

Energy Consumption In Email Communication

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Abstract— With the high speed technology based communication in today's world, there will be a duplicate copy of the messages. Due to the duplicate copy of the message the energy is wasted in the network. This paper describes the new system which employs multilayer, trim function and encryption concept to avoid the problem in technology based communication. Today's technology in social networks contains frequently multiple distinct types of connectivity information. The indirect acknowledgement of friend relationships might match behavioral measures, which link the user according to their actions and behavior. We can represent this by the multi-layer graph that means a single source which has different ways of path. In this multi-layer graph where each edge will be a unique one over the same vertices, the edges present in the different layers are typically related but they will have different semantics. When more than one source is connecting to another obviously there will be an occurrence of noise. In our work we analyzed that, when persons are communicating through social networks there will be at least 40% chances of duplicate messages where they can occupy a more space. In this paper a multifaceted technique is achieved by reducing the noise using a multi-layer.

Keywords : RAC , Bayesian Model , Multilayer , Trim , Cipher text.

1 INTRODUCTION

Technology is a rapidly growing concept in the real world. For small to large things we are using a technology in different ways. Here in this paper the main concept is, how we are going to avoid the repetition of messages in communication through email. As we said technology is rapidly growing, when we take the real world into account and every person is sharing the information with other people through

email only. The percentage of sharing information through email related to their work etc is highly increasing. So there will be a chance of repeated messages to the same person. When the same messages are

repeated more than once it will occupy more memory spaces, so there will be a wastage of memory space. We know that networks mean there is a chance of noise. Consider that for each and every message the token will

be generated, sending the message again the token will be generated for the same message where it will produce the noise that is nothing but the duplication of data redundancy of data.

2 RESEARCH CONTEXTUAL

This technique is applied in small communication organizations, where they transmit email for communication. Here we have used subject-based and content-based filtering methods, and also with the trim function.

2.1 Subject and Content Based Filtering

When the user transmits email, both they will specify subject and content based. Here the first technique is to compare the subject and content

sent by the user in the database of the receiver. Before we compare, we have to use a trim function technique to remove the blank spaces in between the letters. Because if there is any blank spaces, it will make difference in comparing. In order to get the accurate matching of the Database we using this trim function.

Once the trim function done with the subject and content part of the email, it will be scanned and compared in the receiver side Database, if in the receiver side database the content has matched, i.e., if the subject and content is already existing in the receiver side. In that case the email which was sent by the sender will get rejected. It will not get deliver to the recipient.

2.2 Encryption and Decryption

With the help of cipher text key 1, the sender can encrypt the content and subject. This encryption concept is necessary while we are communicating through technology. Cipher text is for security purpose of the messages exchanged between the sender and receiver. In order to achieve the quality of service cipher text concept is implemented in this paper. Cipher text is implemented here as a optional, i.e., means it is not mandatory for the user to send the email with encryption technique. This cipher text concept is fully user dependent here, i.e., they can send the email with or without encryption concept.

The same way once the email is delivered to the receiver, if the email is encrypted it can be decrypted by the receiver to see the original text. Incase if the sender has not encrypted the email then the user can easily view the message.

2.3 Trimming Function

The trimming function is implemented at the receiver side before the email reaches to the receiver inbox. Whatever the message sent by the sender, it will get scanned, before the scanning process the message in subject and content both will get trimmed. This trimming concept is necessary to avoid the duplication of messages, because mainly we are using this trimming function to remove the spaces in between the letters. After removing the spaces in the email it will be scanned or checked by comparing the subject and content of

email at the receiver side database.

Here only the main process is happening in the communication. Once it will get scanned if it found the matches of the messages in the receiver database, the message will get discarded before it reaches to the receiver inbox. Incase if the content and subject of the messages has not matched with the receiver side database, it will get delivered to the receiver.

2.4 RAC Algorithm

Step 1: Input from the user [actual email from the sender]

Step 2: Using cipher text concept, for secure delivery of messages.

Step 3: Passes through the multi layer of networks

Step 4: Trim function in order to remove the spaces in between the content and subject of the email.

Step 5: Scanning process done with or without cipher text

- a. Checking receiver address
- b. Scanning the content and subject of the email

Step 6: Compare the scanned content with the existing messages in the receiver side database.

Step 7: If the content and subject of the email is matched with the existing email in the receiver Database.

- a. Message discarded
Else
- b. Message delivered to the inbox of the recipient

Step 8: Exit

3. COMPARATIVE STUDY

Brandon Oselio et.,ol., states that When we separate the employee messages in two ways, i.e., relational and behavioral easily we can detect the noise during communication. They implemented the DSBM [8] model to do the comparison of messages by the behavior. Where they state that the behavioral parameter appears more noisy when we compared with the relational and also they described the individual interest of the messages. Hierarchical network design involves dividing the network into separate layers. Each layer provides a specific function that define its role within the

overall network.[3] By separating the various functions that exist on a network , the network design become modular, which assists scalability and performance. By using this hierarchical model we can divide the extrinsic and intrinsic behavior of the each and every user when they are communicating through email. Based on these two types of behavior we can identify the repetition of the token generated by the user with the same event. The term cluster analysis is a method of grouping the objects of similar kind into respective groups. X S Yang et ol states that the cluster analysis is an exploratory data analysis tool which aims at sorting different objects into a group in a way that the degree of association between to objects is maximal if they belong to the same group and minimal otherwise.[5] For example consider two weighted graph with 500 nodes are constructed with the ten known clusters of equal size. The weight of the same cluster is calculated independently by normal distribution, and the edges of the weight between the different cluster is calculated independently by the normal distribution. Specifically the first layer of the network is corrupted with the additive noise distribution and the second layer also corrupted with the additive noise distributed. When compared with the existing work , here in this paper extra trim function and cryptography is used. By existing thing it is analyzed that communication between the user through email is more. Q Ho L Song et ol states that network mapping is the study of the physical connectivity of networks. Internet mapping is the study of the physical connectivity of the Internet. [4] Network mapping discovers the devices on the network and their connectivity. It is not to be confused with network discovery or network enumerating which discovers devices on the network and their characteristics such as (operating system, open ports, listening network services, etc.). The field of automated network mapping has taken on greater importance as networks become more dynamic and complex in nature [11]. In this paper , a bayesian network is used from the concept of existing paper. Bayesian network gives the dependencies between the nodes and the conditional probability involved in these dependencies.[6] We can check how many users

are communicating and the probability of the importance of the communication.

Bayes theorem developed by the Rev. Thomas Bayes , it is expressed as,

$$P(H|A, b) = \frac{P(H|b).P(A|H,b)}{P(A|b)} \quad (1)$$

The left-hand term , $P(H|A,b)$ is known as the “posterior probability,” i.e., the probability of H after considering the effect of A given b. The term $P(H|b)$ is called the “prior probability” of H given b alone. The term $P(A|H,b)$ is called the “likelihood” and gives the probability of the evidence assuming the hypothesis H [12] and the background information b is true. The term $P(A|b)$ is called the “expectedness”, i.e., how expected the evidence is given only c.

Equation (1) can be rewritten as

$$P(A|b) = \sum_i P(A|H_i, c)P(H_i|c)$$

(2)

From the related work , it is analyzed in this paper , that based on the different types of behavior , the email can be differentiated.

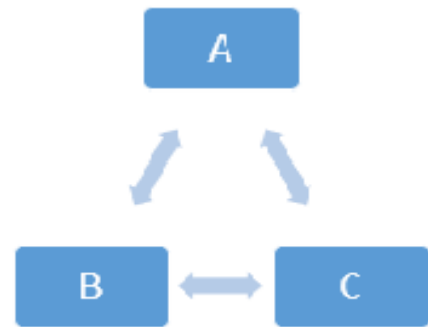


Fig:1

For example let the event A be “fever” , event B be ”cold” , and event C be ”sick“. Let us assume event C has occurred i.e., Sick. Now if a third person see that they have got cold means , he/she may consider this reason to my sick. Thus in his/her view the probability of the event A (fever) is the cause of the event C (sick) will decrease as the event c has been explained away by the event B.

Hierarchical network design involves dividing the network into separate layers. Each layer provides a specific function that define its role within the overall network.[3] By separating the various functions that exist on a network , the network design become modular, which assists scalability and performance. By using this hierarchical model

we can divide the extrinsic and intrinsic behavior of the each and every user when they are communicating through email. Based on these two types of behavior we can identify the repetition of the token generated by the user with the same event

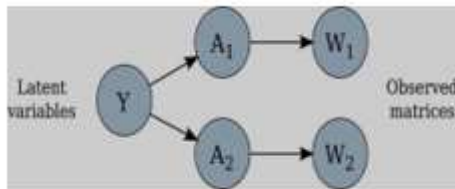


Fig:2

In Fig:2 we denoted the latent variable Y that conditionally decouples the posterior

$$P(W_1, W_2 | A_1, A_2, Y) = P(W_1 | A_1, Y) P(W_2 | A_2, Y) \quad (3)$$

$$P(W_1, W_2 | A_1, A_2) = \int_Y P(W_1, W_2 | A_1, A_2, Y) P(Y | A_1, A_2) dY \quad (4)$$

By making the Y as a compact description by shifting the adjacency matrix A_1, A_2 , to the latent variable Y, so that we can find out how the adjacency combine to form the multi-layer network structure.

4. SYSTEM ARCHITECTURE

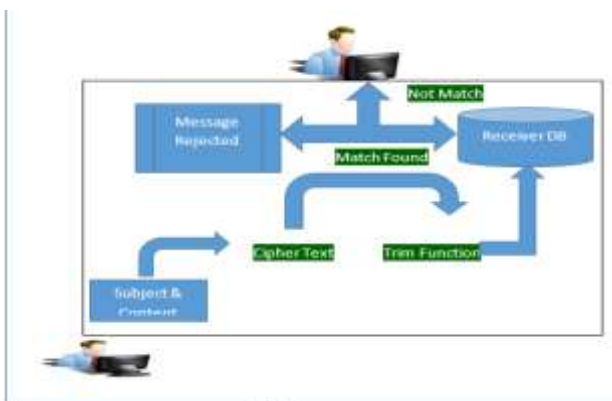


Fig:3

5. EMAIL EXAMPLE SIMULATION

Here in this research article we have taken the email as an example and we have detected to avoid the repetition of messages in email.

In our analysis we come to know there is at least a 40% will be the repetition of messages in social

network communication. Here in this email communication whenever a person is sending message to the another person a token will be generated for each and every messages , this generated token will not be used for the other messages , the token will be unique. In this work we have designed the email communication with the subject and content of messages. For ex., person A sends message to Person B, once they send the message , the subject part and the content part of the message will be scanned to check whether the message is already exists for the same user or not. When the scanning is done , three ways it will check the repetition of the messages

- (i) If subject part is already exists but content part is different it will allow the message to deliver
- (ii) If subject part is different but content part is same means it will allow the message to deliver
- (iii) If subject part is same and message part is also same means it will not allow the messages to get deliver

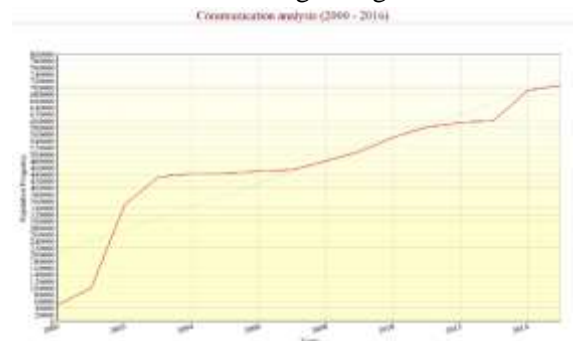


Fig:4

The above Fig depicts that percentage of repetition messages in communication by year wise. Here we can see that , year pass by human using technology also increasing, so when n number of user wants to communicate with the other peoples through technology automatically there is a increase in the repetition of ,messages. When duplicate copy of messages are received to the receiver several times then there will be loss memory space. Where the same message will occupy more space in memory. In order to save the memory space and to avoid the repetition of messages , this technique was implemented.

So automatically the same message will not be delivered to the same user. Here in our work we

6. RES

have given the constraints that if any one either the subject or content is different means the message will deliver because for unconditional situation if the person wants to send the same message to the same person that time this constraint will be useful. For ex., If the person A want to communicate with all other person sending the message so and so date z holiday, if again he want to send the same holiday message with other date means he can send if this constraint present, otherwise when it's scanning it will consider that message as a duplicate message and it will not allow the message to get deliver. Here in this paper we have used trim function to match the strings of the message, this function is used to check whether the message is already there or not in the database.

Security, coming to this security we knew that the technology grows side by side hacking will also get increased. In our work we have used the encryption and decryption technique for security purpose. If the sender thinks that the message which he/she is sending to the receiver will be confidential means they can use the encryption option. In order to make it easier in designing part of the email communication we have given the buttons for encryption and decryption, if they want to secure the message what they are sending the can encrypt the message by using the encryption button , automatically the message will be in the encrypted form. After encrypting the format of the message can be seen by the sender also, after that the sender can click the send button and the message will be sent to the receiver. Once the receiver , receives the message they can decrypt the message by using the decryption option, this will give assurance of secure transfer of the messages.

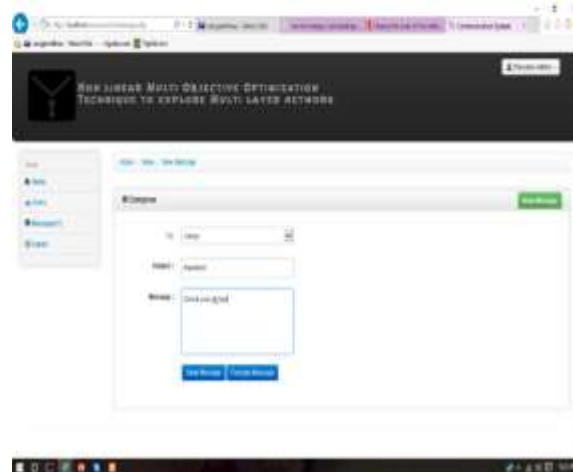


Fig:6

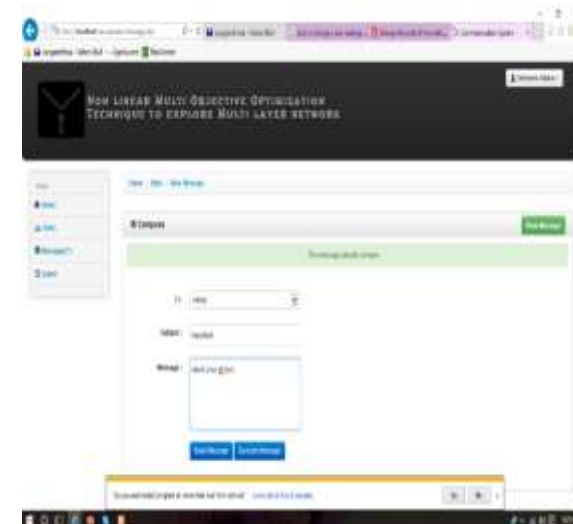


Fig:7

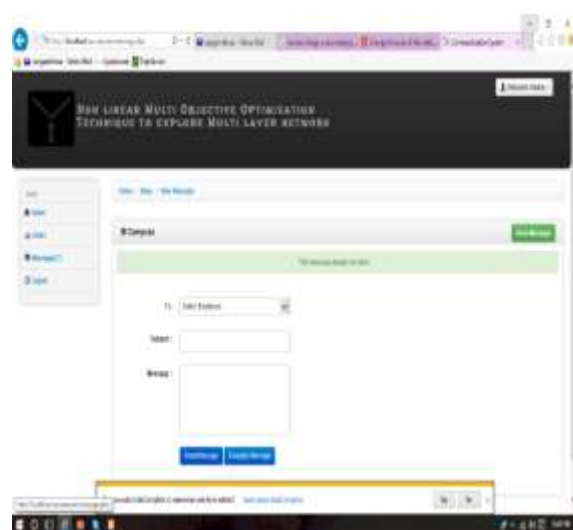


Fig:8

Fig:5

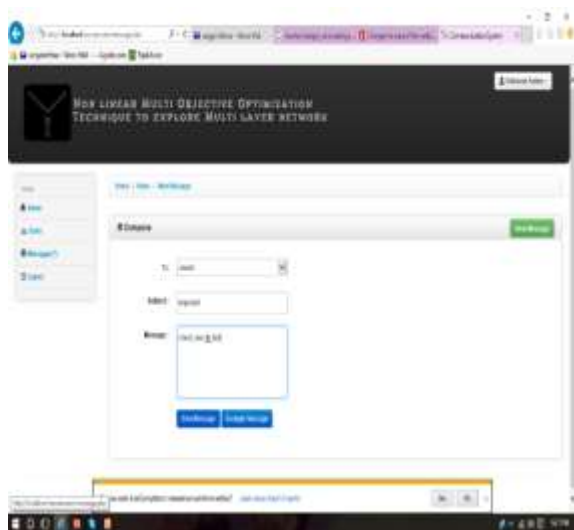


Fig:9

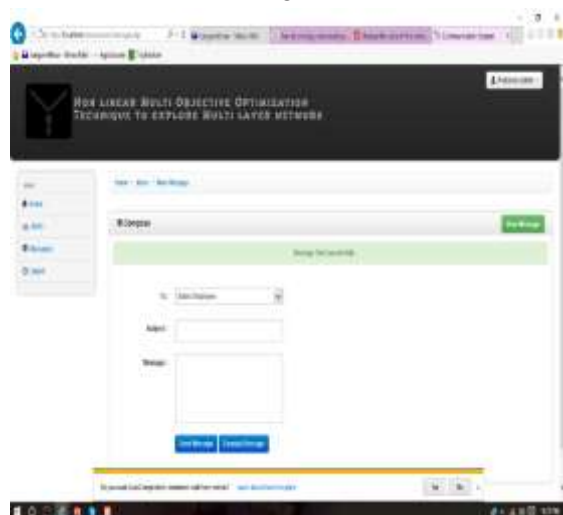


Fig:10

7. CONCLUSION

By using the techniques we can separate the email in social communication into two things, When we are filtering the email it is easy for us to check whether the token is generated already or not. If we come to know that token is generated already we can easily discard the another token which contain the same message. Repetition of the same message in email can be prevented by implementing the RAC algorithm concept. So that we can save memory space. This work we can extend in future by detecting the repetition of files ,images, videos etc. So that noise will not occur in that particular network , by forming the cluster the data's will reach the destination soon. Based on the pareto

ranking method we can differentiate the email from various users according to the priority based.

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