Design and Analysis of User’s Behavior in Fraud Detection in E-Commerce Websites

DANDRU VIJAYA DURGA #1 & Y.SRINIVASA RAJU #2 & D.D.D.SURIBABU #3

#1 M.Sc Student, Master of Computer Science, D.N.R. College, P.G.Courses & Research Center, Bhimavaram, AP, India.
#2 Assistant Professor, Master of Computer Science, D.N.R. College, P.G.Courses & Research Center, Bhimavaram, AP, India.
#3 Head & Associate Professor, Dept of CSE, D.N.R. College of Engineering, Bhimavaram, AP, India.

Received: January 11, 2019
Accepted: February 20, 2019

ABSTRACT: Online shopping and opinion mining have gained more and more importance due to the emergence of the world wide web and a lot of e-commerce web sites. As we all know that users are trying to purchase each and every item online rather than visiting the shops directly for those items. E-commerce is growing faster than predicted as it is up over 150 % compared in the past. As customers have the ease to buy things without spending much time there are also some criminals who try to fraud and get profit in illegal ways. As people are enjoying the advantages from online trading, hackers are also taking advantages to accomplish illegal activities against genuine customers in order to obtain dishonest profit. In this paper we mainly design a online model which can able to detect and identify the fraud based on users individual reviews and opinions for the products. Finally we show that this model can probably distinguish primitive e-commerce sites and current site and extensively decrease customer complaints which are based on a real-world online fraud detection.

Key Words: Fraud Detection, Online Shopping, Opinion Mining, E-Commerce, World Wide Web, Dishonest Profit.

I. INTRODUCTION
World Wide Web (WWW), electronic commerce, commonly known as e-commerce, has become more and more popular now a days. Websites such as eBay and Amazon, FlipCart allow internet users to buy and sell products and services online, which benefits everyone in terms of convenience and profitability. Nowadays various websites are allowing Internet users to purchase and trade products which profits everyone in terms of effortlessness and effectiveness [1, 2]. People who shop are enjoying the advantages from online trading; at the same time traitors are also taking advantages to accomplish deceptive activities against candid parties to obtain dishonest profit. Since the emergence of World Wide Web (WWW) as in [3], electronic commerce, which is commonly called as e-commerce as in [4] become more and more popular in recent years. No often do we now think of taking a stroll through the super market before buying a mobile handset, but a healthy online research which in some cases is consequently followed by an online purchase. The scenario is not limited to mobiles alone; it even covers a wide range of products like home appliances, consumer electronic goods, books, apparels, travelling packages etc. and even the electronic content itself. With e-Commerce as in [4] then, you can buy almost anything you wish for without actually touching the product physically and inquiring the salesman for a number of times before placing the final order. In existing online shopping business model sellers as in [5] sell their products or services at preset price, where buyers can choose what product best suites them which is of good deal.
Figure. 1. Represents the Online Fraud Detection in Many Scenarios

In this section we will mainly discuss about the various aspects for identifying the fraud in e-commerce websites. Normally there are various causes which can take place for fraud in e-commerce websites. One among them is sellers fraud by placing wrong items or misleading the users with wrong products and another fraud is buy back option by attracting the users with various buy back features and finally the fraud which occurs in e-commerce sites are product price mislead. In this paper, we study the application of a proactive moderation system as in [8] for fraud detection, where hundreds and thousands of new customer's try to raise various complaints per day on the products. As this is mainly because of various levels of fraud that was done by the e-commerce websites. So we try to design an application where the fraud can be identified based on any of the levels like:

1) Not Delivered
2) Product Mismatch
3) Poor Service
4) Product Damaged

In our current application the user can able to post the comments based on any of the 4 categories and once if the user/customer review is submitted that will be send to the admin and in turn the overall rating of the product will be automatically reduced and finally overall rating of the product decide the percentage of that product.

II. RELATED WORK

In this section we mainly try to discuss about the background work that is carried out in order to identify the individual functionalities of each and every module.

Motivation

The main motivation for writing up this current thesis is fraud that is caused in online shopping. Till now we can see a lot of articles in online or offline which tells the customers about how to avoid online auction fraud. [9] categorizes auction fraud into several types and proposes strategies to fight them. In some extent some more well reputed channels try to detect auction frauds, where a lot of systems try to use the naive approaches [10] in order to identify the key properties of a good reputation system and also the challenges for the modern reputation systems to elicit user feedback. In this current thesis we try to assume the online fraud detection problem as a binary classification problem in which the main system has two important possibilities either true or false.
Another approach is to consider the variable selection problem as model selection, i.e. put priors on models (e.g. a Bernoulli prior on each coefficient being 0) and compute the marginal posterior probably of the model given data. People then either use Markov Chain Monte Carlo to sample models from the model space and apply Bayesian model averaging [11], or do a stochastic search in the model space to find the posterior mode [12]. Among non-linear models, tree models usually handles the non-linearity and variable selection simultaneously. Representative work includes decision trees [6], random forests [9], gradient boosting [8] and Bayesian additive regression trees (BART) [7].

III. Proposed Online Fraud Detection in E-Commerce Web Sites

In this section we mainly discuss about the proposed online fraud detection in E-commerce web sites. Now let us look at them in detail:

Multiple Instance Learning Approach

In the current system we try to use the multiple instance learning approach for identifying the online fraud detection in the E-commerce websites. Here for performing the procedure we try to take a labeling procedure is in a bagged fashion as in [13] i.e. when a new labeling process starts, an expert picks the most suspicious seller in the queue and looks through all his/her cases posted in the current batch; the expert determines if any of the cases had been found to be fraud, then all the cases from this seller are labeled as fraud. In these types of scenarios they are to be handled by “multiple instance learning” as in [2]. Suppose for each seller i at time t there are K_{it} number of cases. For all the K_{it} cases the labels should be identical, hence can be denoted as y_{it}. For probit link function, through data augmentation denote the latent variable for the l-th case of seller i as z_{ilt}. The multiple instance learning model can be written as

\[ y_{it} = \text{iff} z_{ilt} < 0, \forall i = 1, \ldots, K_{it} \]

Otherwise

\[ y_{it} = 1, \text{ and } z_{ilt} \sim N(x_{ilt}^' \psi_{it}, 1); \]

IV. IMPLEMENTATION MODULES

Implementation is the stage where theoretical design is automatically converted into programmatically manner. Here the application is mainly divided into 3 main modules. They are as follows:

1) Admin Module

The admin is the one who can able to login with his valid credentials and he can see list of sellers and users who try to register. He can see list of complaints which are posted by the end users based on the individual complaint and he can take an action on the seller. He can activate the seller or de-activate the seller if needed.

2) Seller Module

He is the one who initially registers and take permission from the admin. Once he is authorized he can add a set of products based on cost, discount, offers and images. If any customer/user face any problem with the products he can receive a warning or alert from the admin. If still he don't rectify the problem, the admin will block the seller and now the seller cant able to login from his end.

3) User Module

Here the user or customer is one who can enter into the system and try to login and search for various products uploaded by several sellers. Each and every product purchase has a feature to give feedback and if any customer feel that product is not genuine then he/she can post the comment based on the type of problem he is suffering with. This will be send to the admin and in turn passed to the seller and the rating chart will be automatically reduced based on the user comment or feedback.

V. CONCLUSION

In this paper we finally implemented an online model which can able to detect and identify the fraud based on users individual reviews and opinions for the products. Finally we show that this model can probably
distinguish primitive e-commerce sites and current site and extensively decrease customer complaints which are based on a real-world online fraud detection. If this technique is implemented in all E-commerce websites there will be a lot of reduction in fraud which is conducted by the sellers and the web admins.

VI. REFERENCES