Marketing or Newsletter Sender Reputation System Using Association Analysis Concept

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Abstract—At present, many businesses use the advertising emails to communicate with their customers for various objectives. Often advertising emails are sent to unwanted recipients that might be from not up-to-date recipient list or bad senders. Currently, the methods of classifying the sender whether they are good sender or not have still been ineffective. Such events can lead to annoyance to the recipients. The recipients might permanently deny to accept these emails or even worse, the business image of email sender could be damaged. Hence, we propose the use of the centralized user feedback database with the sender reputation system to solve the problems previously mentioned. We use the association analysis concept to receive advertising emails from senders by considering relationship between the recipients and senders. Besides, to classify senders accurately, sending histories and the certificated authorities (CA) or the autonomous system numbers (ASN) are also considered. The proposed method can improve significantly toward the classifying process. For the framework validation, the results show that the detection accuracy rate is increased 30.50%.

Keywords-FMNSRS, email, reputation system, association analysis, marketing email, newsletter email

I. INTRODUCTION

The emails in recent years have been increasing popularity dramatically. Almost all businesses use the email method to send their information to customers for various objectives, such as advertising, purchase order, sale, and customer care service. Moreover, the email gains the advantage in lower cost and faster than the other communication methods. The recipients and senders can also send and access the information anywhere and anytime via the Internet. However, the problem of unwanted email, commonly known as email spam, is an important issue to face.

Often emails are sent indiscriminately, indirectly or directly, to unwanted recipients that might be from not up-to-date recipient list or bad senders. The most recipients are flooded with both the welcome and unwelcome emails. Also, it consumes disk storage space, computational resources and network bandwidth of the recipient email systems and also affects recipients to work efficiently. In addition to that, the recipients may be harmed by the attackers. Such events can lead to boredom and annoyance to the recipients. As the consequences, the recipients might permanently deny to accept these emails or even worse the email owner business or product image could be damaged. As with an email spam, the use of the advertising emails, marketing or newsletter emails, violates the rights of the recipients that causes the critical problems same as email spam problems previously mentioned.

In this paper, we propose the use of the centralized user feedback database with the sender reputation system to classify marketing or newsletter emails. In additional, we use the sender reliability technique to solve calculating the sending credit scores for the new email system member. The system considers the reliability of the senders by considering the sending credit scores. The sending credit scores are calculated by considering the certificated authorities (CA), the autonomous system numbers (ASN), the sending histories in the blacklist system and the age of the domain name. The good senders will have the high sending credit score. Domain-based authentication systems previously mentioned can help the recipient systems classify authenticated sending domains as either spammy or not spammy. Spammers are easily identified, as are good senders. In addition to that, we use the association analysis concept to solve classifying marketing or newsletter emails more efficiently although the statistic reports and the number of the sending emails are not enough. The system can choose to receive marketing or newsletter emails from the senders by considering relationship between the recipients and the senders and also the friends of recipient.

In the next section, we will discuss the background information and previous studies to manage and classify spam emails and also the sender verification processes. Section III explains our research design and process diagram. Section IV validates the effectiveness of the modified FMNSRS. Finally, Section V concludes and presents future directions.