

Fraudster Community Detection in online auction

Poonam Biradar¹, Radha Petlur², Ms. P G Sunitha Hiremath³, Sowmya B⁴, Vijayakumara Katti⁵

¹ Student of BVBCET, Hubli, India

² Student of BVBCET, Hubli, India,

³ Associate Professor in BVBCET, Hubli, India,

⁴ Student of BVBCET, Hubli, India

⁵ Student of BVBCET, Hubli, India,

Abstract— As the number of internet users are increasing, the people using social networks are increasing. Many online auction sites like ebay.com, ebid.com allow sellers and buyers come into contact from different places in order to sell or purchase products. The online auction sites allow users to leave feedback to each other. Many fraudster leave bogus positive feedback to increase their profit. In this paper we propose a system to find those fraudsters in online auction site. The feedback posted by users are extracted and grouped into positive and negative comments using machine learning algorithm. Further compared with actual sellers and buyers in order to find the fraudster communities.

Keywords— *Fraudster*

I. INTRODUCTION

Now a days many people merchandise using online auction sites because they are simple and easy for marketing. So that online auction network sites have much more profit in revenue stream.

These auction sites provide with the option to leave feedback on each other on their transaction. User who gets more positive feedback is considered to be more trustable seller/buyer. But many of the sellers to increase their trust level accumulate bogus positive feedbacks. Although auction sites are more useful than traditional retailer shops people are reluctant [1] to choose them because of bogus positive feedback.

We have observed in [1] that to detect the fraudsters, link between sellers and buyers is necessary (where in transaction graph is assumed). We are proposing our own auction site viz., eQuick from this auction site actual sellers and buyers list is achieved by getting payment transaction between them.

As proposed in [2] the comment extraction is achieved using regular expression. The proposed system aims to extract comment using JSOUP parser. [3] uses opinion analysis and topic combination for grouping of extracted comments. The proposed system achieves grouping of comments using sentiment strength algorithm.

The below section is as follows: section 2 is about system model and section 3 gives complete idea of proposed system.

II. SYSTEM MODEL

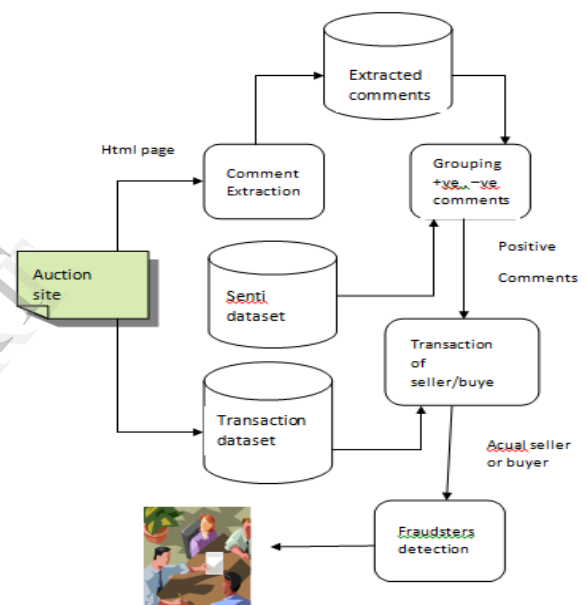


Figure. 1 Proposed system of fraudster community detection in online auction.

System model consists of four modules: (a) Comment extraction, (b) Grouping of positive and comments, (c) Transaction of actual sellers and buyers, (d) Fraudster detection.

The goal of proposed system is to detect the fraudsters communities based on the feedback. Users post comments on products in auction site. These comments are extracted from html source file of auction site using JSOUP parser. Content present between DIV tag shall be taken as comment and is extracted and stored in file. These stored comments are taken as input to next part. Extracted comments are grouped into positive and negative comments using one of the machine learning algorithm called NER (Named Entity Recognition)[1].

Sentiment analysis technique is used for grouping of comments into positive and negative. Based on weights assigned to each terms, the grouping of comments is achieved. Seller/buyers list is derived from positive comments and are compared with actual sellers and buyers list. Actual sellers/buyers are those who has transacted on particular item on auction site. Fraudster list will be given out with the details like name, comment they posted on auction site.

III. METHOD

A. Comment Extraction

In this module, the comment from html page is extracted. Using JSOUP parser the comment is extracted from div tag and stored in file. Taking html url as input to this module, we extract comment from the html source page. Stored comments from the file shall be taken for sentiment analysis. Algorithm is as follows:

```

Algorithm 1: Comment Extraction
If URL connection
    Open connection
    On response Data
        Jsoup parser
        Until end of 'body' tag
        For each 'div' tag
            Extract text between div tag
        Else
            Error in opening connection
    
```

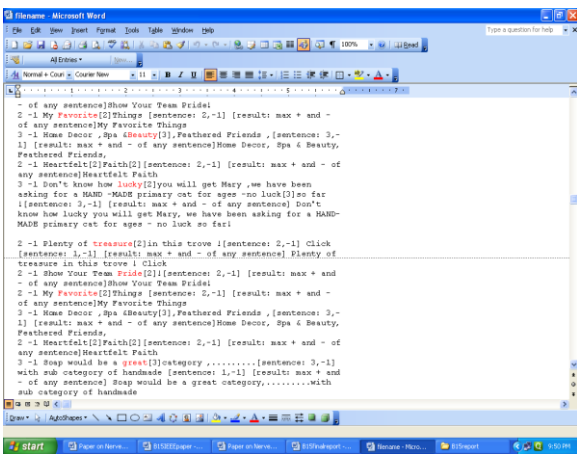


Figure. 3.1 Output of comment extraction

Figure.3.1 shows the output of comment extraction. Here are the comments from ebid auction site is extracted and stored.

B. Grouping positive and negative comments

The extracted comments are grouped into positive and negative comments using sentistrength analysis algorithm. Positive comments are grouped by opinion analysis. Here each term is assigned with weights. Weights are available in dataset of sentistrength. Positive and negative weights shall be calculated. Group of positive comments shall be extracted from comparison of weights assigned to each terms. Figure 3 shows the positive comments extracted from the ebid auction site. Algorithm is as follows:

```

Algorithm 2: Grouping of comments
Initialize: pos_wtg, neg_wtg =0 are positive
and negative weights of sentistrength
Sentistrength
Initialize sentistrength
Compare with dataset
Compute sentiscores
If pos_wtg > neg_wtg
    Print positive comment
Else if pos_wtg < neg_wtg
    Print negative comment
Else
    Print neutral comment
    
```

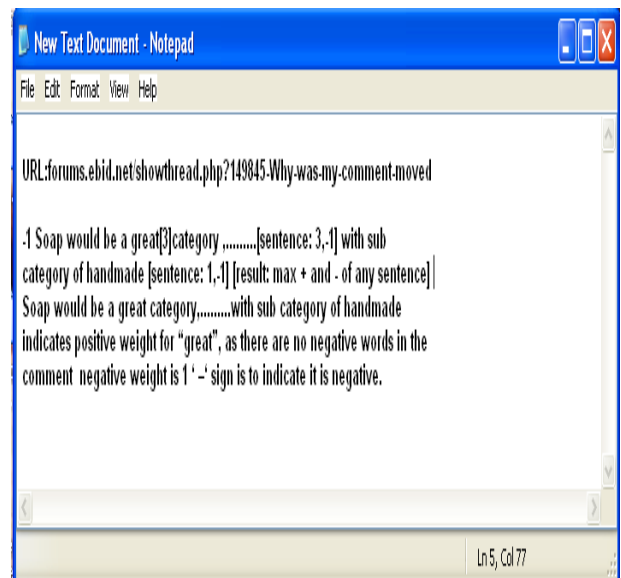


Figure. 3.2 Output of grouping positive and negative comments

B. Transaction of actual sellers and buyers

The transaction of actual sellers and buyers is achieved through the payment transaction between them. The sellers post their products to be sold in auction site. The buyers on other hand, buy the product by completing the payment transaction. When the buyer completes payment process, he/she is considered to be true buyer. This buyer details are stored in database.

All sellers		All buyers		True sellers		True buyers	
Seller name		Buyer name		Seller name		Buyer name	
Pooja		Poonam		Pooja		Poonam	
Radhika		Pooja		Radhika		Suresh	
Sonamya		Pooja				Pooam	
Taseem		ayy					
Bharana		Suresh					
Makeshwaran		Pooam					

Figure. 3.3 output of transaction of actual sellers and buyers.

Figure 3.3 shows the details of all sellers and buyers along with actual sellers and buyers who are involved in payment transaction.

C. Fraudster detection

In this module, user details who posted positive comments and transaction of actual sellers and buyers are compared. From the details of actual sellers and buyers fraudsters are detected. Extracting details of sellers and buyers shall be done from the auction site.

V. RESULTS

Extraction of comments and grouping into positive and negative comments is achieved using JSOUP parser and sentiment strength analysis algorithm. The actual sellers and buyers details is also achieved by creating own auction site and registering users and accessing their payment transaction. The username extraction from html source page of auction site is in progress.

VI. CONCLUSION

The proposed system works for detection of fraudsters community in online action site which helps the user to know each other honesty.

The authors would like to thank Ms. P. G Sunitha Hiremath, Associate Professor, BVBCET, Hubli who has always motivated us throughout the project.

REFERENCES

- [1] ZhengYou Xia , Zhan Bu “Community detection based on a semantic network” College of Computer Science and Technology, Nanjing University of Aeronautics and Astronautics, Nanjing 210016, China 2011
- [2] Meng-Hsuan Fu, Chih-Hui Peng, Yau-Hwang Kuo “Hidden Community Detection Based on Microblog by Opinion-Consistent Analysis” in International Conference on Information Society (i-Society 2012)
- [3] Kai Zhu, Yong Guan and Lei Ying “Detecting Hidden Communities in Online Auction Networks” Department of Electrical and Computer Engineering, Iowa State University 2012 IEEE