

Web based Email Marketing based Recommendation

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ABSTRACT

Email marketing is a powerful tool through which it is possible to talk directly to the customers about today's goods and future successes. Every business today require lots of marketing so that their product or business outcome will give them loads of profit and increase their progress graph. Many online business do their marketing through emails. But they are not aware of whether customer really liked that product. Web browsing is very popular activity till date wherein consumers not only purchase product online but also search information related to products and services before they purchase any product. We reduce the task of marketer's by introducing web recommender in which depending on customer's likes and dislikes of product they will be recommended their required product along with some product related to it. Along with likes and dislikes location wise clustering is followed. The logic we described constructs a data about history of user's web access data, habit and behavior, which in turn provides personal recommendation to users in timely manner. The Marketer need not be always online for sending e-mails, this is achieved by allowing automatic mail sending. This model also increases scalability and needs of market. This approach we introduced is build based upon path analysis, K-means algorithm which filter and provide sorted recommendation of resources based on user's browsing history, personal information through email marketing.

Keywords

Web browsing, K-means algorithm, location wise, filter, sorted, browsing history, personal information, automatic mail sending

1. INTRODUCTION

A. Background

^[1]Nowadays when we research our marketing strategies its shows that traditional digital marketing is less trustworthy then email marketing. Email marketing is nothing but sending or marketing a commercial or social site message to a group of people using electronic mail (e-mail) to send ads, offer sales/donations, request business, create trust and brand awareness among loyal customers. [3]Email marketing has four major plus points: It is very cheap i.e. it's very low cost marketing strategy, because it takes less time to create and send, communication between customers and subscriber can occur many times as when needed, Marketers can easily get to know about their progress with the help of graph design/result, headlines, offers and even colors which will be replied by subscribers.

B. Main Contribution

In this paper, we describe a system which not only sends e-mails to users but also track its activities depending on which business strategy changes. User's likes and dislikes are given higher priority and according to their activity being done on website helps in generation graph city wise so that next time we come to know which city prefer which types of products more.

The basic idea of our proposed system is that users are recommended new products depending on their browsing history i.e. mostly visited and purchased products. Administrator comes to know whether user have read/unread mail. Initially when user register to the system, he is asked for birth date which is updated in our database. And before his/her birthday, admin sends special offers which are released as on date.

C. Paper Organization

The rest of our paper is organized as follows. In Section II, we describe our system architecture in detail. In Section III, we describe our proposed system in detail. In Section IV, Some technical details. In Section V Mathematical Model is explained. We conclude in next Section VII.

2. SYSTEM ARCHITECTURE

Description:

1. In this architecture two entities are considered user and Admin
2. Initially New user register to the system and he gets his Id and password. Next time he can login with that Id and password.

Secondly, Admin sends email to the users and try to evaluate user activity by tracking his various activities such as which product user is viewing/buying more, user's interest and depending on that history and statistics user will be recommended products of his interest

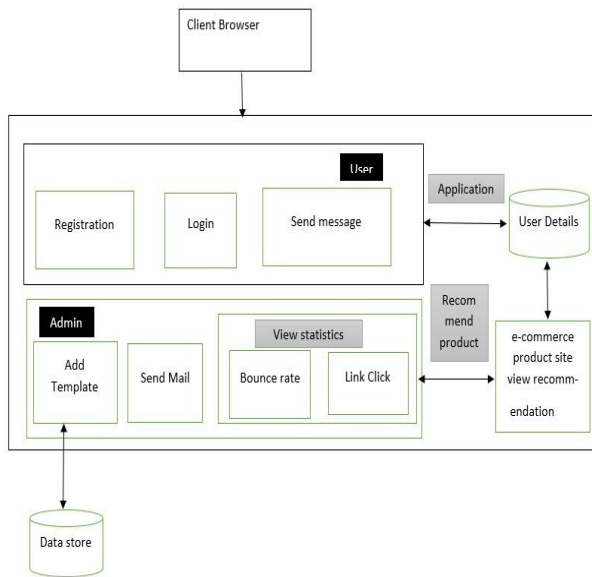


Fig 1: System Architecture

Basically system architecture is divided into two main modules, they are as follows:-

Module1: User

Input: Register/login, View Mail

Sub Module 1: Registration

User which are firstly visiting to site they can register himself to access Email id. At registration time they have to choose username and password for further process because all services can be accessible only after login into account. When he is registered he get email id.

Sub Module 2:Login

User can Login into web Server throw his Email id which are assigned at Registration of User.

Sub Module 3: Inbox

In this module user receives emails

Sub Module 4: Send Message

Logged in users can send email to registered user

Module2: Admin

Output: Send emails to users

Sub Module 1: Template

Here Admin can add template to the system. And that template can be send to the user which is part of the system.

Sub Module 2: Send Email

Admin sends advertising mails to users

Sub Module 3: View Statistics

Admin see's following statistics

- a. Bounce Rate
- b. Link Click
- c. Conversion

Sub Module 4: Recommendation

The recommendation can be view when user login

Into the system. Recommendation is based on history of the product view.

3. PROPOSED SYSTEM

Our research proposes an efficient and scalable model for effective Email Marketing. Tracking subscriber web interaction data and email activity helped us to get more insight into prospective subscribers. Considering a variety of aspects and narrowing down the huge set of important data into a few clustering factors rendered the segmentation more efficient.

This model is also scalable to need and market requirements. Modifying a sub-component like Web Interaction may help marketers to gain more insight about subscribers. For example, a certain page can contain discount products. If the overall impression ratings of discounted products are higher than Regular-priced products, then we can assume that subscribers are more interested in discounted products. Also testing various contents and structures of a page may increase or decrease the amount of overall subscriber activity and ROI. The marketer need not be always online to send e-mails to the user's. Particular time will be set and on arrival of that time system will automatically send e-mail to intended user's. All these factors can be integrated onto the system and database. Using the Modified K Means Clustering Algorithm also increased the efficiency of segmentation. Moreover the availability of huge set of data empowers the overall marketing performance. We were able to test our email campaign according to the relevancy of our subscribers' interest and we were able to achieve higher ROI in test run. In future, we will extend our clustering approach, considering not only open rate, click through rate, impression on products or purchase history, butalso the pattern of activities in the marketing funnel. We will also consider the facts of activity patterns such as seasonal data log, and product type.

E-Commerce Product Site

Give people the information they need. I like the approach of some of the sites here, like Sonos and B&O. They provide summaries above the fold, with lots of detail as you scroll down. Basically, all of the required information about the product is there, including useful visuals showing how you can sync stats with various devices.

This will include list of products and details of each and every product wherein user can see his required product. This list is not only of particular type. For example it includes of various type such as Electronics product, Home gadgets, Clothing, sports related products, etc

View Statistics

Here two to three statistics are calculated based on user activity which helps further to recommend products to user according to his/her area of interest.

1. Click Rate:-

Click rate is nothing but the proportion of visitors to a web page who follow a hypertext link to a particular site

CTR is the number of clicks that your ad receives divided by the number of times your ad is shown expressed as a percentage (clicks ÷ impressions = CTR).

For example, if you had 5 clicks and 1000 impressions, then your CTR would be 0.5%. Here's how it's calculated:

$$\frac{5}{1000} = \frac{0.5}{100} = 0.5\%$$

A high CTR is a good indication that users find your ads helpful and relevant.

2. Bounce Rate:-

It calculates the percentage of visitors to a particular website who navigate away from the site after viewing only one page. Bounce rate tells admin that particular user is not interested in specific product. Bounce rate helps admin to let him send email of only interested product next time. Deviation from particular product. There are a number of factors that contribute to a high bounce rate. For example, users might leave your site from the entrance page if there are site design or usability issues. Alternatively, users might also leave the site after viewing a single page if they've found the information they need on that one page, and had no need or interest in going to other pages.

Bounce Rate = (Visits With Only 1 Pageview) / (Total Visits)

4. MATHEMATICAL MODEL

System S= {Email Marketing Application}

System S= {S1, I, d, O}

S1 = {Email, Server}

I = {V,S}

d = function

O = output

I1 = V =>> Variables

I2 = S =>> Statistics

[1] I1 = {Email, Statistics}

D1 = I1 =>> O1

O1 = {S1, S2,S3}

Where S1=click rate

S2=bounce rate

S3=view rate

S = Statistics of Email Bounce Rate & View Rate

I2 = {Current Product W, Previous Sequences S}

D2 = Max (S) W => Recommendation Products R

R = {P1, P2, P3,..... , Pn}

Where P1,P2,P3,...,Pn are list of products which will be recommended.

O2 = {R}

Show (O2)

1. Huge database can lead to more time consumption to get the information.

2. Hardware failure.

3. Software failure.

Success:

1. Search the required information from available in Datasets.

2. User gets result very fast according to their needs.

Φ: Failure-

1. Failed to recommend product

2. Failed to track user activity

5. TECHNICAL DETAILS

Clustering:

Clustering and classification are both basic tasks in Data Mining. Classification is mostly to be a supervised learning method and clustering is mainly considered as unsupervised learning. The goal of clustering is brief that of classification is based on prediction. The goal of clustering is to generate new set of types, the new groups which are of interest in themselves, and their assignment is done intrinsically.

In classification tasks, however, an important part of the assignment task is extrinsic, since the groups must reflect some reference set of classes. "Understanding our world requires to know conceptual similarities and differences between the entities from which that compose is". Clustering divides data objects/instances into subsets in such a manner that similar object are clustered together, while different instances belong to different cluster. The objects are therefore organized in an efficient structure that characterizes the elements being gathered by sampling. Formally, the clustering structure is described as a set of subsets

e-mail Tracing

E-mail tracing is is very useful when the sender wants to know that whether intended receiver has read the e-mail or not or if they have clicked the link or not. However, due to technology nature there will be some inaccuracy. But this model will identify how many user and which user's read mail. Application marketing team will have exact no of users who opened e-mail.

6. FUTURE SCOPE

Our proposed model is very effective and largely scalable. The main limitation which can be overcome in future is that instead of working on our own system module, famous domain such as Gmail, yahoo, rediff can be implemented together. This system can be compared with existing online marketing sites like flipkart,amazon,etc and can be merged in future.

7. CONCLUSION

Our research proposes an efficient and scalable model for effective E-mail Marketing. By clustering users of particular same area of interest helped in effective marketing. Tracking user interaction led to marketing on large scale. Due to bounce rate we could determine uninterested users for many products. In our system by using clustering approach, we were able to cluster the users depending on different types of product. Use of Apriori and modified K-Means increased efficiency. Use of system graph generation will help in knowing the product category frequency. In market till now there is only use of email marketing tool but in this system there is combination of email marketing tool alongwith e-commerce site which helped in deciding marketing strategy for future.

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