

Ranking Fraud Detection System and Recommendation System for Mobile Apps

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Abstract:

Ranking fraud in the mobile Apps is nothing but the false or fake activities which are going to be done in Apps popularity list for bumping up the fraud App . It is very easy for the App developer to use the fake App and fake rating for committing the ranking fraud . The research in ranking fraud of the mobile App is limited . For that purpose a ranking fraud detection system and the App recommendation system is proposed . There are mainly three types of evidences , Ranking based evidences , Rating based evidences , and Review based evidences . These evidences can be obtained from Apps ranking , rating and review history .Then proposed an optimization based aggregation method for integrating all these evidences for the fraud detection .In this way more effectiveness and regularity of the ranking fraud detection system is obtained and the original App is recommended to the user.

Introduction

Now a days the mobile Apps has developed at an increasingly high rate . The development of Apps were increased by several millions of times at different App Store . For developing mobile Apps the different App Stores launches App Leader boards daily. The App Leader boards does the chart ranking of most popular Apps . Also the other important role of the App Leader board is promoting mobile Apps and the way for earning . The App which is having rank on the top of the App Leader board is going to download by many number of user . But now a day , some App developers are going to develop the fraud App and intentionally upload their Apps on App leader board , and tries to maintain the chart ranking on an App Stores . Therefore the main aim is to detect ranking fraud of mobile Apps . Actually fraud occurs within the leading sessions .Therefore we have to identify fraud occurred within leading sessions. For that purpose we propose an algorithm to identify the leading sessions of each App based on its history of ranking records and the analysis of its ranking behaviours . Therefore some fraud evidences are characterized from Apps history of

ranking records. Then three functions are developed to extract such ranking based fraud evidences. Therefore, further four types of fraud evidences are proposed based on Apps rating and review history, recommendation and app fraud history which reect some anomaly patterns from Apps historical rating and review records. In addition, to integrate these types of evidences, an unsupervised evidence aggregation method is developed which is used for evaluating the credibility of leading sessions from mobile Apps.

Review of literature

A. Klementiev, D. Roth, K. Small, and I. Titov uses the method for the learning the setting of aggregation of the full rankings and aggregation of the top-k lists . And also demonstrated a significant improvement over a domain agnostic baseline in both cases . E.-P. Lim, V.-A. Nguyen, N. Jindal, B. Liu, and H. W. Lauw shows the degree of spam is measured by the scoring methods for each reviewer and then it apply for the Amazon review dataset. After measuring degree of spam select a subset of highly visited reviewres for next inspection by our user calculator . It can be done with the help

of a web based spammer evaluation software . Y.-T. Liu, T.-Y. Liu, T. Qin, Z.M. Ma, and H. Li. explain the main focus is on the Markove Chain based rank aggregation

.Here the optimization is not a convex optimization problem because of that it becomes hard to solve , thats why the supervised rank aggregation method is evolved from unsupervised rank aggregation method . N. Spirin and J. Han Web spam detection techniques are discussed in systematic way on the basis of algorithms and underlying principles . Here algorithms are categorized into different ways on the basis of different things .

Proposed System

The main target is to detect ranking fraud for the mobile App. Mainly fraud happens in leading sessions. Thats why rst propose the effective algorithm for identifying leading sessions of App which is truly based on the ranking history . after that Apps ranking behaviours is analyzed for nding the fake App . Because the fake Apps have different ranking records as compared with the normal App . Therefore from Apps history of ranking records we have to characterize some fraud evidences and then develop different functions for extracting ranking based fraud evidences . There are two types in fraud evidences which based on Apps rating and the review history .

In ranking based evidences there is a specic ranking pattern which is going to satisfy by the history of the Apps ranking behaviours in a leading event . There are mainly three different ranking phases rising phase , maintaining phase , and recession phase .

In rating based evidences , when App were published it can be rated by the downloaded user after downloading the App . Rating of the user is one of the most important way for Apps

advertisement . The App having higher rating attracts more user for downloading the app and it ranks high on the leader board . Therefore rating plays important role for ranking fraud .

In review based evidences as like of the rating some App Stores allows users to write their comments as App review . With the help of review user gives their experience of the particular mobile App . Therefore review also plays important role in ranking fraud . After that the evidence based aggregation method used for integrating all these evidences . then nd the fraud App from the App Store and Recommend the original App from the App store .

System Architecture

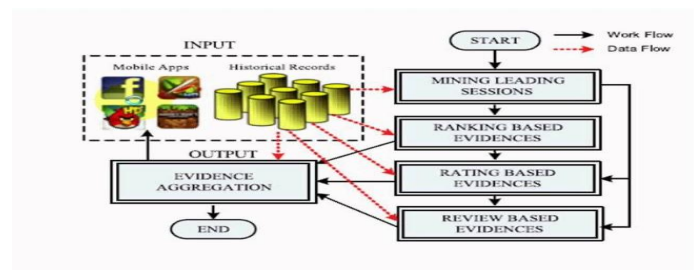


Figure 1: Block Diagram of Proposed System (System Architecture)

The system architechure describe the overall function of the system . As the number of mo-bile Apps increases for that to detect the fraud App this paper proposes a simple and effective system . The above fig. shows the overall structure of ranking fraud of mobile App .

The architecture is divided into four module :

Module 1 : Leading events

It observed that mobile Apps are not ranked high in the leader board , that

ranked only in some leading events which form the different leading sessions on the basis of analysis of ranking history .

Module 2 : Leading sessions

Leading sessions of mobile App gives the period of popularity . Thats why leading session plays important role in ranking manipulation . Ranking fraud is detected by extracting leading sessions from its ranking history .

Module 3 : Identifying the leading sessions for mobile Apps

For mining leading sessions there are two different steps . In first step , identify leading events on the basis of ranking history of the Apps . In second step , for constructing leading sessions merging of the adjacent leading event is done . For that purpose the algorithm is demonstrated .

Module 4 : Identifying evidences for ranking fraud detection

1 Ranking based evidences :

For finding the fraud evidences and for getting the ranking history of the Apps analysis of the leading events is done . Apps ranking behavior observed in leading event is satisfied by specific ranking pattern .

2 Rating based evidences :

Ranking based evidences are not sufficient for detecting fraud of mobile Apps . If user downloaded the App , the rating has been done after downloading that App . If the rating of the App found at higher level on leader board then that mobile App is mostly attracted by the people . Therefore these history of rating is used for

developing the rating based evidences which is then used for fraud detection .

3 Review based evidences :

As like of rating , the textual comments to the App is nothing but the review of that App . User gives comments to the App after downloading that App . These reviews of the App are referred by the most of user before downloading that App . On the basis of these review it becomes easy to find the fraud App .

Conclusion

The work proposed the novel approach for the development of a ranking fraud detection system for mobile Apps. Firstly, identification of rating based evidences is done. Secondly, identification of review based evidences then by mining leading sessions ranking fraud evidences is collected. And finally system performs the aggregation of all three evidences to detect fraud Apps. Experimental results showed the potency of the proposed approach. Our proposed system will definitely offer substantial benefits and provides an opportunity to prevent fraudulent Apps being used in market and recommend the fraud free App .

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