

Prediction of Fraud App Detection Techniques

P. Gopinath, V. Ariyamala



Abstract: *The use of mobile has increased a lot in day to day life. In this advance technology new apps are been discovered a lot and these apps are available in many app markets. The app market contains a lot of similar apps in it and we confuse as which is the apt one to use. The apps some are useful and some are fraud. The detecting fraud app helps user to easily identify the real one and download it. The revelation of fraud app through analysis of review, rating and ranking using datamining technique. The analysis of the app using sentiment analysis technique i.e. a datamining technique used to analyse the sentiment of the reviews. The analysis of the review predicts the positive and negative rating apps separately. The classification score to extract rating and ranking evidences is given with fuzzy score classification. The main objective of this paper is to survey on different techniques and methodology used for detecting fraud apps.*

Keywords : *Evidence Aggregation, Fraud detection, Fuzzy score, Mobile app, Rating and Ranking, Sentiment analysis, stemming, User review.*

I. INTRODUCTION

The easy and compatible way to use a new technology is through mobile software application generally called as APPs. Web pages also provides the service but apps are user friendly. A competitor app is always developed to newly emerged one. The related apps some are real and some are fake ones. In many cases Apps are marketed with paid marketing services and increasing their priority in the App market but their review gives the original trust of the App. There are vast number of reviews for an App and it is not easy to find out the trustworthy of the App through reading the review. In an alternate way sentiment analysis that analyse the reviews into best, good, neutral, bad, worst and the rating for the App is given accordingly. These evidences are calculated by giving a fuzzy score to it. The prediction of fraud App is done on basis of three unprompted detection techniques confirmation such as (i) Review confirmation, (ii) Ranking confirmation and (iii) Rating confirmation. The analysis on above techniques the Apps related with positive score and negative score. The additional extraction of evidence are added to the calculation of score. The Apps with lot of negative score are leery App.

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* Correspondence Author

P. Gopinath*, Student, Computer science and Engineering, Saveetha University, Chennai, India. Email: pgopinath56@gmail.com

V. Ariyamala, Associate Professor, Computer science and Engineering, Saveetha University, Chennai, India. Email: ariyamalav.sse@saveetha.com

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II. LITERATURE SURVEY

In this paper “Discovery of Ranking fraud for mobile Apps” [1] the author exclaims that App leaderboard on of the reason for vast number of downloads and provide millions of dollars as revenue. So, to increase the attractiveness of App user online service like “Bot Farms” are used to marketing the App and advertise it. The system proposed is to take example of leading sessions and events extracted the ranking phases. The evidences are recorded for reviews, rating and ranking evidences. The evidences are evaluated with EA-RFD approach (Evidence Aggregation based ranking Fraud Detection).

In this paper “Genuine ratings for mobile apps with the support of authenticated users’ reviews” [2] the pioneer board rank returns the number of downloads and their benefits. To inflate the app, users write fake reviews to reduce or increase fame of the app. These spam reviews are categorized as malevolent negative audits. The clients are persons who give reviews about particular app. If the client deletes the app the user has no chance to give comments whether it is positive or negative comments. The author discussed on three categories untruthful audits, survey and non-survey on the brands. These classifies the review that are important.

In this paper “An Implementation to detect fraud app using Fuzzy logic” [3] the fraud evidence system related into two groups either good or bad. The review and ranking evidences are taken to confirm the fraudulent apps. The reviews are converted into rating and divided into classes for mean calculation that calculates rating variance and review variance separately and analysis the obtained pattern. The mean review variance is analyzed through visualizing graphically. The visualizing and experimental analysis is done on app id- com.developer. copaoro. Further final variance is calculated for review and rating that is greater than threshold frequency.

In this paper “Ranking Fraud and fake review detection for mobile Apps” [4] the fake reviews are removed. Here, J48 classification algorithm is used that provides a testing file. Comparing the testing file with the review it is easy to identify the fake reviews and eliminate the fake reviews. To find the leading events related to ranking using k* recognizing and construct period of prevalence’s for ranking records only.

In this paper “BehaviorDroid: Monitoring Android Application.” [5] the proposed system monitors App properties at run time.



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The BehaviorDroid framework is used as it monitors the multiple apps and their properties at run time. The file reader takes input files in BehaviourDroid. The BehaviorListener listen for the events occurred and convert it into symbols that used for monitoring automata.

In this paper “Detecting Fraud Apps Using Sentiment Analysis” [6] the fraud product selling in online or application on mobile is detected through analyzing the application. Here, there are two modules are used one is for user and other for the Admin. The admin module where a user can add an application and details of the app. The user module where a user can login and give their prompt reviews to the application. These are analyzed by the admin and the admin detects whether the applications fraud or trusted through the analysis of user reviews. This type of benchmarking reduces the fraud applications.

In this paper “Mobile App Classification with Enriched Contextual Information” [7] the study of instances is limited contextual data about the app. As the user of mobile apps are increased the use of mobile apps are increased rapidly. The relevant apps are segregated into group. The web knowledge and real-world contexts are enriched the contextual information. The context aware use of app is recognized where the apps are to be used at certain location, specific time. The App taxonomy is used to analyze the semantic meanings. The search engine is used to web search the enrich features of the application and obtain a snippet that adds additional information about the application.

In this paper “Mobile Apps Opinion Analysis Using Emoticon” [8] the author determines that ranking based evidences is not appropriate to decide the trustworthiness of the app. So, along with that have to verify the reviews and survey records and audit history. In this prolongation of unsupervised learning a new advancement is added as emoticons that records the emotions of the review. Here, opinion analysis is used to account reviews with alphabetic words and emoticons. The reviews and comments that occurred in documentary level are recorded. The smiley dictionaries and sentiword dictionaries are used to determine the score. The score is calculated using rule based and fuzzy logic approach to give output.

In this paper “Detection of Fraud Apps using Sentiment Analysis” [9] the ranking of fraud evidences is observed through historical records. In detecting fraud there are mainly two phases one is to recognize the leading sessions and other is to recognize the evidences for ranking fraud. In recognition of leading sessions where the Apps historical rankings recorded and identified the leading events this helps to conclude the leading sessions. Then the evidence-based ranking is done to detect the fraud of the application. According to the evidence an aggregation method combines all the three score and rule-based classification to calculate the score and prioritize the App accordingly.

In this paper “Discovery of Ranking of Fraud for Mobile Apps” [10] the author says ranking fraud to app doesn't occurs always and to be determined the several important challenge. The first challenge is to detect the time fraud happens and the next challenge is to detect the deviation of app reviews. The ratings and reviews given are identified and recognized as a historical record on the leading event. The ranking based confirmation is done on three phases mainly rising, maintaining and recession phase. The rise and fall of

priority to the app in leaderboard. This examine the issues of singleton survey spam detection.

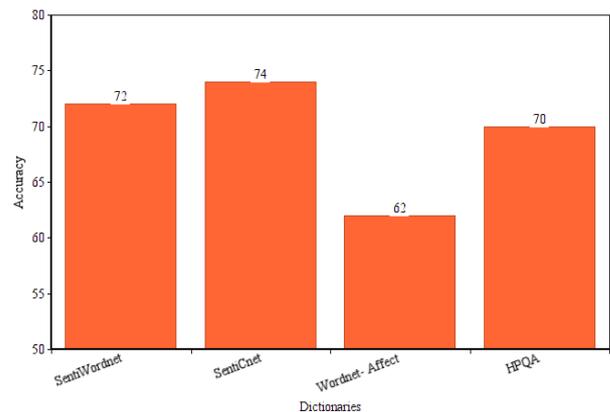
III. METHODOLOGY

The fraud App detection is done using leading events mining of sentiment analysis. The sentiment analysis is mining the sentiment of the text i.e. reviews. The methods used for sentiment analysis are merely classified into two types: [i] Lexicon based approach [ii] Machine learning based approach.

[i] Lexicon based approach:

The Lexicon based approach is also known as Rule based approach. In Lexicon based approach it involves the calculation of sentiment from semantic orientation words or phrases that occur in text. The sentiment analysis is done on basis of manually crafted rules. The rules are identified by subjectivity and polarity using Lexicon. A lexicon is a dictionary of positive and negative opinion of words or phrase. Thus, lexicon follows certain rules and regulation it is also known as Rule based Approach.

In Lexicon based approach dictionaries contains the words or phrases of positive and negative opinions. The dictionaries like sentiwordnet, SenticNet, WordNet-Affect, HPQA are used. The different dictionaries used in Lexicon based approach and their accuracy are shown in below graph.



[ii] Machine Learning based approach:

The machine learning approach to sentiment evaluation in most cases belongs to supervised classification. In a machine learning based techniques, sets of files are needed: training and a test set. A training set is utilized by an automatic classifier to study the differentiating characteristics of documents, and a test set is used to check how well the classifier performs. A variety of machine learning techniques have been adopted to categorise the reviews. Machine learning techniques like Naïve Bayes (NB), maximum entropy (ME), and support vector machines (SVM) have achieved tremendous fulfillment in sentiment analysis.

Lexicon based approach	Machine Learning based approach
Advantage: 1. Scalable 2. More accurate method of approach	Advantage: 1. No training of data required. 2. Easy to debug.
Disadvantage: • Training of data is required.	Disadvantage: • Low rate of Accuracy compared to the other approach.

IV. RESULT AND DISCUSSION

The supervised machine learning shows better performance than unsupervised lexicon method. Lexicon method is also important as the label of training data required for unsupervised learning is very less compared to supervised learning. Among the techniques used (SVM) support vector machine has high accuracy rate than other techniques. The below table represents the different techniques used and their percentage in use and rate of Accuracy obtained.

References	Technique used	% in use	Accuracy
[3] Neha M. Puram et.al	Lexicon +Fuzzy Logic	35	73
[4] Monali Zende et.al	J48 classification	2	85
[2] K.Manoj et.al	SVM	25	92
[6] Rekhavarati et.al	Decision tree	15	70
[5] Alexis Sliva et.al	Clustering	6	67
[9] IGauri Rao et.al	Classification+stemming	5	72
[8] Varsha A et.al	Naïve Bayes	5	62

V. CONCLUSION

In this paper a survey is conducted on different sentiment analysis techniques used for text mining to rate the app and different techniques to rate the app. Mining the data of leading events to classify based on events confirm by ranking based confirmation, review based confirmation and rating based confirmation. The mere future scope is to analyze the latent relationship between rating, review and rankings. Further, the fraud detection approach is extended with other mobile App related service, such as Mobile App recommendation for enhancing user experience.

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AUTHORS PROFILE



P. Gopinath, pursuing Bachelor of Engineering (B.E) in Computer science and Engineering department at Saveetha University, Chennai. He have done publication in national conference. This paper is related to my Final year project fraud app detection using sentiment analysis.



Mrs.V. Ariyamala, She completed M. Tech information technology in veltech university, Chennai. She is working as an assistant professor in saveetha school of Engineering, saveetha university, Chennai. She is interested in Mobile computing, networks.

