Design of Targeted Advertisements and Referral System

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Abstract: In today's competitive market, attraction of customers towards the product plays an important role. In order to attract the customers there is a need of targeting the users towards the product. The current system of advertisement is not so efficient towards targeting the customers. In such systems, customers are getting bored and waste their time by simply watching the advertisements. To overcome such situations, the proposed system provides a new way of advertisements by giving points or virtual money to the users in wallet for watching the advertisements and can redeem the same. The system also has an optional program of Referral, initially user has to pay a particular amount and then he/she gets a unique QR code (Quick Response) which is generated in a random fashion. For referring each friend, he/she receives some points in wallet and he/she can redeem the same. The paper proposes an efficient way for the development of targeted advertisements and referrals with the help of C4.5 and Recommender systems. C4.5 basically includes parameters such as age, location, gender etc. and Recommender system gives us the personal interests of user which were collected during registration. The current system has an efficiency of 53% in targeting the customers and the proposed system being a combination of C4.5 and recommender system gives a better efficiency.

Keywords: Targeted Advertisements, QR code.

I. INTRODUCTION

Advertising is most important decision, a marketer makes and plays an important role in case of new products, schemes been launched. Ensuring that advertising is done effectively and is targeted properly, then it will be a large impact on the sales and popularity of product. Traditionally, the advertising system was to just increase the sales by advertising to all customers, which later proved to be in-effective way of advertising, as there are consumers who are unlikely to purchase or have an interest in their product and who are not active in the category. This is the reason target advertising came to into action. Targeted advertising is a method of advertising that focuses on certain aspects of the consumer, these aspects are based on the product the advertiser is promoting. These aspects are mostly age group, location, sex, occupation etc.

Through the emergence of various competitive products in the market, there is a necessity that most of marketers are opting for advertising. They want to guarantee that the advertisement should influence or target the best customer for their product. Targeted advertising plays an important role and has a great impact on the popularity, sales aspect of product.

The system aims at creating a program of targeted advertisements and referrals for displaying the ads of clients for attracting the customers. The technique used for developing the system is a combination of C4.5 and recommender system. C4.5 uses parameters such as age, location, gender whereas recommender system provide us personal interest of users for targeting a customer. The customer gets points in wallet for watching the ad and can redeem the same. For Referral program, initially user has to pay a amount of Rs.50 and then he/she gets a unique QR code which is generated using random( ). For referring each friend he/she receives some points in wallet and he/she can redeem the same.

II. LITERATURE SURVEY

The idea of social and spatial data for targeted advertisements was specified in the model[5].Social data is acquired through user's social websites, various other communication channels, users profiles etc. and spatial data basically location of the user is found with the help of Beacons. With the help of these kind of data we can target the customers by properly deciding the parameters of targeting the customers.

There are various techniques defined to make the proposed system more efficient in terms of security, reliability etc.. There are various authentication and encryption mechanisms that should be implemented for securing the systems data as described in the given model[6]. Hence it is essential to have proper testing of the systems after a fixed period of intervals for ensuring availability, effectiveness and reliability.

A technique, C4.5 algorithm[7] is used for classifying the customers and thus targeting them for advertisements. C4.5 Algorithm uses parameters such as age, location, sex, occupation etc as the parameters for targeting the customers in an efficient way. The efficiency of this system was around 50-55% as few of the targeted customers through this algorithm were not having interests. Therefore, there is a need to improve such system by properly selecting the parameters which can target the customers effectively.

III. PROPOSED SYSTEM

A. Targeted advertisements:

The project aims at creating a website in which advertisements of the clients will be displayed. The clients can choose the number of persons to whom the advertise will be displayed. The website users are the persons to whom the advertisements will be displayed. A person wanting to use the website will have to register with us by creating an account. The information needed for targeting advertisements viz. location, age, gender etc will be taken from the users during registration and stored in the database. The users will get money for every advertise they watch. This earned money will be transferred to the user's bank account or wallet whose detail will be taken during registration.

B. C4.5 and Recommender system:

The technique used for developing the system is a combination of C4.5 and recommender system. C4.5 uses parameters such as age, location, gender whereas recommender systems provide us personal interest of users for targeting a customer. The information such as age, location, gender are retrieved from customer database which were stored during the time of registration. For recommender system the personal interest i.e likes and dislikes of each user are being recorded at the time of registration. The current system has an efficiency of 50% in targeting the customers and the system being an combination of C4.5 and recommender system gives an efficiency of 75%.

C. Referral program:

The Referral Program will be an optional way for the users to earn money. User can opt to join this program by making an initial payment of say Rs. 100 using the payment gateway. On doing so, the user will be given a unique referral code which he can share with his friends. User will get Rs. 50 for eg; for first referral and so on. For generating a unique referral code, Random( ) function is being used.

The proposed system aims to provide an interesting solution for the viewers of boring advertisements. Web based application is created, wherein advertisements of clients are displayed. The website users are the persons to whom the advertisements will be displayed. Advertising is a highly important decision, a company has to make. The current system has an efficiency of 53% in targeting the customers and the proposed system being a combination of C4.5 and recommender system guarantee a better efficiency
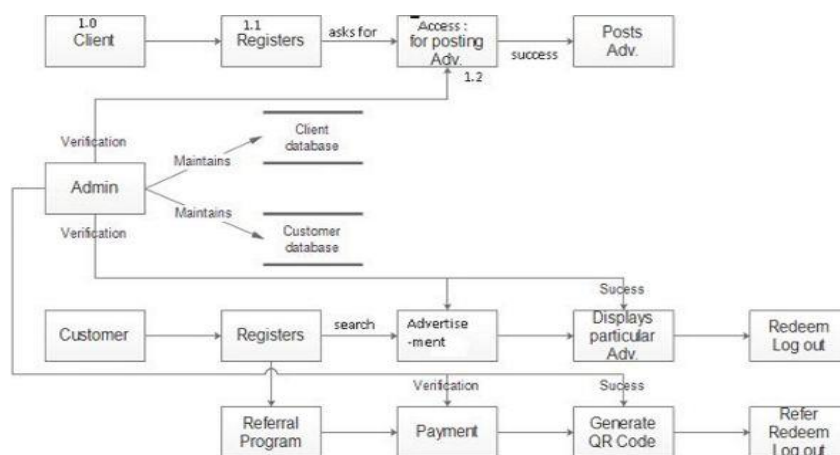

Fig 1: Architecture of Targeted Advertisement system

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Fig 1 gives the architectural view of targeted advertisement system. The system aims at creating a website in which advertisements of the clients will be displayed. The clients can choose the number of persons to whom the advertise will be displayed. The fee charged to display these advertisements will be directly proportional to the number of persons who view it. The website users are the persons to whom the advertisements will be displayed. A person wanting to use our website will have to register with us by creating an account. The information needed for targeting advertisements viz. location, age, gender etc will be taken from the users during registration and stored in our database. The users will get money for every advertise they watch. The advertising fee taken from the clients will be distributed among the users who view their advertise. This earned money will be transferred to the user's bank account or wallet whose detail will be taken during registration. Thus, Users are getting paid to view the advertisements.
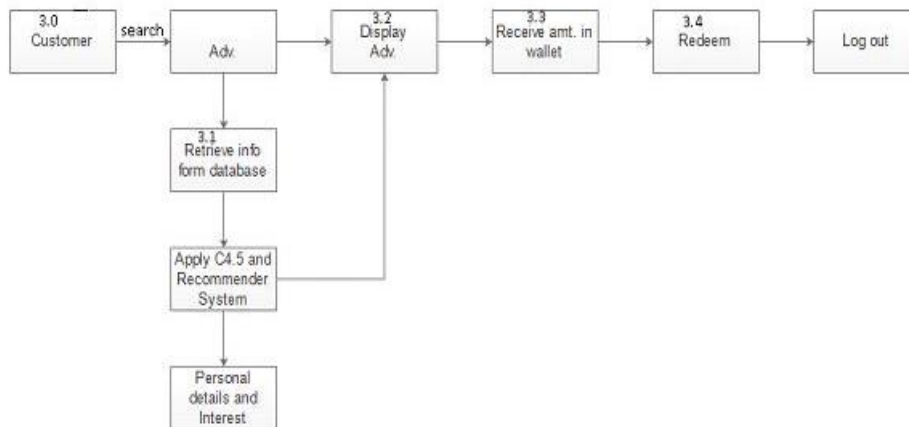

Fig 2: Advertisement process

The figure 2 depicts the use of C4.5 + RS system (Recommender System). It is used as a combination techniques for displaying advertisement to the user. C4.5 works on age, sex, interests, etc. C4.5 effectively save resources, capital investment, etc. RS (Recommender System) is predicting most likely preference of user. How to effectively identify the user and acquired target group information in such a complex environment, is a prerequisite for the implementation of targeting advertising. It acknowledges information from the form filled by the user at the time of registration. Active advertisements of all the locations are already stored in the server with some associated tags. These tags are later used as keywords by which each advertisement are described. The customers are highly contended with the offers easily accessible to them in nearby areas.

The main part of the system is advertisement which is shown to the customer by using C4.5 and recommender system algorithms. The system retrieve the information of the users from customer database and thus apply combination of C4.5 and RS to target the customer..
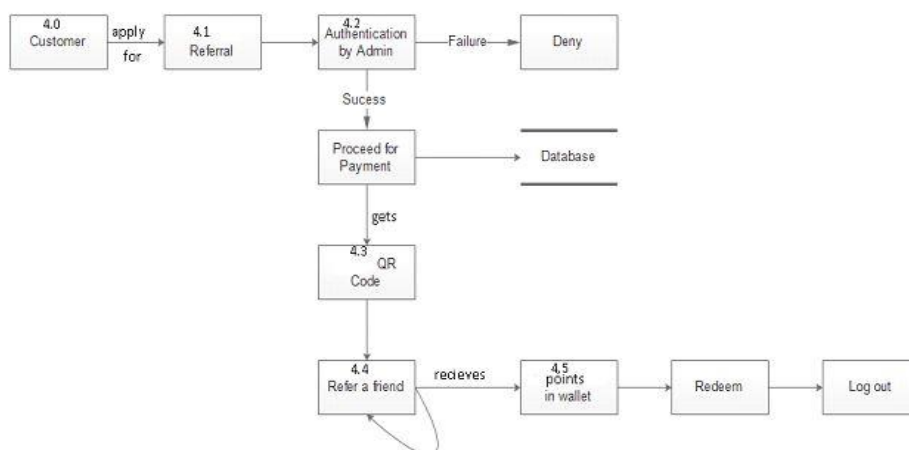

Fig 3: Referral process

The optional program of referrals is included in the system in which user has to pay initially Rs.100 as it is described in fig 3. Then the system provides a unique QR code to the user which he/she can use to refer his/her friends. For every successful referral, points are provided to the user which can be redeemed after it reaches a certain limit.

IV.   IMPLEMENTATION

CashmyAd.com is the website created for targeted advertisements and referral program.The website is created using HTML,CSS for implementing frontend and PHP is used for creating Backend and all other functionalities.Following Fig 4 gives the view of the website.
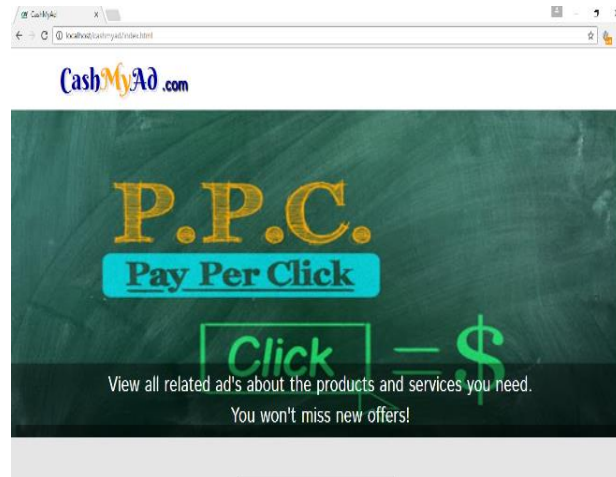

Fig 4

The Website has three sections:

1. Registration/Login:

For new user, a registration form is displayed.Registration form has inputs such as name,location,age,sex and interests with multiple options.All these inputs are used further as an input in C4.5 algorithm and Recommender system.For the registered user,login forms are displayed having inputs user_id and password.The registration/login session are validated.Following Fig 5 and Fig 6 gives the view of registration and login process respectively.

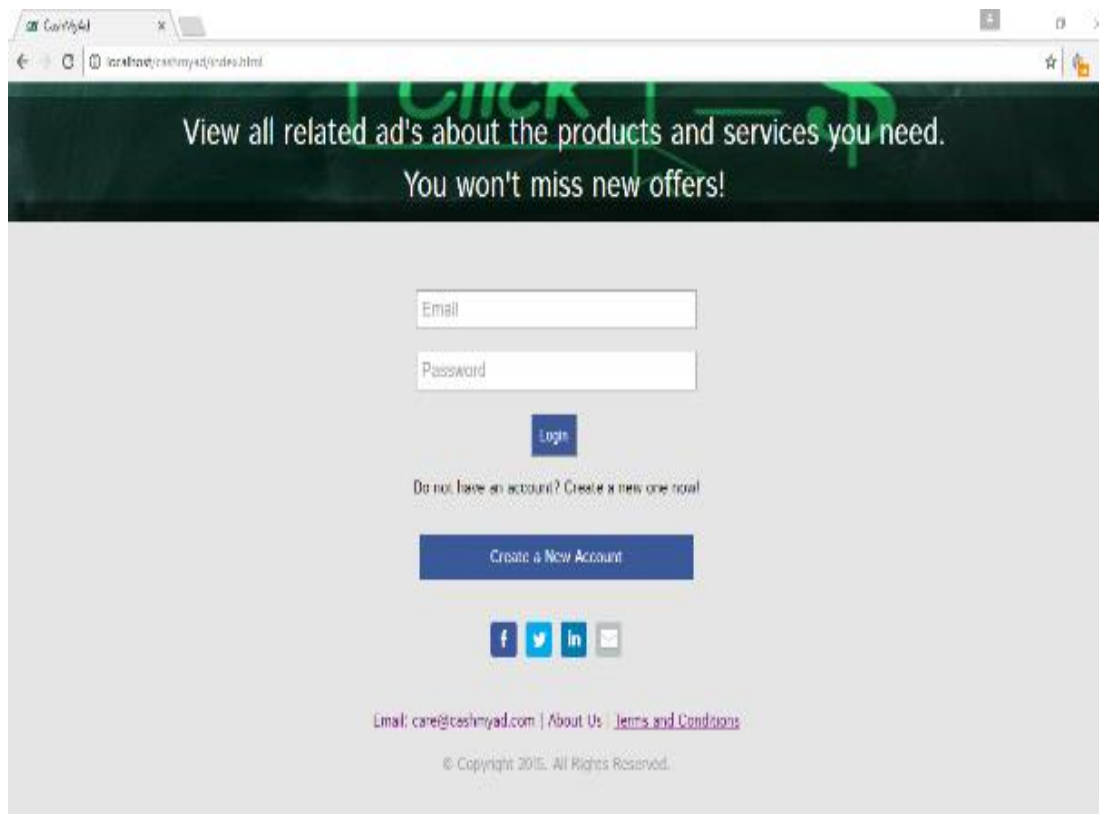**Registration process:**

Fig 5

Page | 44

Fig 6

2. Advertisements:

The advertisement section displays targeted ads to the user by using C4.5 algorithm and recommender system.The targeted customers are selected using SQL queries and C4.5 algorithm respective parameters.Thus by executing SQL queries selects the record of a particular user.Onclick() and a counter is used for incrementing points in the wallet whenever user clicks an advertisement.Fig 7 and Fig 8 are the examples shown according to the process.

Advertisement process:

I. Bournvita ad targeted through Age(for kids)

Fig 7

II. Cosmetic ad targeted through Age & Gender(male)

Fig 8

3. Referral program:

Initially the user has to make payment for opting referral program.The user gets an unique referral code for referring, code is generated using random().Thus, user can refer his/her friends and on successful referrals user gets some amount in wallet.Fig 9 gives the view of referral program.
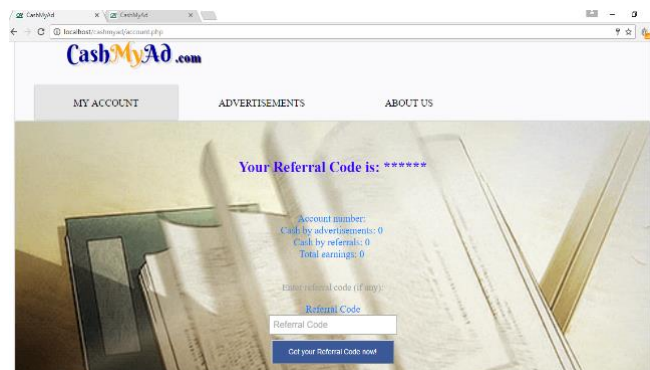

Fig 9

4. Payment

All the transactions generated in referral program are validated and handled by Paypal gateway and PayUmoney.All the transactions for referral program are processed through either of the gateways and all the security measures are taken into account.All the points redeemed for watching Ads are also transferred into account of user with the help of these gateways.Following Fig 10 gives the view of payment gateway.
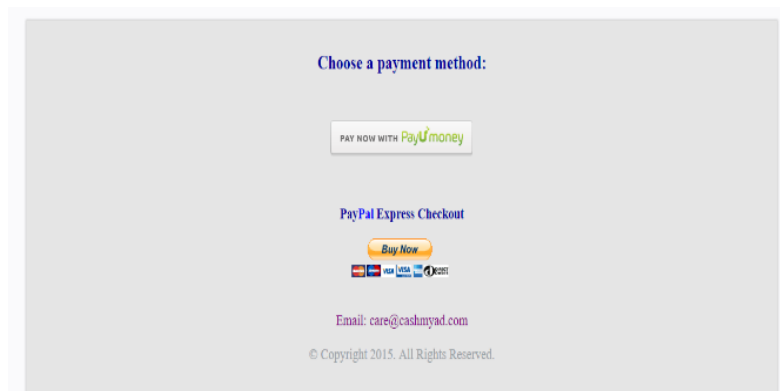

Fig 10

Payment Gateway:

For resolving queries feedbacks can be submitted on the given contact information in CONTACT US section.All the detail information of the system are available in ABOUT US section.

V. CONCLUSION

The working model of targeted advertisements and referral program is implemented successfully by using C4.5 algorithm and recommender system. The overall efficiency is being increased to 75% as compared to traditional approach of advertisements having efficiency of 40%.Thus,the overall relevancy of the ads to the user is increased and the reach of ads to the relevant users is achieved. Following Table 1 gives the comparison between various techniques of advertisements.

Table 1

	Technique	Parameters	Efficency
1	Traditional	social sites	53%
2	RAKE	keywords	50%
3	Google Ads	Baecons & cookies	60%
4	C4.5 & RS	Age,Gender,Location,Interests	75%

Promoting various products of clients through targeted advertisements on a much more larger scale viz. globally. Also to have a good amount of earnings through advertisements and referral programs.In future the system aims to include optional program of downloading various apps and providing free coupons to customers.

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