

AI used in advertising and recommendations



Advanced Techniques in AI

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Contents

Introduction	2
2-How AI is being Used in Advertising	3
3- Programmatic Advertising:	3
3.1- Real-Time Bidding (RTB):	4
4-Benefits of using AI in advertising	5
More personalized experiences:	5
Select the right thought leaders and influencers	5
Target the right audiences	5
Make better decisions faster	5
Improve ROI (return on investment)	6
5-Potential obstacles to avoid with AI in advertising	6
Weak IT infrastructure:	6
Too little high-quality data:	6
6-Examples of AI and advertising	7
7-Recommendation System:	8
7.1-Recommendation engine processes data in four phases:	9
8-Privacy	11
Conclusion	13
References	14

1. Introduction

A.I. have been impacting a lot of industries and done so many good things for the general public.

A.I. have made huge changes in how the advertising industry works and the efficiency of the entire industry.

We now have a humongous amount of data of the internet users and what they are doing on the internet. We can utilize Artificial Intelligence to show only relevant advertisements to the target audience and generate more results for each dollar spent on advertising.

When you go to Amazon and browse some products but don't complete any purchase. But the same product's ad will popup on your Facebook feed, instagram feed, Google Search results, and your favorite blog.

Does your favorite blog know if you would be interested in buying an xyz product from amazon? No. They don't. This is called remarketing or retargeting advertising.

But you may also notice that you don't just see ads of the xyz product only, you also see their competitor's ads. Have you wondered how abc company found out that you are interested in xyz? That's the small little Artificial intelligence doing its job in profiling you and showing you relevant ads.

2-How AI is being Used in Advertising

When it comes to ad targeting, displaying the right ads to the right customer at the right time has posed a challenge for companies such as Google Ads in selling ad inventory.

By incorporating artificial intelligence technologies such as Programmatic Advertising, however, Google has been able to automate the process of buying and selling ad inventory by combining the power of AI and real-time bidding for inventory across mobile, display, video and social channels.

This AI technology effectively analyzes a visitor's behaviour and enables real-time campaign optimization for an audience that is likely to convert.

It's designed to replace human negotiations with machine learning and AI-optimisation. The goal is to increase efficiency and transparency for both the advertiser and the publisher.

3- Programmatic Advertising:

Programmatic advertising exists in a wide range of digital channels, including display, mobile, video and social.

We're starting to see out-of-home channels advertise programmatically through digital screens on bus stations, shopping malls, and billboards.

But, what is exactly Programmatic Advertising? The use of Artificial Intelligence and machine learning to buy advertising in real-time, instead of going through human negotiations and pre-set prices.

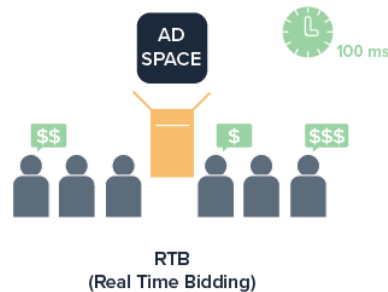
If you choose to advertise on a large publisher's website there is no way of knowing who saw your ads.

Products aimed at an audience of, say, people over the age of 50 could just as well be shown to 25 year-olds.

This brought on the birth of Real-Time Bidding (RTB) – the first real instance of programmatic advertising.

3.1- Real-Time Bidding (RTB):

RTB is a way of buying and selling ads through real-time auctions, meaning transactions are made in the time it takes to load a webpage



It works like this:

As a visitor enters a website, a request is sent to an ad-exchange with information on the website along with visitor data.

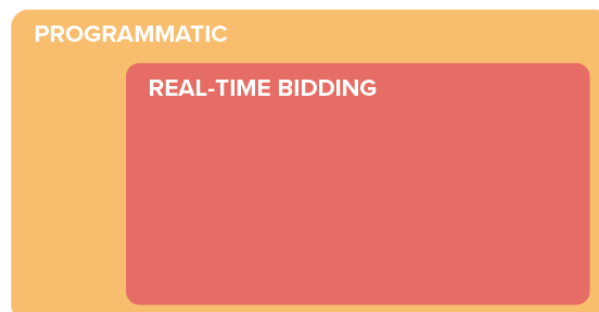
This information is then matched against available advertisers and a real-time auction takes place between the advertisers that match the criteria.

For instance, let's say you visit a website that sells organic dog food, but you don't make a purchase. Later you visit other news site and suddenly you see ads about dog food.

During the time it takes you to load the website an auction takes place between the organic dog food brand and everyone else who's also interested in showing you ads.

The winning bidder gets to display its ad to you on the publisher's website.

RTB is a form of programmatic advertising, but not all programmatic uses Real-Time Bidding.



4-Benefits of using AI in advertising

AI can bring a competitive advantage to advertising campaigns through improved user experiences and reduction in human error. The potential benefits are evident, and organizations are taking notice.

More personalized experiences:

Most consumers want experiences tailored to them. And the AI offers the possibility to create personalized experiences for each person.

Personalization allows you to establish relationships with consumers across touchpoints. Whether it be using conversational marketing or optimizing creative messaging to better connect with audiences, the company can benefit through increased brand loyalty and more relevant advertisements.

Select the right thought leaders and influencers

Influencer marketing is becoming increasingly important for brands looking to cultivate more personal connections. By leveraging AI, your team the company the right thought leaders, generate a content strategy, and increase engagement across platforms.

Target the right audiences

One of the biggest challenges for marketers is ensuring that the right people are targeted. AI can analyze different data sources to determine the probability of a user taking a specific action, making campaigns more effective and actionable. AI can create look-alike audiences based on past campaigns to target new contacts and build the sales funnel.

Make better decisions faster

With the right data and insights, marketers can make better decisions faster. In an ever-changing marketplace, this is becoming increasingly important to make sure ads stay relevant to the target audience.

Improve ROI (return on investment)

Advertisers and marketers have traditionally struggled with determining the effectiveness of their campaigns and the steps needed to improve their results. Leveraging analytics can help companies determine what is most effective. Additionally, by targeting the right audiences with the right messaging, your team can reduce advertising waste and improve marketing ROI.

5-Potential obstacles to avoid with AI in advertising

Be knowledgeable of ways to overcome potential obstacles to becoming successful in the use of AI in advertising. These obstacles may include:

Weak IT infrastructure:

To implement a robust AI strategy in your advertising processes, you'll need a strong IT infrastructure that can handle it. Before you do anything else, it's crucial to speak to your IT department to determine what can be taken on, and what tasks need more preparation time.

Too little high-quality data:

With the influx of data, it can be difficult to manage both the quality and insights derived from the information. Conversions and interactions happen across channels in both online and offline environments. The vast amounts of data can make it harder to plan for longer-term initiatives. Additionally, navigating the data and ensuring the collected information stays current can be difficult. The outputs and insights generated from AI can only be as useful as the data it is based on.

6-Examples of AI and advertising

Here are two examples of how some brands use AI in advertising:

Behr was able to take advantage of AI advertising and conversational marketing to provide customers with real-time recommendations, resulting in a 17 percent increase in purchase consideration and an 8.5 percent incremental lift in foot traffic.

A leading boots brand wanted to increase foot traffic at its points of sale. Location-based marketing was an important component of this campaign in order to target different customers across media types. This resulted in a 41.4% increase in foot traffic, which was 360% above benchmark, and 21,000 increasing visits to the store.

7-Recommendation System:

The purpose of a recommender system is to suggest relevant items to users. To achieve this task, there exist two major categories of methods: collaborative filtering methods and content-based methods. Collaborative methods for recommender systems are based solely on the past interactions recorded between users and items to produce new recommendations. These interactions are stored in the so-called “user-item interactions matrix”.

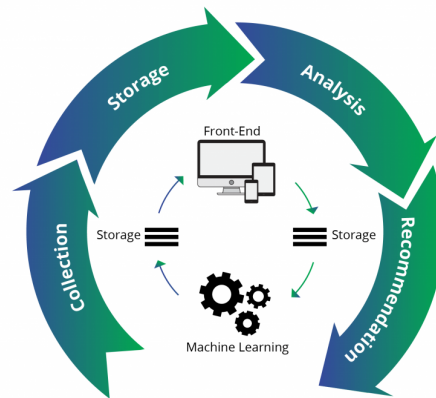
The main advantage of collaborative approaches is that they require no information about users or items and, so, they can be used in many situations. The more customer interacts with products the more recommendation gets perfect.

However, it is impossible to recommend anything to new users or to recommend a new item to any users and many users or items have too few interactions to be efficiently handled.

Unlike collaborative methods that only rely on user-item interactions, content-based approaches use additional information about users and/or items. The idea of content-based methods is to try to build a model, based on the available “features”, that explain the observed user-item interactions.

Content-based methods suffer far less from the cold start problem than collaborative approaches: new users or items can be described by their characteristics (content) and so relevant suggestions can be done for these new entities. Only new users or items with previously unseen features will logically suffer from this drawback, but this has little to no chance to happen once the system is old enough.

7.1-Recommendation engine processes data in four phases:



1,Collecting the data:

Data gathering is the first phase of creating a recommendation engine. In reality, data is classified into explicit and implicit ones. Data provided by users, like ratings and comments are explicit. Whereas, implicit data may consist of a search log, order and return history, clicks, page views, and cart events. This kind of data is collected from any users who visit the given website.

Collecting behavioral data is not difficult, since you can keep user activities logged on your website. As each user likes or dislikes various items, their datasets are different. During some time, when the recommender engine is feed with more data, it becomes more clever And the recommendations become more relevant too, so the visitors are more inclined to click and buy.

2. Storing the data

To have better recommendations, you should create more data for the algorithms you use. It means that you can turn any recommender project into a great data project quickly. You can decide what type of storage you need to use with the help of the data you use for creating recommendations. It is up to you whether to use a NoSQL database or a standard SQL database or even some sort of object storage. All of these variants are practical and conditioned with whether you capture user behavior or input. A scalable and managed database decreases the number of required tasks to minimal and focuses on the recommendation itself.

3. Analyzing the data

In order to find items with similar user engagement data, it is necessary to filter it with the use of various analyzing methods. Sometimes it is necessary to provide recommendations immediately when the user is viewing the item, so the type of analysis is required. Some of the ways to analyze this kind of data are as follows:

- Real-time system

In case you need to provide fast and split-second recommendations you should use the real-time system. It is able to process data as soon as it is created. The real-time system generally includes tools being able to process and analyze event streams.

- Near-real-time analysis

The best analyzing method of recommendations during the same browsing session is the near-real-time system. It is capable of gathering quick data and refreshing the analytics for few minutes or seconds.

- Batch analysis

This method is more convenient for sending an e-mail at a later date since it processes the data periodically. This kind of approach suggests that you need to create a considerable amount of data to make the proper analysis like daily sales volume.

4. Filtering the data

The next phase is filtering the data to provide relevant recommendations to the users. For implementing this method, you should choose an algorithm suitable for the engine you use. There are a few types of filtering, such as:

- Content-based

The focus of content-based filtering is a specific shopper. The algorithms follow actions like visited pages, spent time in various categories, items clicked on and etc. And the software is developed based on the description of the products the user likes. Afterwards, the recommendations are created based on the comparison of user profiles and product catalogs.

- Collaborative

It makes predictions conditioned with the tastes and preferences of the customer and allows you to make product attributes. The essence of collaborative filtering is the following; two users who have liked the same item before will like the one in the future.

8-Privacy

Consumers and regulating organisms are taking a major action on how organizations are using their data. Marketing teams need to make sure they are using consumer data in an ethical way and in accordance with standards in order to avoid risky heavy penalties and its reputation damage. This is a challenge when it comes to AI. Unless the tools are explicitly programmed to meet some specific legal guidelines, they risk going beyond what's acceptable in terms of using consumer data for personalization.

9-Conclusion

In conclusion, we can see that the advance of artificial intelligence has been huge in recent years. This is why it has had such an impact on the world of advertising. Therefore, the functioning of a machine (the AI in this case) will be more efficient and fast in this area of the advertising than the functioning of the human mind. This can be generalised to more aspects of life in the future. Who knows, maybe one day we will also buy using artificial intelligence, instead of buying products by hand, thinking about what we have to buy.

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