71273-4_20)>> last accessed on 02-01-2020.
6. APATE: A novel approach for automated credit card transaction fraud detection using network-based extensions<<  
<https://www.sciencedirect.com/science/article/pii/S0167923615000846> >> last accessed on 15-11-2019.
7. Data mining for credit card fraud: A comparative study  
<< <https://www.sciencedirect.com/science/article/pii/S0167923610001326>>>  
last accessed on 02-01-2020.
8. Realtime Fraud Detection in the Banking Sector Using Data Mining Techniques/Algorithm <<  
<https://ieeexplore.ieee.org/abstract/document/7881517>>> last accessed on 05-01-2020.
9. Distributed data mining in credit card fraud detection<<  
<https://ieeexplore.ieee.org/abstract/document/809570>>> last accessed on 10-01-2020.

## Phone pay a Money Transaction System with Fraud Detection Using Datamining techniques

### ORIGINALITY REPORT

<b>13%</b>	<b>8%</b>	<b>5%</b>	<b>11%</b>
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

### PRIMARY SOURCES

<b>1</b>	<b>Submitted to Daffodil International University</b> Student Paper	<b>3%</b>
<b>2</b>	<b>Submitted to Ain Shams University</b> Student Paper	<b>2%</b>
<b>3</b>	<b>androidflagship.com</b> Internet Source	<b>1%</b>
<b>4</b>	<b>Submitted to Gujarat Technological University</b> Student Paper	<b>1%</b>
<b>5</b>	<b>Submitted to The University of Manchester</b> Student Paper	<b>1%</b>
<b>6</b>	<b>Submitted to Federal University of Technology</b> Student Paper	<b>1%</b>
<b>7</b>	<b>Submitted to Kaplan Professional School of Management</b> Student Paper	<b>1%</b>
<b>8</b>	<b>Submitted to University of Birmingham</b> Student Paper	<b>&lt;1%</b>