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SURVEY ON DIGITAL MARKETING FOR OFFLINE MARKET

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Abstract: Nowadays newspapers are getting obsolete and the newer generation is getting more dependent on smartphones and similar digital media**.** Advertising in newspapers is expensive and does not catch the eyes of younger generation**.** The proposed system is a platform where the user can view the daily offers, flash deals and other advertisement of nearby shops. In this survey, a new approach to offline and online marketing is discussed here.

Keywords: Digital Marketing, Machine Learning, Promotion

I. INTRODUCTION

The invention of internet provides infinite opportunities for promotions and digital marketing. People tend to use internet more to discover latest deals and opportunities more than conventional means. This paper proposes a system that collects, organizes, and publishes ads from local markets. People often miss out on deals and offers happening around them, that's where the Adwall comes in. The proposed system consists of 2 applications, one for the customer to view advertisements and another for seller to publish advertisements.

II. THEORY

A. Seller Module

Seller interacts with seller module to publish the advertisements. Seller will need to go through the registration and login which will also verify seller's identity. Once the seller is inside the application, they can either choose to upload their own advertisement or they can make the advertisement using the inbuilt tools provided by the system. Seller can then publish this advertisement to Adwall platform. Since there won't be deals and offers all the time, seller can also maintain an online catalogue which will show the details of the products available at their store.

B. Customer Module

Customer interacts with customer module to view this advertisement published by the sellers. Initially customer will need to go through registration and login and then customer's preferences are collected. Once they are inside the application, they will see the advertisements posted by sellers near their locality. Customers can also interact with the product catalogue made by the seller to know about the product details, stock availability etc… Advertisements are organized according to their categories and if needed customer can search through the catalogue maintained by the sellers. Customers can view the shop's details such as location, contact number, services provided etc… Customers can also give rating and post their reviews about sellers using customer module.

C. Recommender System

The proposed system uses a combination of content based and collaborative based recommender algorithm. This combined with location of the user, Adwall provides user with the advertisement that suits their interests. Combining collaborative and content-based filtering together may help in overcoming the shortcoming we are facing at using them separately and also can be more effective in some cases.

III. RELATED WORK

Here are some papers from which the proposed system takes references from.

In this paper [1], the authors propose a location-based mobile advertisement publishing system, a framework for vendor editing, and location-based service. The system is able to provide vendors not only the ability to edit advertisements, but also the means to publish advertisements to consumers. This work presents a location-based mobile advertisement publishing system. The proposed system is able to provide vendors a convenient way for editing and a low cost and

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effective way to implement digital advertisement publishing mechanisms. In addition, advertisement data desired by the consumers can be viewed when a QR code is scanned, thus providing information for the consumer to access. After interviewing with the vendors, most vendors have positive responses and they would consider the adaption of mobile advertisement if the cost is lower than that of their current advertising methods.

The paper [2] proposes Mobile Yellow Pages with User interest and Location Sensing Ensemble (MyPULSE) system, an easy to use, platform-independent mobile application which enables a user to see image and video-based advertisements, get directions and obtain other important information about products and services offered by local businesses, such as restaurants, hotels, shops, taxicabs, etc. near the current location of the user, whether she is stationary or mobile. The paper proposes simple client-server architecture as a potential solution to designing such a system and discussed how the client-server modules interact with each other. Different future improvements that can be made to upgrade this system into a more interactive and user-friendly system are also mentioned. The privacy and security issues in designing such a system are very important in commercializing such systems. We are currently in the process of designing a security mechanism as well as imposing privacy on the system.

The paper [3] proposes a system for creating and monitoring a competitive and cost-effective pay-per-click advertisement campaign through the web search channel is a resource demanding task in terms of human expertise and effort. The paper presents a prototype and a functional web application for semi- and fully- automated creation, monitoring, and management of cost-efficient pay-per-click campaigns with budget constraints. The preparation of large-scale online advertising campaigns for products, services, brands, or web pages can be a very complex task especially if it is designed for websites with online catalogues or catalogue aggregators. The shops or listings are classified according to the products that they are selling, so each landing page contains important information and relevant description for each category or product that needs to be considered. The number of the various urls inside these domains makes the effort even more complicated regarding the manual insertion of keywords and ad-texts per landing page as well as monitoring and optimizing the performance of each campaign.

The proposed system aims at the automation of the mentioned tasks in order to aid the advertisers. The demonstration will present to the audience: a) keyword generation, suitable for AdWords Campaigns, from a given landing page and proposed ad creatives using text summarization, b) an automated method for budget optimization during campaign running time, based on a MCKP (multiple-choice knapsack problem) modelling and capitalizing on genetic algorithms to maximize profit or traffic, the two usual objectives for website advertising, c) a fully implemented and functional prototype system, developed for the Google AdWords platform, which currently occupies a vast share of web-search advertising volume, d) an experimental evaluation on real world data.

The paper [4] introduces the Ad-me (Advertising for the mobile e-commerce user) system, a context sensitive advertising service for the mobile user. This system falls within the broad category of context sensitive service delivery, which may be defined as services that are offered to the user which are primarily determined by location. The ad-me system sits on top of a mobile tourist guide where the motivation and added value service offered to the user is that of context sensitive tourist services accommodated upon a Personal Digital Assistant (PDA) or cellular phone. The tourist content thus provides a carrier mechanism for the true objective of the system that of targeted advertising. Ad-me aims for intelligent and selective advert delivery to the users, i.e., only if they need them when they need them where they need and in a form sensitive to their technological context. The Context-Sensitive Advertising Agent utilises push technology supplying advertisements relative to the user location and perceived need. The latter is adjudged by interrogation of the profile database. The Ad-me system thus provides more than mere content delivery but supports electronic commerce emerging as a result of the content delivery.

The paper [5] presents ShopAssist, a multi-store location-aware application that adapts to the store currently being visited. ShopAssist relies on Bluetooth Low Power to identify the store being visited and perform indoor localization. ShopAssist makes use of a Content Management System (CMS), used by the store owner to upload information, and is capable of interacting with Digital Signage in order to display targeted advertisements in the store. The work proposes a unified, interactive, location-aware system for Shopping. The key idea is to take advantage of the fact that almost every person carries a mobile phone, providing customers a context-aware application for their devices, while at the same time providing business owners a way to engage customers and increase revenue. the work presented in this paper is to develop a system to identify customers and help them locate products in stores, enriching users' shopping experience and bringing added value to the business owners. To achieve this, Bluetooth was the chosen underlying indoor location technology. Additionally, the Estimote platform was chosen to provide indoor localization services. The system presents an interface for business owners – the CMS – that abstracts business owners away from the complexity of deploying a beacon infrastructure to provide indoor localization services. Additionally, the prototype was also designed in tandem with the Digital Signage and Mobile platforms. The former provides users a context-aware shopping experience, with targeted content being shown in the Digital Signage. The latter adds an interactive layer over traditional shopping, allowing users to locate themselves within the store and browse for products in the mobile application.

The paper [6] implements a recommendation system that recommends flights to the target user, using the well-known Recommender System algorithms of Collaborative Filtering and Content Based Filtering. The unique idea behind the project was to provide the user with recommendations on a personalized level, instead of supplementing them with a

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generic list of airlines from a point A to a point B. As, the ratings parameter used for computing the collaborative filtering in between users to recommend flights was not possible, as it is tough to give ratings to an airline solely based on a single parameter, the system uses the latitude and longitude of the source and destination locations, to implement Collaborative Filtering. The user profile, generated the content which was further used to filter flights through the Content Based Filtering.

The paper [7] discusses about book recommendation system. Book recommendation system is recommending books to the buyers that suits according to their interest and stores recommendations in the buyer's web profile. This system will store the details of the books which users have bought earlier and find the category of book from users buying history. It uses content based filtering and collaborative filtering and find out the list of books based on content and ratings. The system actually evaluates the quality of the recommending books dependent on the rating given by the existing users also use association rule mining algorithm to finds interesting association and relationship among large data set of books and provide an efficient recommendation for the book. This system may become helpful for lots of people as well as students who need the best books available from the database for both general and academic purpose.

The paper [8] proposes a novel alternative which depicts a simple approach to find the correlation between two features using set intersection in content-based filtering and finds the similarity between two items and predicts them for recommendations using CF. Previously related approaches have used text classifiers like Naive Bayes in the content-based algorithm. The algorithm is further tested and compared with Pure CF and SVD. MAE values generated after evaluation provides successful comparisons. Although Hybrid content recommendation produced better MAE values and improved the sparsity of the dataset between 1%-2%, the results may vary when tested with a larger dataset.

Using this method one can find the similarities between the content of one movie and the other which are liked by the users. Since Collaborative filtering is largely dependent on the ratings of the users, therefore, if the number of users in the domain is low as compared to items, then it can lead to cold start.

In this paper [9], paper recommends a hybridized Factorization Machines and SVD models to better up the whole accuracy of the recommendation system using deep neural networks. In the content-based recommendation system, when increasing the near neighbours in KNN, also increased the accuracy of model, it's just over SVD performance. However, the total cost of making a content-based recommender is much high, as every user has its own model that is built on the basis of features of songs preferred by him. Factorization machines have very high recall value but lack the precision of some other models. The built model performs better over songs that occur quite often in the data, so our future work could involve making the accuracy better on lesser popular songs.

The paper [10] proposes a CBF-CF-GL method which is a combination of content-based filtering and collaborative filtering considering good learners' ratings in learning material recommendation. It is motivated by learners' needs to find relevant learning materials among a huge amount of existing learning materials on the web. A mixed method of CBF-CF-GL was chosen considering that the hybrid method combining CBF and CF had successfully been implemented in many previous studies for various recommendation problems. On the other hand, the CBF-GL method had also been implemented in a learning material domain. MAE scores are used to measure and compare the performance of the two methods. Since the experiments show that the CBF-CF-GL method gave lower MAE scores than the CBF-GL method, it can be concluded that the suitability between learning content and learners, the similarity between learners in rating learning materials, and preference from good learners positively influence recommendations produced. Learners prefer to choose learning materials most suitable with his competence and recommended by good learners with similar taste with them.

In the paper [11], method to take images into account when trying to give the user a recommendation is proposed in this paper. The Paper proposes a new hybrid approach for rating items which contain visual data. The system tried to use as much information as possible, so used both the information available based on the image part of each item along with its so-called textual parts. Reaching such a goal requires that we introduce some image retrieval techniques which are more customized according to our circumstances. By the way, using distributed architectures and programming models seems inevitable and has encouraged us to focus on Hadoop MapReduce framework for our future works. Finally, one of the main improvements the system aims to pursue is using better similarity metrics, especially those that take the shape into account to measure the similarity of two images, and are typically based on techniques such as Fourier descriptors, and Delaunay triangulation.

In this paper [12], a hybrid methodology which takes advantage of both Content and Collaborative filtering algorithm into account is proposed. The authors use Genres and Tags. Thus, using this method one can find the similarities between the content of one movie and the other which are liked by the users. To predict the likes of a target user, Collaborative Filtering takes into consideration, the neighbours of that target user, and finds the similarity between the neighbours and target user such that the most similar users are selected and their ratings and likes are recommended to the target users. Thus, user preferences are dependent on the others users present in the active user's neighbourhood. Also, the domain dependence nature of CF can make it vulnerable to sparsity and cold start. The proposed algorithm takes into considerations the tags and genres specified in the dataset, and for the content-based prediction, we have applied a set matching comparator. This comparator returns the number of common objects between two movies.

The paper [13] discusses about the internet communication strategies of Swedish service companies which can be characterised according to three different options. The research question has been: "how does the internet influence the

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marketing communication of traditional service companies?" The purpose has been to gain a preliminary understanding of how traditional service companies use the internet in their marketing communication and what effect the internet has had on their use of other marketing communication channels. The mass transaction communications strategy is used by some large companies. Other large companies have opted more for the use of relationship marketing in their marketing communication and in consequence they follow the mass relationship communication strategy. For the small companies it has been found that they all follow the personalised relationship communication strategy. It is argued that this is the only reasonable choice for them since small service companies probably need to focus on relations. Some of the large companies have adopted a greatly decentralised organisational structure. The communication strategy that their sub-units utilise has been found to resemble that of the small service companies.

In this paper [14], the paper discusses about the development of the new field around advertising and marketing technology and summarize present research efforts. In addition, some industry case studies will be shared to illustrate the power of the latest big-data and machine-learning applications for driving business outcomes. First, to understand the value behind automation for media buying, it should be noted that the traditional purchase process has been cumbersome and heavily manual for years. Typically, the process involves numerous meetings, emails or phone calls to complete insertion orders (over many days). Thanks to progress in technology, agencies and brands can now acquire ad spots directly and in real-time through software and user interfaces, known as demand side platforms. Second, the large amount of newly available information enables companies to create profiles about their customers and prospects, which in turn can be used for micro-targeting distinct audiences. Generally, advertisers and data providers use predictive modelling to place users into granular audience segments. For instance, customers may be classified into different age groups (inferred from the sites they visited or from information they filled in somewhere) or marked as being associated with certain product categories (again, based on websites they have browsed over time). For media campaigns, such detailed information on individual customers can be employed to personalize creatives or better match the product category of an ad to a person's interests.

In this paper [15], The authors proposed a feature-combined deep learning framework for predicting customers' purchase intention in promotion under multiple online channels. The framework is based on the AIDA model and extracts customer browsing behaviour across channels. The authors have demonstrated how combining this browsing behaviour with purchase history and demographic information was expected to improve prediction performance but raised methodological challenges as well. Therefore, the authors have proposed an FCD using the LSTM to model sequence correlation within customer browsing data and process the multiple sources and heterogeneous data structures of feature combination. Extensive experiments showed that for all of the tested methods, the combination of all features had the best prediction performance, with the proposed FCD outperforming the other machine learning methods according to precision, recall, f1, AUC, and lift. The proposed approach, although made in the context of concert tickets promotion, can be applied to other similar promotion problems.

In this paper [16], The authors propose an advertisement recommendation system in the online broadcasting environment. To provide a personalized advertisement for users whose interest changes depending on the items in the broadcast content, the rapid recommendation system is required Existing recommendation systems suffered from the scalability problem is not suitable. Also, collaborative filtering suffers a cold start problem when the target user has a sparse history. To solve these problems, the authors proposed two tree-structured user profile models utilizing ROI patterns and rating history of users. Experiments have confirmed that the proposed system3s execution time is 30 times faster than the existing method. In addition, the proposed algorithm had similar performance to all users. It shows the proposed system alleviates the cold start problem. The results well confirmed the effectiveness of the proposed recommendation system in an online broadcasting environment.

This paper [17] is dedicated on contextual display advertisement. Generally, contextual advertisement implementations based on topical or keyword-based relevance approach. This paper addresses the mechanism of advanced contextual advertisement based on opinion about specific topic within content of webpage. Use of Natural Language Processing and Sentiment Analysis aims to determine the writer's attitude towards particular topic as: positive, negative, or neutral. This approach helps to develop an advertisement system that is more content-sensitive and consequently has higher ROI of marketing.

In this paper [18], the paper provides a hybrid recommendation algorithm The core part of the recommendation system faces some key challenges, including data sparsity, cold start and inefficiency, which seriously affect recommendation. In order to solve the issues well, the paper provides a hybrid recommendation algorithm. The authors first improve the two methods of collaborative filtering and content-based, and then combine the two recommend results in a certain proportion. Finally, the authors carry on experiments of comparing with other methods, which suggest that the new algorithm can efficiently solve these problems above and improve recommendation quality and efficiency.

In this paper [19], The authors propose a holistic pricing model for online specialty store with consideration of positive sale association between different items. The objective of the model was maximum of gross profit and sales. A particle swarm optimization algorithm was designed to solve the model. Simulation results indicated that the pricing model can help online specialty store get more gross profit and sales. The model can also be used to price different items based on the expectation for the commercial targets, which is a useful tool for the online specialty store.

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In this paper [20], the paper proposes a system design to combines the online advertising real-time bidding specific demands and advertisers demands to meet the online advertising business requirements. The design not only defines the module division of Demand-side platform system, but also puts forward core entity relationship. To solve the problem of online advertising in Demand-side platform has been the lack of a clear definition of the problem of entity relationship. Furthermore, it also provides a good foundation for further online advertising with efficient, flexible ways.

IV.CONCLUSION

The proposed system provides an innovative method for digital marketing which helps local markets and introduces a mechanism for local sellers to connect with customers near them. The method provides a more cost-efficient platform so that even the small businesses can promote their advertisements. The proposed system brings offers and deals which are available near you to your smartphone which you would otherwise miss out on.

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