

# Social Media Crowdsourcing and Detecting Financial Fraud Using Real Time System

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*Abstract - In this paper, we provide basic idea about social media crowdsourcing, along with some examples. We also discuss the process of crowdsourcing, with its advantages and potential drawbacks. Social media crowdsourcing is a new trend used by several companies or firms for getting their work done through an online community or crowd in the form of an 'open call'. The trouble with this trend is that there are so many ways things can go wrong; problems can occur and mistakes can be made by users, or trouble can be intentionally caused by fraudsters. We mention various types of fraud activities emerging in recent days. We study a Real Time System for detecting financial fraud in social media crowdsourcing. We have suggested certain ideas for the enhancement of the process of the Real Time System.*

*Keywords- Crowdsourcing, Real time systems, fraud, Twitter, Social Media, Credit card, Fraud Detection, Financial fraud.*

## I. INTRODUCTION

Fraud detection plays an important role in many industries like banking and financial sectors, insurance, government agencies and law enforcement, and more. Now-a-days fraud attempts are drastically increased, making fraud detection more important than ever.

Fraud detection enables protection of customer and enterprise information, accounts and transactions through the real-time or batch analysis of activities by users and other defined entities (such as kiosks). Social media is website and application through which users can create and share their content or can participate in social networking.

Different types of social media are dedicated to forums, microblogging, social networking, social bookmarking, social curation, and wikis. It is the collection of online communications channels dedicated to community-based effort, interface, content-sharing and association.

## II. CROWDSOURCING

Crowdsourcing is a combination of two terms 'crowd' i.e. 'group of people' and 'outsourcing' i.e. 'The practice of having certain job functions done outside a company instead of having an in-house department or employee handle them; functions can be outsourced to either a company or an individual.' . (Paul Whitla, March 2009)

Crowdsourcing is a process of getting work done through a group of people i.e. crowd using internet. The basic idea behind Crowdsourcing is to take the work and give it to a group of workers where any member of the group completes the work and get paid his/her efforts. The key advantage is that using crowdsourcing a firm assigns its task to a wide range of skilled people who have the ability to complete the task within short time span and much reduced cost as compared to the work done by the

firm's in-house employees. (Paul Whitla, March 2009)

### III. WORKING PROCESS OF CROWDSOURCING

Initially, a Company recognizes the number of tasks performed in house. These tasks are assigned to a group of crowd rather than in house employees on a stipulated fee. This task can be completed by anyone interested in completing the task, or a set of people who are expertise or having knowledge on a particular field, or the combination of people interested in the task but allowed on a certain criteria basis. Then an individual of the crowd take on the task and completes it within a given specific time. (Paul Whitla, March 2009)

After completing the task, it is submitted to the company. If the task meets the company requirements, then payment is made to the individual. Sometimes this task will be completed by many people and if completed successfully each one are paid for it. In some cases, the tasks is completed by many people and the best one which is found to be meeting the company requirements are paid. (Paul Whitla, March 2009)

Sometimes, these tasks are published on the company's website. Company access their crowd through online websites or crowdsourcing intermediaries. These websites either have their own specialized online community or they form a more generalized community who choose the task they wish to complete. Even some individuals are unfamiliar with the company they are working for. (Paul Whitla, March 2009)

One of the well known crowdsourcing intermediaries is Amazon's 'mechanical turk' website which provides a huge number of Human Intelligence Task (HIT). The website pays a small amount for each HIT completed. The website

provides facility to assign as well as complete the task that is listed. (Paul Whitla, March 2009)

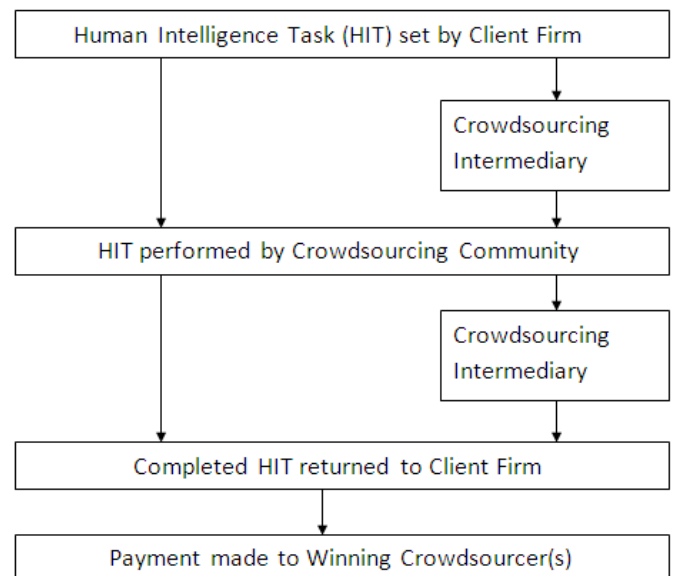


Figure 1 The Crowdsourcing Process

Some examples of crowdsourcing are as given below:

**Pepsi**—The New Pepsi Challenge invited consumers to create Ads for IPL 2015 and send it to replace the existing Pepsi Ads that will be aired during IPL. The Winner of the contest was announced a prize money of Rs 1 Lakh. After submission, the jury will select top 5 contestants while a sixth one will be chosen through public voting. The submission of the videos was also done through YouTube.

**Lay's**—Lay's announced a competition 'Do Us a Flavor' that asked the crowd to recommend new chip flavors. Voting was conducted where fans can vote for the flavors that they want Lay's to keep permanently. Fans can cast their votes through Facebook, Twitter or by texting. The winner of the competition will get a million dollars, or one percent of the flavor's sales, whichever is higher where as two runner ups will win \$50,000 each.

Looking at data from the crowdsourcing timeline, we find that the Best Global Brands are three times more likely to use crowdsourcing platforms (76% of all initiatives in 2014) than websites and social media (24%) for their crowdsourcing efforts [4]. Here's the figure:

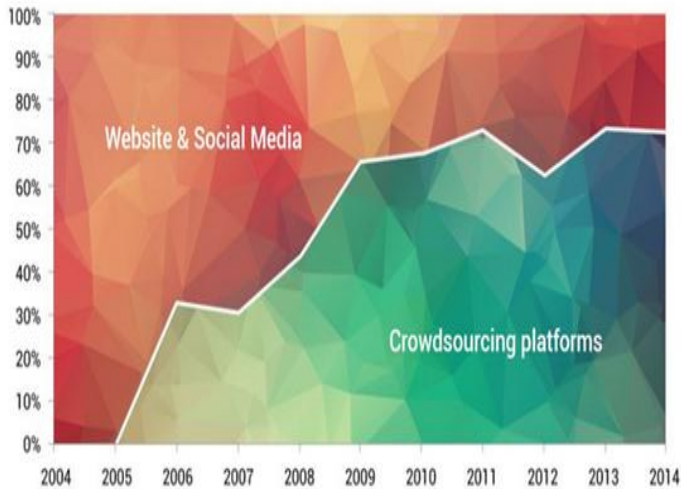


Figure 2 The growing usage of crowdsourcing platforms

### ADVANTAGES

#### 1. Work done is cheaper:

This is the main reason why crowdsourcing is widely used. Crowdsourcing involves a huge number of people and they give the best result to accomplish the task[3].

#### 2. Better value for your money:

Even though it is costlier, you get a lot of choices and you can select the best option out of it. The selected option might not be utilized, but its idea can be used in the future[3].

#### 3. Hassle Free:

There is no need to predict the task to be completed. After getting the finished forms, you can pay for the best option. There is no need to maintain employees and no need to track the process of development[3].

#### 4. Best way of Marketing:

Crowdsourcing is one of the best ways of marketing, where your products get more popularity[3].

#### 5. No need search for talent:

If you had performed the task in-house, you would have required to hire employees who can give you the best outcomes. But in case of crowdsourcing, you don't need to hire employees, instead just crowdsource your task and get the work done[3].

### DISADVANTAGES

#### 1. Crowdsourcing can go wrong:

When you crowdsource your task, you assume that it will not be leaked. Even if it gets leaked, make sure that you don't lose anything[3].

#### 2. Crowdsourcer needs to be checked:

Major issue in crowdsourcing is Copyrights. If the crowdsourcer gives the same product designs in two companies and one of them launches the product, then it might happen that the other company claims for the artwork. Hence in such cases, the crowdsourcer needs to be checked[3].

#### 3. No assurance of quality even if it is costlier:

You might get the best result by paying more. But things are not same in case of crowdsourcing. There are huge numbers of crowdsourcer who come up with their products. But you cannot expect that by paying more, you get the high quality product[3].

#### 4. Disputes will be there:

One or two people come up with their original ideas, and the rest just mimic them. Hence, it is possible that the ideas get leaked across the Internet, there's basically no way out. So disputes are bound to be there[3].

### IV. TYPES OF FRAUD

[1] Following are the several types of fraud activities (P. Jayant, Vaishali, D. Sharma, March - 2014):

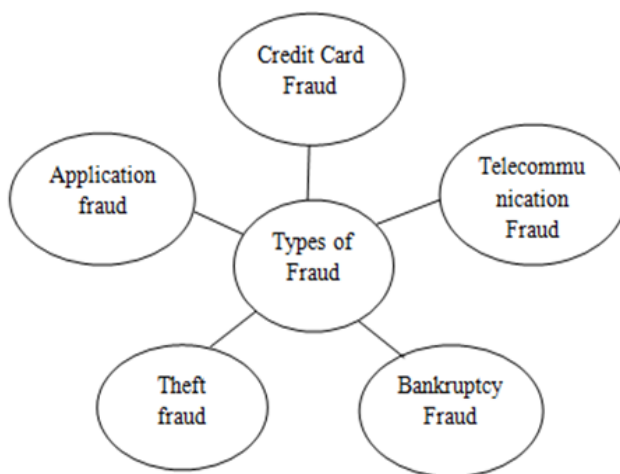


Figure 3 Types of Fraud

#### 1. Credit Card Fraud:

There are two types of credit card frauds:

- i) Offline fraud: Offline fraud is done by using a stolen physical card at any place.
- ii) On-line fraud: On-line fraud is committed over internet, phone, online shopping or when the card holder is not present.

#### 2. Telecommunication Fraud:

Telecommunication fraud is the theft of telecommunication service (telephones, cell phones, computers etc.) or the use of telecommunication service to commit other

forms of fraud. Victims include consumers, businesses and communication service providers.

i) *Identity Theft*- The misuse of information that is specific to an individual in order to convince others that the imposter is the individual, effectively passing oneself off as someone else.

ii) *Internet Fraud* - Any type of fraud scheme that uses one or more components of the internet - such as chat rooms, email, message boards, or web sites to present fraudulent solicitations to prospective victims, to conduct fraudulent transactions, or to transmit the proceeds of fraud to financial institutions or to others connected with the scheme.

iii) *Telemarketing Fraud* - Any scheme to defraud in which the persons carrying out the scheme use the telephone as their primary means of communicating with prospective victims and trying to persuade them to send money to the scheme.

iv) *ATM Fraud* - Use a special information storage device to secretly copy the magnetic strip on the back of credit and debit cards during normal transaction such as an ATM withdrawal or in-store purchase (this is called skimming)

#### 3. Bankruptcy Fraud:

Bankruptcy fraud means using a credit card while being insolvent.

#### 4. Theft fraud:

Theft fraud means using a card that is not yours. The perpetrator will steal the card of someone else and use it as many times as possible before the card is blocked.

5. *Application fraud:*

Application fraud is when someone applies for a credit card with false information. To detect application fraud, the solution is to implement a fraud system that allows identifying suspicious applications.

To detect application fraud, two different situations have to be distinguished: when applications come from a same individual with the same details, called duplicates, and when applications come from different individuals with similar details, called identity fraudsters.

## V. DETECTING FINANCIAL FRAUD IN SOCIAL MEDIA CROWDSOURCING USING REAL-TIME SYSTEM

Now-a-days, huge amount of data transaction takes place over the internet. The information used for transaction in banking and credit card companies is very confidential. Companies use social media as a platform for inviting crowd to participate in their contest, hence there are possibilities of financial frauds in such cases. This paper shows the possible ways of detecting financial fraud events in social networking sites.

The main aim of this real time system is to detect financial fraud in social media crowdsourcing. This real time system comprises of four major modules (TimothyMatti, Yuntao Zhu and KuaiXu, December 2014):

- a) Data collection,
- b) Data mining from unstructured texts,
- c) Correlations of heterogeneous data sources,
- d) Real-time summary.

### *a) Data collection*

It constantly queries streaming servers of Twitter.com and it matches the realtime tweets with the pre defined keywords like fraud and bankruptcy.

### *b) Data mining from unstructured texts*

In this, twitter streams are considered as input and financial fraud related events are extracted. It also extracts some personal informations like name, location and age as well as the particular types of financial fraud events from the tweets. There are certain heuristic rules for the accuracy of the extracted information.

### *c) Correlations of heterogeneous data sources*

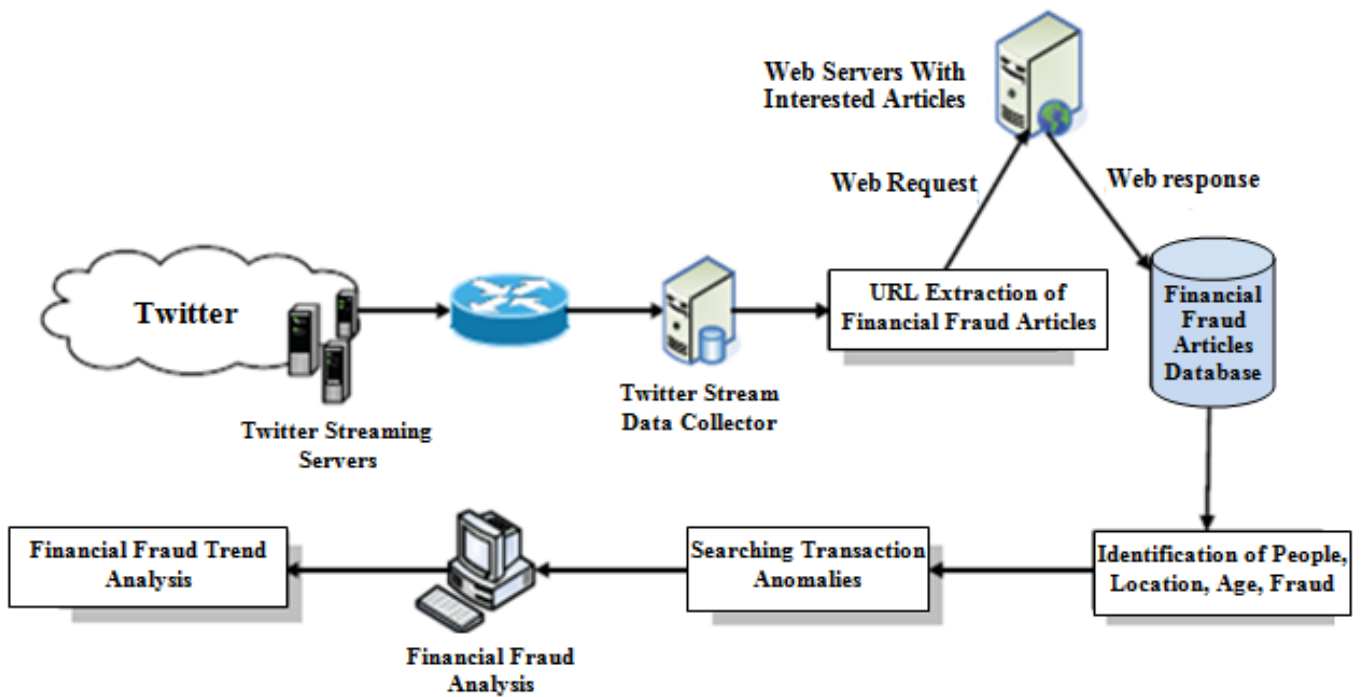
The extracted information from the tweets is correlated with financial transaction databases from a large credit card company. With the help of the correlation, abnormal transaction patterns of the suspected person can be identified.

### *d) Real-time summary*

It generates realtime summary reports for further processing for e.g. to avoid further financial loss, immediately close related credit cards.

## VI. LITERATURE SURVEY

[1] gives an overview of a real time system that is used to influence social media crowdsourcing for fraud detection. It is concluded in [2] that Crowdsourcing is a relatively new term for tapping the potential of large and open crowd by an organization and it describes a process of



**Figure 4 Real-Time System of Financial event detection via social media crowdsourcing.**

organizing labour, assigning tasks to the online community and offering payment to anyone who completes the task. [3] explains few tips to keep in mind when outsourcing jobs to the crowd. It concludes that crowdsourcing comes down to two things: what your problem is, and how much you are willing to pay for the solution. In [4], the graph illustrate the usage of crowdsourcing platforms. [5] reviews recent findings in the credit card field and discusses measures like pair-wise matching to detect fraud activities. [6] illustrates about the different types of fraud activities.

### **SUGGESTIONS FOR FRAUD DETECTION IN ILLUSTRATED REAL TIME SYSTEM**

I. In illustrated real time system, the second module data mining from unstructured texts extracts personal identification information including name, residence location and age. Fraudster can have several cards on the same address or name. Those giving the same address under different names can be indentified using pair wise matching technique. We can pair wise

the personal identification information such as the name, address and age. Examples would be “last name and age and postal code and address” or “last name and address and e-mail and gender”. By those queries, individuals with more than one card are identified. Those are quite simplistic queries but will remove most duplicates from the system. This information is crucial to the efficiency with which the detection system can process the data (Linda Delamaire (UK), Hussein Abdou (UK), John Pointon (UK), 2009).

- II. To prevent fraud, the system must be able to tap into a global network of millions of historic payments and transactions, and detect abnormal activities.
- III. This real time system is proposed only for twitter. We can also implement in other social networking sites like Facebook, Google+ etc.

## VII. CONCLUSION

In summary, this paper describes that Social media crowdsourcing offers new opportunities for everyone from individuals to large organizations, but a growing number of incidents, ranging from misunderstandings to millions of dollars in damages demonstrate the risks involved in using these technologies. The next step in future research, we can validate and improve the efficiency of the real time system discussed in this paper.

## AUTHORS PROFILE

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