A Review on Advertisement View ability Prediction on the Web portals

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ABSTRACT: Advertisement plays a vital role in the business to increase the sales and promote the products and also brand image. The advertisements in the web portals as scrolls, banners, animated images helps to attract the customers to view the advertisements. But the recent studies have found out that most of the advertisements are not seen by the web users and also not scroll in deep to see the advertisement fully. It makes financial losses to the product sellers or manufacturers. This paper studies about the various research works done in the online advertisements view ability and scrolling behaviour and depth.

KEYWORDS: Scroll Depth, visibility anticipation, User Clicks, Performance Analysis

I. INTRODUCTION

The popularity and versatility of web pages like news portals and social networks allows organizations to reach their chosen target audience and, by using appropriate marketing and communication tools, not only convey information, but also establish relationship with customers, create a dialogue and offer products (services) that suit their individual and constantly changing needs best. The news portals and social networks portals have huge number of peoples as followers or visitors and have high market potential for placing advertisements to reach the users.

Online advertisements are one of the promising area and popular forms of advertisements. Recent studies show that the display advertisements in the web pages generating high revenue. Display the advertisements in the web pages in various formats like text message, images, flash files, audio and also video. The following image shows the web page with advertisement. HDFC Life, ICICI profile advertisements in the form of images placed in the web page. A page view happens each time a page is requested by the user and displayed in the user's web browser. One display of an advertisement in a page view is called impression. Normally advertiser pay the money based on the impressions and clicked by the user.

Fig. 1.News portal with advertisement

Normally users of the web pages spend more time to look or read the upper part of the page than lower part of the page. Scrolling the web pages are very less. Webpage layout selection is an important factor to place the advertisements in the web pages. It helps to the investors and publishes to get more benefits from the advertisements and its impressions.

Investors are finding personalized page layouts that can balance advertisement view ability and customer's experience. For an example, if a customer will not scroll deep, the advertisement duration at the bottom of the page may be moved higher, while considering the reaction on customer's experience.

Normally Investors pay to the publishers for every ad impact feeling that their ads are seen, scrolled and clicked. In the traditional methods advertisement views are calculated based on the number of clicks and conversions (impact created in positive way after viewing the ads), which gets the profit directly.

Currently, the interest of the investors is expanding towards online display advertisements to raise the brand appreciation and to promote the products of their company. Online marketing by will develop trust in users about them excited about it. Despite, users these ads and calculating the click rate and conversion rate will be inadequate.

To discourse this issue, on extends ads based on the number of impressions that an administrator provided has become famous in the market. However, a recent study [1] is showing that, more than half of the advertisements are not exposed on the user's screen and users, as they do not scroll the page completely to bottom.

II. BACKGROUND

A page view and ad view ability are to be considered as the probability that the user will scroll to the page from top to page depth where the ad is located. Probabilistic latent class model(PLC) with constant memberships (PLC Const) are developed to predict the view ability of any given page depth for a page view. in later, Dynamic membership (PLC Dyn)was adapted to find the web page characteristics, account, web page attractiveness. PLC_Const and PLC_Dyn uses to softmax functions produced by the linear functions to calculate the final memberships.

Normally machine learning models used to predict the view ability of a page depth where an ad is placed. Factorization machine model is used to get the details of the interaction between the input features. Factorization model considers the basic factors like user, page and its depth and secondary information based on view port.

III. LITRATURE REVIEW

This section reveals that the existing research works based on the machine learning models used to predict the image, text and video based advertisement view ability in web.

Chen et al.[2] introduced a factorization model to predict the advertisement with search results based on the click position. This prediction is done for a given position and pair of query advertisements. It does not consider the web user as a factor.

Liu et al. [3] proposed dwelltime data with Weibull distributions and demonstrate the possibility of predicting webpage dwell time distribution from page-level features. Dwell time data specifies time spend by the user in the same position in a web page.

Yi et al. 4] predict dwell time through Support Vector Regression, using the context of the webpage as features. However, both methods do not consider individual user characteristics, an important factor of scrolling prediction.

Chong Wang et at [5] proposes two probabilistic latent class models (PLC) with constant membership and dynamic memberships that predict the view ability of any given scroll depth for a user-page pair. Using a real-life dataset from a large publisher, the experiments demonstrate that the models outperform comparison systems.

M. Mareck [6] finds new pricing model for pricing ads by the number of impressions that can be viewed by a user not for unseen by the user. This model avoids the payments for served in the page but not unseen by the use.

SwathiVoddi et al. [7] recommends a proficient solution using PLC and expectation maximization algorithm for anticipating the visibility prediction of ads taking in view the scrolls, number of clicks per user and web page pair.

JurgitaRaudeli et al [8]carrying out an experiment to examine the assessment factors of the effectiveness of advertising campaigns on socialmedia networks and their applicability to various types of organizations, taking into

account thespecifics of the activities these organizations operate; and evaluating the interconnectivity of theassessment variables of advertising campaigns and their impact on the performance of an organization. During the study, out of 39 primary assessment factors, eight primary factors that influence the effectiveness of advertising campaigns on social media networks were identified: sales, content reach, and traffic to website, impressions, frequency, relevance score, leads and audience growth.

Malar vizhiet al [9] improves the credit ability of the online advertisers and it leads to more investment on advertising by the growing and upcoming industries to earn more money using two probabilistic latent class models.

Eugenere Agichtein et al [10] collects scrolling behaviour and considers scrolling behaviour as an implicit indicator of user interests in order to measure the quality of webpage design and its content. The author proposed predictive model of the scrolling behaviour for any user on any based on historic information. The focus is to make prediction before the user behaviour occurs, rather than observation or measurement.

Wang et al.[11], learns user's click behaviour from server logs in order to predict if a user will click and ad shown for the query. The authors use features extracted from the queries to represent the user search intent. In this research proposal, search queries, which can explicitly reflect user interest is not available.

Most of the existing work on click prediction [Deepak agarwal et al.[12] and Olivier Chappelle et al.[13]] is done on the advertiser side, based on high dimensional features about user's profiles, ad campaigns and impression content. On the other hand, such data is not available at the publisher side. Therefore, these existing techniques of predicting click behaviour cannot be readily used to predicting scrolling behaviour at the publisher side.

Kim et al [14] presents regression method to estimate the parameters of the Gamma distribution of click dwell time. But its predict dwell time at a specific depth in page and depth-level dwell time prediction is more challenging than page-level dwell time prediction.

Table 1. Summary of Literature survey

Author	Method /Model	Work Done	Limitations
Chen et al.[2]	Factorization model	Advertisement view ability prediction based on click position	Web user factor is not consider in the publisher side
Lie et al [3]	Wei bull distribution	Predict the dwell time distribution based on page level features	Page depth level feature is not considered
Yi et al[4]	Support Vector Regression	Predict the dwell time using context of the web page	Individual user's characteristics factor not included
Chong Wang [5]	Probabilistic Latent Class Model	Predict the any gien scroll depth for a user page pair	Efficient in publisher level not in advertiser level
Mareck [6]	Pricing Model	Pricing for ads to be calculated based on impression	Unable to find the scroll depth of the advertisement
SwathiVoddi et al[7]	Probabilistic Latent Class with Expectation Maximization	Visibility prediction of ads taking in view the scrolls and impressions	Data are not accessed by the advertiser side
Eugenere et at [10]	Predictive Model	Scrolling behaviour of user based on historic information	Does not use any measurement factors

Wang et al.[11],	Feature Extraction	Query based advertisement listing	user interest is not available
Deepak et al.[12] Olivier et al.[13]]	High Dimensional Features	Prediction of ads clicking behaviour	Cannot used for Scrolling behaviour
Kim et at[14]	Regression with Gamma distribution	Prediction of dwell time in the specific depth in the page	Depth level dwell time prediction is more challenging

The existing works in click prediction is carried out on the advertiser side with users, advertisement convent and impression context. These data are not accessed in the publisher and user's side.

View ability prediction plays important role in many cases like guaranteed impression delivery, real-time impression bidding, webpage layout selection and recommender systems.

IV. **CONCLUSION**

Most of the research works based on the user's features captured from their browsing habits, web page features, user's interaction in the page, geo-location of the user and device type used for browsing. PLC models plays vital role in the ad view ability prediction in the existing works.

Meta level category like geographical profile and web user profile are not applicable to the PLC based models. In the existing works, user profile like gender, qualification, age, occupation and location based advertisement view ability analysis not performed. Behaviour of the user is also an important factor in advertisement view ability.

The scroll depth and impression for the advertisement in the web page by the user allows predicting the view ability of the advertisements. Our work focuses the scroll depth and impression for the ads based on the user's profile and location to find out the view ability of advertisement.

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