

# A Study on Machine Learning in Social Media

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**Abstract:** The fiction we enjoyed in the scientific movies earlier, has now become a reality and is gaining popularity across various sectors. Of course, we mean Artificial intelligence and machine learning. More and more companies are leveraging this technology to understand their customers, to understand the taste and demand of customers, thereby making better business on the Social media. Machine learning for social media analysis is an inevitable tool. This is due to the unprecedented growth of social-related data, boosted by the explosion of social media websites and the embedded heterogeneity and complexity. It's not a secret that social media has become a new way to do business. In this paper we bring out a detailed study on Machine learning in Social Media and its influence in businesses.

**Keywords:** Artificial Intelligence, Social Media, Machine Learning,

## 1.Introduction

Machine learning is a branch of Artificial Intelligence, a broad science that mimics human abilities. According to Professor, of the Machine Learning Department at Carnegie Mellon University, Tom M. Mitchell: "Machine learning is the study of computer algorithms that improve automatically through experience". The aim behind machine learning is to automate the creation of analytical models and to enable algorithms to learn continuously with the help of available data, while reducing the need for human interaction.

In recent years, social media has become a part in all aspects of consumers' lives and social media marketing has become crucial for most of the businesses to remain competitive. Earlier Facebook and My Space were fun tools to find events, share photos and chat with friends, but nowadays, 95 percent of the youngsters expect to be able to engage with brands via Facebook, and 42 percent of brand marketers state that

Facebook is critical for their day-to-day business. Facebook is just one of many social media marketing platforms where brands need to be ready and waiting to engage with users 24x7. Social networks is the means of communication today. Information available from social media is helpful in the analysis of user opinion, for example measuring the review on a recently released product, looking at the response to policy change or the effect of an ongoing event or about a product or a person.



During the last decade, social media has blossomed into a mandatory customer-service and sales channel. Social media and chat applications are used to the extent that users no longer use email or pick up the phone to communicate with brands. Further social media is now used by people of all ages, with most users regularly logging on to two to five different social media accounts.

## **2. Machine learning empowers marketers and revolutionizes Social Media**

### ***2.1 Improves visual experience***

According to statistics, 82% of the twitter users watch video content and around 90% watch it on a hand held devices. So, to enhance the visual experience further, Twitter is using Magic Pony Technology, a London based technology firm that has developed machine learning techniques for visual enhancement. This in turn helps Twitter to automatically sharpen the video and images.

### ***2.2 Supports the social networking giants to market their products to the targeted customers***

Facebook uses deep neural networks to decide which advertisement company needs to be shown to which users. By assigning this work to the machines, the company can free itself from labour intensive activities that includes collecting the data, clustering it in an insightful way, and serving the data in a way to maintain supremacy in their domain.

### ***2.3 Protects the reputation and keeps the data safe***

Today, even the big corporates are vulnerable to data spam, hence Pinterest has started using machine learning technology to its advantage. With it, the company can detect the spam content and the users,

recommend the content and predict the likelihood that a person will pin the content, can monetize ad performance.

### ***2.4 Helps to automate the data***

Today there are almost 2.2 billion Google+ users, out of 111 million are active users and reaching out to so many users is always a concern. Thus, Google has followed the suite of machine learning through which it can automatically attach tags without further data input. The web giant wants to recognize abstract concepts such as sunset, beach, etc. and attach metadata to it without any further mouse click.

Definitely, machine learning technology has started off its game and is changing the future of social media trends and with its deep insights both the customers and marketers are being benefited. Starting from big shops to small companies, everyone can use it to step up their competitive advantage and customer engagement objectives.

## **3. Real examples of ML applications in Social Media**

As technical advancements happens every day, a wide range of tools are being used, in the race to win customers on social media. It doesn't merely stop at acquiring new customers, however Artificial Intelligence is seeping its way into the user experience on social platforms, creating a better journey for users.

**Yelp.com**, which was founded in 2004, is leveraging machine learning to improve users' experience. It started using machine learning two years ago when it first implemented its picture classification technology. Yelp's machine learning algorithms help the company's human staff

to compile, categorize, and label images more efficiently.

**Pinterest** occupies a peculiar place in the social media ecosystem. Pinterest's primary function is to curate existing content. The company in the year 2015, approached a machine learning company, Kosei, that is specialized in the commercial applications of machine learning technology, specifically in content discovery and recommendation algorithms. Today, machine learning is available at every aspect of Pinterest's business operations, from spam moderation and content discovery to advertising monetization thereby reducing email newsletter subscribers.

**Facebook**, the social networking site, invested in Artificial Intelligence since 2013, they acquired the services of New York University professor, Yann LeCun. Footprints of AI and ML are all over Facebook, from neural networks learning to tag, to image recognition making it easier to find friends. Deep learning methods are used to understand keyword queries for better search results of people and places. Facebook's Messenger service, is considered as one of the most exciting aspects of the world's largest social media platform. AI applications are also used in Facebook to filter out spam and poor-quality content, and the company is also researching computer vision algorithms that can "read" images to visually challenged people.

**Twitter** is also working using AI and ML to categorize every single tweet. The basic idea is to provide content people most care about at the top of their timeline. Twitter shows you "the best tweets first". Twitter's Machine Learning evaluates each tweet in real time and "scores" them according to

various metrics. Twitter also uses neural networks to crop photos to maximize their aesthetic output. For this, machine learning studies eye-tracking. Eye tracking, records which area people look at first in a picture, meaning ML can understand which part of a photograph is most appealing.

The most widely seen development in Google's neural network research is **the DeepMind network, the "machine that dreams."** It's the same network that produced those psychedelic images. The company is researching "virtually all aspects of machine learning," which will lead to exciting developments in what Google calls "classical algorithms", also includes other applications such as natural language processing, speech translation, and search ranking and prediction systems.

**Baidu**, the Chinese search engine, is also investing heavily in the applications of AI. One of the most interesting developments at Baidu's R&D lab is the Deep Voice, **a deep neural network that can generate entirely synthetic human voices that are very difficult to distinguish from genuine human speech.** Deep Voice 2 – the latest version of the Deep Voice technology – promises to have a lasting impact on natural language processing and voice pattern recognition systems, as well as other potential uses, such as real-time translation and biometric security.

**IBM**, the oldest and largest legacy technology companies, has renowned machine learning technology, **Watson**, which is used to test and validate self learning behavioural models. Watson has been deployed in several hospitals and medical centers in recent years, where it demonstrated its aptitude for making highly accurate recommendations in the treatment of certain types of cancers. Watson also has a significant potential in the retail sector,

where it could be used as an assistant to help shoppers, as well as the hospitality industry.

#### **4.Social Media Analysis**

Data in social media is unstructured, in the form of conversations and images, that holds the answers to the most important business questions. This unstructured data requires a deeper type of analysis. Some of the existing analytical tools for social media monitoring includes,

##### **4.1Sentiment Analysis**

Sentiment analysis, otherwise called as opinion mining or emotion AI, is used to judge the opinion of a text. The process uses both natural language processing (NLP) and machine learning(ML) to pair AI training data with predefined labels such as positive, negative, or neutral. Then, the machine develops agents that learn to understand the sentiments underlying the new messages. Businesses can use sentiment analysis to collect feedback on a new product. Similarly, businesses can apply sentiment analysis to discover how people feel about their competitors.

##### **4.2 Image Recognition**

Image recognition uses any accompanying text. This can be particularly useful for businesses when their customers upload photos of a product without directly mentioning the brand or product name as text. Businesses get benefits from paying close attention when people post photos of their products, because social media posts with images generally receive higher user engagement compared to posts that are purely text. . Facebook users are 2.3 times more likely to like or comment on posts with images, while Twitter's machine learning to train computers, to recognize a brand logo or photos of certain products, without users are

1.5 times more likely to retweet a tweet with images.

##### **4.3 Chatbots**

Chatbots are applications of AI which mimic real conversations. They are embedded in websites such as online stores, or through a third-party messaging platform like Facebook messenger, and Twitter and Instagram's direct messaging. Chatbots allow businesses to automate customer service without requiring human interaction. For businesses with a generally young customer base, chatbots are more likely to increase customer satisfaction. 60% of millennials have used chatbots, of which 70% of them have reported positive experiences. For example, Estee Lauder uses a chatbot embedded in Facebook messenger that uses facial recognition to pick out the right shade of foundation for its customers.

#### **5. Social Media Management**

With the drastic growth and popularity of social media platforms and smartphone technology, social media management is vital activity. Daily management includes the tasks for promoting growing networks as much as possible, post regular photos and ads, like comments and respond to the occasional question. As the wireless internet has advanced, with increasing engagement, many brands have contracted digital agencies to manage social media marketing campaigns.

Over the past few years, social media has blossomed into an essential customer-service and sales channel. Social media and chat applications have advanced to the extent that users no longer use email or pick up the phone to communicate with brand and they expect to be able to leave a

comment on Instagram or Facebook and receive the same speedy, informative response they would using traditional channels.

Many organizations now hire for management-level positions such as community manager to engage with the community, curate social content that targets specific demographics and the companies strategize social marketing campaigns based on past performance, analytics and emerging trends.

In the era of big data, brands now have access to more information than ever, especially about their customer base. One of the main challenges of social media marketing is segmentation—targeting people with content that they are interested in based on their online activity and demographics. Using a mix of big data analysis and machine learning, brands can effectively target users with messaging in a language they really understand and can push offers, deals and ads that appeal to them across a range of channels.

## 6. Conclusion

The present trend is, its impossible to have a brand without social media presence, but just being on these platforms isn't enough. It has to be utilized correctly to achieve maximum advantage, generate more customers and ultimately increase turnover. Companies are leveraging social media through the integration of Machine Learning. It helps them to understand their customer's buying personas, thereby, helping the company to market more relevant products to the right customer. Marketers do also personalize content for their customers, based on their buying habits, their environments and on their decision making trends.

Of course Artificial Intelligence can learn these habits at a rate much faster than any human. Machine learning algorithms analyze everything that is happening on social media in real time and thus convert the information to tangible data for the marketers to utilize. Machine Learning, studies data and makes recommendations based on its findings. Such vast information would typically take months for a human to understand and cultivate. Machine learning, algorithms, and datasets empower Artificial Intelligence, which in turn streamlines the process for marketers. Those businesses who doesn't have the resources to hire human staff to monitor trends, social patterns and insights, can utilize AI and ML, a way to solve such problems and affords marketers the freedom to be creative with their outreach. Machine Learning is the way for brands to span the vast pool, social media.

## REFERENCES

1. <https://www.martechadvisor.com/articles/machine-learning-amp-ai/the-impact-of-artificial-intelligence-on-social-media/>
2. <https://www.martechadvisor.com/author/olga-egorsheva/>
3. <https://www.wordstream.com/blog/ws/2017/07/28/machine-learning-applications>
4. <https://www.goodworklabs.com/how-is-machine-learning-changing-social-media/>
5. Machine Learning Techniques for Social Media Analysis, POLITECNICO DI MILANO