

# Digital Advertisement using Artificial Intelligence for Data Analytics

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**Abstract** - To offer the most suitable products to the end-users in digital marketing, by analyzing large data set of existing user based on the report generated by the Advertisement Platform which analyses the users on the basis of (Cookie ID - Subscriber ID, URLs- Classified Interactive Advertising Bureau (IAB) category) analysis, non-functional resorts (end-user behavior report, category score report, device usage report) of the User, which is observed in real-time behavior of the user through websites while surfing, During Demonstration, we demonstrate the user mapping by the reports generated and score report of the user with respect to the user browsing history and its behavior while surfing. This enables us to profile and define end-user behavior with more accurate success rates. By this, we can classify most visited websites and new categories.

**Key Words:** Artificial Intelligence, Data Analytics, Digital Advertisement, User Profiling, Digital Marketing.

## 1. INTRODUCTION

With the advancement of the internet, the web has become the most preferred medium of promoting the brands and products and services. Traditional advertising involves the hoardings, billboards, distributing pamphlets hoping that customers will give them view. The digital marketing project is a useful idea for our day to day life as it can help us in reducing the time we took for viewing every product and choose the product of our choice. It takes a glance at our web behaviour and suggests the product we might be interested in. So we will be Implementing this Projects for Social Media Marketing, as this can Analyse Data of users while surfing and Recommend the best products which can be similar to user choice. This can help to reduce time and hassle for both the user as well as the Marketing People. This can make the Marketing process faster, efficient and precise [1].

Advertisements are seen everywhere in our daily life, which help companies increase business and enhance and maintain a relationship with clients. To list just a few, the ad-trucks, the brochure delivered directly to users or clients and various product promotions on TV shows, SMS advertisements, etc. Among all those forms of advertisements, the online advertisement is one type that recently welcomes its prosperity thanks to the rapid development of information technology (IT) and the Internet. The use of the Internet and mobile phones increase rapidly and affect people's daily lives, and they have become

the mainstream media of our society, especially for the young as well as the middle-aged. In the meantime, their audience possesses the very characteristics that sellers always wish their customers to have: young, fashionable, well-educated, high-income, etc. Thus, it is paid close attention to the whole industry [2].

So companies like Google, Amazon and many others have implemented the systems which show ads based on user surfing behaviour. In this, they are currently making progress by using Machine Learning for the classification of the user. This helps in targeting the specific users of the products, due to this the marketing has become cheaper than before and advertisement has reached a wider audience. This helps in marketing the products globally and by implementing AI the advertisement will become more precise and more marketing can be done under less cost. So common people can use this platform for advertisement of their products on websites and get more business out this at a very low cost [3].

## 2. LITERATURE SURVEY

Through this system, all information about the customer like their budget range, product types, product categories, and types of interest, the desire of buying any products, web browser history, and cookie details are tracked [7]. The necessary condition is that there is a need for employees to have an android smartphone or internet-enabled computer device. This system helps managers to monitor their customer through browsing history. For computing similarity between the different ads in the given dataset efficiently and in the least time and to reduce the computation time of the ads recommender engine we used cosine similarity measure [5]. All outgoing packet details can be seen and can be used by the managers, they can also predict where their customers are really interested in the product they have been visiting several times and can show the advertising on other websites as well as other social platforms like google mail, and other community social platforms as well. The outgoing packets can be examined by using dpi. The dpi means deep packet inspection system is beneficial for the progress of observing the outgoing network traffic and will allow the system to check the search history of his customer towards work. In the study, all activities like observing the outgoing network packets, generating advertisements, crawling the data back to another website, and showing advertising on another website as well as other social platforms are stored on a centralized database [4]. Managers can see that history by logging into the centralized server.

Content-based recommendation systems analyses the properties of the items recommended. Predicts recommendations based on how similar the items are to those that users liked in the past [6]. SSP service supply platform is developed for generating the advertising. The supply service platform is a technique that allows us to manage our advertisement space inventory. According to the analysis of these recommendation lists, we can obtain the final recommendation list [8].

**Table-1:** Descriptive Analysis

SR. NO	PAPER	JOURNAL	AUTHOR
1.	An artificial intelligence enabled data analysis platform for digital advertisement	2019 22 <sup>nd</sup> conference on innovate internations in clouds and networks and workshops	Naz albayra1, aydeniz ozdemir, Engin zeydan
2.	Ad Analysis using Machine Learning Classifying and recommending advertisements for a given category of videos, using Machine Learning.	International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS-2017)	R Vinit Kaushik, Raghu R, Maheshwar Reddy L, Ankita Prasad, Sai Prasanna M S
3.	Management Information Systems for Advertisement based on Online-to-Offline Strategy	Department of Information Management Peking University 2017	Fei Teng, Yang Xu, Yang Xu

### 2.1 Existing System

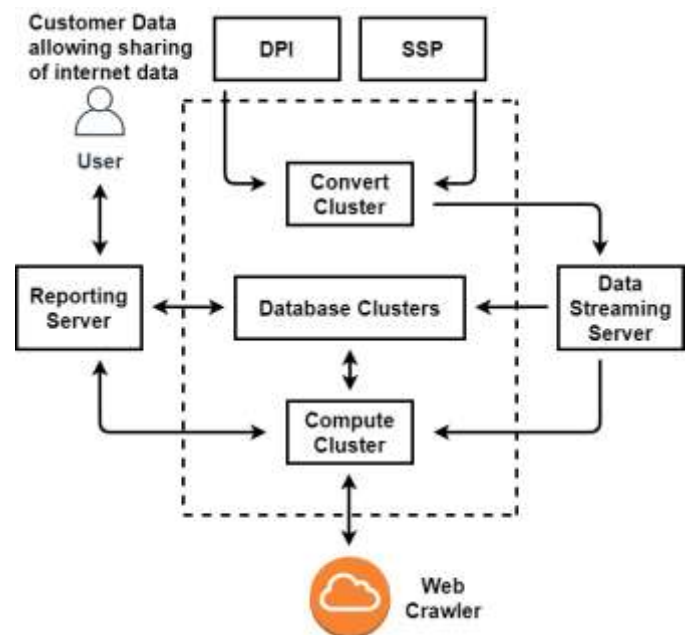
The Existing System mostly recommends ads based on user behavior and tries. Here Machine learning is used to predict similar products to the system. When a user Surfs a Website, then he visits other websites there he can see Ads related to the surfing behavior of himself. It was tracked and Analyzed by companies like Google, Microsoft using bots like Google Analytics, etc.

## 3. IMPLEMENTED SYSTEM

### 3.1 Implemented Technique

In this system, we have used two websites to show the demonstration of how the digital marketing system works. One website is the source of products where the user searches the products and another website is used to show the advertising by SSP. SSP is used by the administrator to monitor the user traffic that can be useful to understand the interest of users about both product and budget. By monitoring data obtain from it the implemented system will recommend the best product for the customer and make the suggestion by showing the advertising on the webpages.

### 3.2 System Architecture



**Fig-1:** Digital Advertising Platforms

The above architecture shows the procedure of monitoring the data of end-user, arranging the collected data and displaying the advertising. All the necessary details of the end user are collected through DPI and SSP and converted to the data set which is stored in the database. This data is then passed to the streaming server which is used to transferring the data to the database which is then passed to an admin panel where it can be monitored by the admin and the decision is taken. After these phases the details like user interest, budget range, etc. are collected and suggestions are made. Web Crawler crawls data about products from another website for recommending it to the users.

## 4. METHODOLOGY

The main objective of this system is to automate the serving of ads to the user which visits the website based on their user browsing behavior. We will implement a time window that will act as the filter for getting the user preference for

showing ads in the future related to this data. Also, we will use this with Machine Learning for recommending the ads to that user precisely.

## 4.1 Modules

**4.1.1 Supply-Side Platform:** Supply-Side Platform (SSP) is an advertising technology (AdTech) platform used by publishers to manage, sell and optimize available inventory (aka ad space) on their websites and mobile apps in an automated and efficient way. By using an SSP, publishers can show display, video and native ads to their visitors, and monetize their website and apps.

**4.1.2 Deep Packet Inspection:** Deep packet inspection (DPI) is an advanced method of managing and examining network traffic. Internet usage habits of test end-users are analyzed. Internet usage is classified on an industry basis so that the market can be addressed in the most accurate way. Therefore, depending on the test end-users visiting the website, the customer group is labeled with the corresponding category, E.g. "real estate" or "automobiles" sector without affecting or modifying the higher level system. Hardware Abstraction Layer loaded by the Android system at the appropriate and time implementations are packaged into modules. For more details, see the Hardware Abstraction Layer (HAL).

**4.1.3 Reporting Server:** Admin Panel or Dashboard for checking the Progress or tracking and Maintain Servers.


**4.1.4 Convert Cluster:** Converting the Data sets into the proper format and maintain it in the database.

**4.1.5 Web Crawler:** Web Crawler is an Internet bot that systematically browses the WWW (World Wide Web) and typically for the purpose of Web indexing. A web crawler sometimes called a spider bot or spider and often shortened to the crawler.

## 5. RESULTS AND ANALYSIS

This system will provide an easy way to marketing the product and help the customer to buy the better product in its budget. The system will keep an eye on the user's history and traffic to identify the details and generate the suggestion. It will help the customer for a more convenient way of buying a product that suits their choice and wallet. By using this application, we are able to track the history of the browser and use it to generate better suggestions for the user and generate the advertising according to user data. This system increases the overall performance of marketing strategies that are being used currently in the real world. Real-time marketing like a paper advertisement, pamphlets, television marketing, and hoarding marketing is will not be needed anymore.

In the given figures we have explained the working of the system.



#	SiteName	Domain	Token	Status	Searches	Remove
1	Miskart	http://miskart.000webhostapp.com/				
2	Pismart	http://pismart.000webhostapp.com/				

Fig-2: Admin Dashboard

Figure 2 shows the admin dashboard for buying and selling advertisement and to manage the website user search history. Figure 3 shows where the advertisement will be shown to the user.



Fig-3: Before Recommendation

In figure 4, the user visits the website where he searches for products, these searches are stored in the cookie and passed to the SSP.



Fig-4: User Searched Keywords

When the same user visits another website i.e. figure 3 then it shows the advertisement on the present visit website based on the search history of the previously visited websites. E.g. laptop advertisement shows in figure 5. User Search the laptop product on the previous website then it recommends that type of products or ads on the present website.

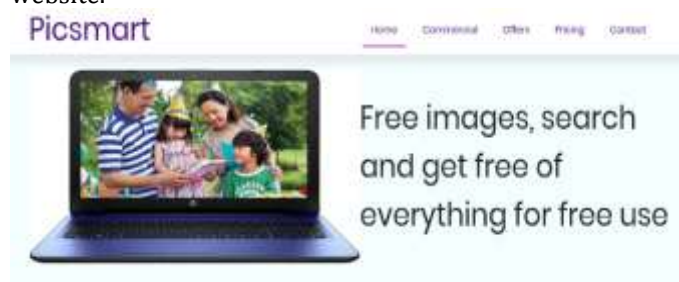


Fig-5: After Recommendation

**Table-2:** Comparison between Existing Technique and Implemented Technique.

Features	Existing Technique	Implemented Technique
Time Measured	No	Yes
Human Efforts	Yes	No
Product Suggest	No	Yes
Cost	More	Less
Social Platform Used	No	Yes
User Budget Considered	No	Yes

## 6. CONCLUSIONS

Thus, this system will provide an easy way to marketing the product and help the customer to buy the better product in its budget. To overcome the existing system problem, the system will keep an eye on the user's history and traffic to identify the details and generate the suggestion. As technology is used there is no doubt about errors. Ultimately it will help the customer for a more convenient way of buying a product that suits their choice and wallet. Human position by making the guide for new users, applications for finding an exact position, locating the point and controlling activities, etc. By using this application, we are able to track the history of the browser and use it to generate better suggestions for the user and generate the advertising according to user data. The details are accessible to the managers using this system like dpi that is a deep packet inspection that is used to track network packets. It also helps the company for wastage of time will be minimized and thus the company's annual growth is increased. It helps to monitor the employee's login and out. It reduces the complexity of employee detail maintenance. And helps to reduce the complexity of marketing techniques that were being used earlier. This system increases the overall performance of marketing strategies that are being used currently in the real world. Real-time marketing like a paper advertisement, pamphlets, television marketing, and hoarding marketing is not needed anymore. It completely reduces the traditional way of marketing and also reduces paperwork and saves time.

We can use this project in movies, places, Hotel recommendations based on their history, it will help in developing a large scale and the much-advanced systems as a recommendation system.

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