

Artificial Intelligence in Social Media

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ABSTRACT

Artificial intelligence (AI) is a branch of computer science that deals with the capability of a machine to imitate human intelligent behavior. It has the potential to help tackle some of the world's most challenging social problems. Modern social media, also known as social networking, include Facebook, Twitter, Instagram, Pinterest, and YouTube. AI is a fundamental component of how today's social networks function. The use of AI in social media is growing in an unprecedented way and is constantly transforming social media. This paper explores various artificial intelligence tools and their impact on social media companies.

Keywords: social media; artificial intelligence; AI for social media; social artificial intelligence

INTRODUCTION

Artificial intelligence (AI) is the cognitive science that deals with intelligent machines which are able to perform tasks heretofore only performed by human beings. It is mainly concerned with applying computers to tasks that require knowledge, perception, reasoning, understanding, and cognitive abilities [1]. AI tools can be trained to leverage individual behaviors, preferences, beliefs, and interests to personalize experiences. They can teach machines to be like humans. They can provide them the ability to see, hear, speak, move, and write. AI can learn these habits at a rate much faster than humans. AI tools are being used across industries to automate and improve the efficacy of diverse activities.

Social media have become an indispensable part of life. Consumers constantly interact with social media. They constantly engage with platforms such as Facebook, Twitter, LinkedIn, Pinterest, and Instagram [2]. Social media is one of the major sectors where marketers can both skyrocket performance and efficiencies by using AI. Companies are better leveraging social media through AI. With the help of AI, data about your activity on social media is continuously being compiled and analyzed. Social media is currently being used to infer social behavior and derive tendencies, in combination with big-data analysis tools [3].

OVERVIEW ON ARTIFICIAL INTELLIGENCE

The term "artificial intelligence" (AI) was first used at a Dartmouth College conference in 1956. AI emerged as an academic field in 1956. The main goal of AI is to enable machines to perform complex tasks that typically require human intelligence [4]. AI is now one of the most important global issues of the 21st century.

AI is the branch of computer science that deals with designing intelligent computer systems that mimic human intelligence, e.g. visual perception, speech recognition, decision-making, and language translation. The ability of

machines to process natural language, to learn, to plan makes it possible for new tasks to be performed by intelligent systems. The main purpose of AI is to mimic the cognitive function of human beings and perform activities that would typically be performed by a human being. Without being taught by humans, machines use their own experience to solve a problem.

AI is stand-alone independent electronic entity that functions much like human expert. Today, AI is integrated into our daily lives in several forms, such as personal assistants, automated mass transportation, aviation, computer gaming, facial recognition at passport control, voice recognition on virtual assistants, driverless cars, companion robots, etc. AI is not a single technology but a range of computational models and algorithms.

Some forms of AI that are most commonly used in various applications include the following [5,6]:

- **Expert systems:** They solve problems with an inference engine that draws from a knowledge base equipped with information about a specialized domain, mainly in the form of if-then rules. Expert systems are the earliest and most extensive, the most active and most fruitful area.
- **Fuzzy logic:** This makes it possible to create rules for how machines respond to inputs that account for a continuum of possible conditions, rather than straightforward binary.
- **Neural networks:** These are specific types of machine learning systems that consist of artificial synapses designed to imitate the structure and function of brains. They are similar to the human brain. They are made up of artificial neurons, take in multiple inputs, and produce a single output. The network observes and learns as the synapses transmit data to one another, processing information as it passes through multiple layers.

- **Machine learning:** This includes a broad range of algorithms and statistical models that make it possible for systems to find patterns, draw inferences, and learn to perform tasks without specific instructions. Any changes so that the same work can be done more efficiently than previously can be called learning. Machine learning (ML) is a process that involves the application of AI to automatically perform a specific task without explicitly programming it. ML techniques may result in data insights that increase production efficiency. Today, artificial intelligence is narrow and mainly based on machine learning.
- **Deep learning:** This is a form of machine learning based on artificial neural networks. Deep learning architectures are able to process hierarchies of increasingly abstract features, making them especially useful for purposes like speech and image recognition and natural language processing. Deep learning networks can deal with complex non-linear problems.
- **Natural Language Processors:** For AI to be useful to us humans, it needs to be able to communicate with us in our language. Computer programs can translate or interpret language as it is spoken by normal people.
- **Robots:** These are computer-based programmable machines that have physical manipulators and sensors. Sensors can monitor temperature, humidity, pressure, time, record data, and make critical decisions in some cases. Robots have moved from science fiction to your local hospital. In jobs with repetitive and monotonous functions they might even completely replace humans. Robotics and autonomous systems are regarded as the fourth industrial revolution.

These AI tools are classified in Figure 1 [7]. Each AI tool has its own advantages. Using a combination of these models, rather than a single model, is recommended. AI systems are designed to make decisions using real-time data. They have the ability to learn and adapt as they make decisions.

AI IN SOCIAL MEDIA

AI is a key component of the popular social networks you use every day. It can handle certain types of social media creation and management in minutes. Figure 2 shows the impact of AI in social media [8]. Here are some examples of how social media platforms are leveraging AI [9]:

- **Facebook** does almost everything on its platform like proposing your content, recognizing your face, suggesting friends, and targeting ads to users through advanced machine learning. Facebook uses a variety of AI tools to heighten each user's experience.
- **Instagram** identifies and suggest visuals and images using artificial intelligence. The first way that Instagram uses artificial intelligence is seen on its Explore page.
- **Snapchat** leverages an AI technology in the form of computer vision to monitor your facial features and then superimpose filters for your face in real-time.
- **LinkedIn** uses the power of AI to recommend connections, suggest job vacancies, serve specific posts in feed and people you would like to follow. Its technology provides connection suggestions, targets posts to users, offers specific job recommendations.
- **Pinterest:** The major reason many users love Pinterest is because of the personalized content that it shows. Pinterest Lens allows users to take photos, and use them to search for related items rather than entering keywords. Over 80% of

Pinterest's active users make purchases via the platform because of the hyper-personalized content that Pinterest offers.

APPLICATIONS OF AI IN SOCIAL MEDIA

Social media has moved away from its traditional role of being a platform where humans interact and connect with each other. Today, smart companies are using social media for ecommerce, customer service, marketing, public relations, and more. The applications of artificial intelligence in social media companies are many. Examples of how AI is used on social media platforms include analyzing text, analyzing pictures, detecting spam, social insights, advertising, and data gathering. Some of these applications are discussed as follows [9-11].

- **Social Media Advertising:** AI is almost at the helm of ruling the realm of marketing technology. There are AI tools that will write social media ads for you. Many social media platforms have built-in advertising systems that one can use to enhance the results of their marketing operations. While social media platform gives individuals and businesses to connect to people, it also allows brands to run paid advertisements based on behavioral targeting and demographics. AI can write Facebook and Instagram short-form ad for you.
- **Marketing:** AI is transforming the social media marketing landscape. It will enable you to stand out from the competition, forge a stronger connection with your customers, and improve your bottom line. Marketers have a range of tools at their disposal for understanding customers and prospects on social media. The combination of social media marketing with artificial intelligence is popularly known as "social artificial intelligence." Many social networks give marketers an unprecedented ability to run paid ads to platform users. With the assistance of AI, marketers are able to identify customers, curate content, and advertise better. AI tools can write Facebook and Instagram ads for you. Marketers should enhance the digital experience of buyers but not at the expense of their convenience and privacy. Human touch still remains the most desirable aspect in social media marketing. The next-generation machine learning will take branding and marketing activities at a higher level. Figure 3 illustrates AI in social media marketing [12].
- **Social insights:** AI-powered tools can deliver insights from your brand's social media content, profiles, and audience. AI-powered social media intelligence can help companies improve brand equity, detect consumer trends, understand target audiences, analyze your posts and the posts of other companies to recommend what to post. One can use the unparalleled insights that AI technologies provide to increase productivity, identify new trends, reach a wider audience, figure out what works for your niche, track performance, and optimize campaigns in real-time.
- **Security and justice:** This domain involve preventing crime and other physical dangers, as well as tracking criminals and mitigating bias in police forces. It focuses on security, policing, and criminal-justice issues. AI can be used to identify tax fraud using alternative data such as browsing data, retail data, or payments history.
- **Automation:** Automation capability is one of the biggest advantages of using AI in social media. Automation will make your business far more productive. Examples of tasks to automate include social listening, social engagement, content scheduling, content republishing, and analytics tracking

- **Social listening:** This is another area in which AI is making a big impact. Social listening is a technique that is often used to monitor a business' social media channels and help listen to what people are saying about your products and services. Through social media listening tools, businesses can efficiently analyze thousands of conversations and identify patterns. They can use the information for their overall marketing strategy.
- **Chatbots:** Chatbots have benefited sponsors on social media in many ways. AI-powered chatbots are benefiting digital marketers in many ways. Companies running over social media can use AI-powered chatbots to answer their customers' queries in no time. AI tools help companies to automatically reply messages by developing user-interactive AI chatbots. Brands can also use chatbots for businesses to provide personalized support to shoppers. With this, businesses can improve customer experience to a significant level. Figure 4 depicts chatbots as AI in digital marketing [13].

Other areas of applications of AI in social media include customer behavior, customer analysis, consumer engagement, social media management, social media monitoring, competitive analysis, content creation, content curation, sentiment analysis, social media analytics, image recognition, facial recognition, and text understanding.

BENEFITS

Artificial intelligence in social media enhances the user experience and overall effectiveness of social platforms. It has the potential to transform how brands create and manage social media marketing. Other benefits that AI can offer social media include the following [14]:

1. Increased audience engagement

AI enables businesses to get to know their audience a lot better and understand their preferences.

2. Greater efficiency

By relinquishing cumbersome, repetitive, and mundane tasks to AI, marketers save time and energy, which can be poured into tasks that require human effort. AI is capable of increasing business productivity by 40%.

3. Smarter advertising

With AI on your side, you can target prospects and customers with the right message at the right time.

4. Refined content targeting

Using AI to track your audience's behaviors and preferences on social media will give you a clear understanding of how to appeal to them.

5. Reduced marketing costs with better return on investment (ROI). AI can fully or partially automate time-consuming and labor-intensive tasks. It can help a social media marketer increase revenue and reduce costs.

6. AI-powered chatbots:

Companies running over social media can use AI-enabled chatbots to answer their customers' queries in no time. With this, businesses can improve customer experience to a significant level.

7. Increased security

AI can help social media platforms to protect the user data and increase the privacy of their information.

8. Cost-reduction

Once the algorithms and action points are in place, AI can function with minimum human monitoring. This helps to reduce marketing expenditure. AI has the benefit of speed as well as cost versus using human effort.

9. Incremental revenue

AI also assists brands to boost revenue by making processes automatic and efficient. AI provides valuable insights that aids in creating content to improve engagement.

10. Competition-minded tool

AI is a competition-minded tool. In business, knowing what a competitor is up to is as important as making your own business plans. AI has been helping online marketers to track competitors' business online.

CHALLENGES

Although AI could help tackle some of the world's most challenging social problems, it is not a silver bullet. While the social impact of AI is large, certain challenges must be addressed if some of the potential is to be realized. Principles for using AI tools must be established since they can be misused. Other significant challenges are [15].

- **Data accessibility:** Resolving this significant challenge will require a willingness, by both private- and public-sector organizations, to make data available. The data owners include telecommunications and satellite companies, social-media platforms, financial institutions, healthcare providers, and governments.
- **Shortage of talent:** There are not enough professionals or expertise to develop AI solutions. Integrating AI into social media requires high-level AI talent, people who may have PhDs or considerable experience with the technologies. Such people are in short supply.
- **"Last-mile" implementation challenges:** This is another significant bottleneck for AI deployment for social good. Most AI models cannot perform accurately all the time, and many are described as "brittle."
- **Privacy concerns:** The risk is that financial, tax, health, and similar sensitive personal records could become accessible to illegitimate individuals. That would cause embarrassment and harm. Due to privacy concerns, AI-enabled marketing automation platforms and social media marketing processes should draw a line between being intuitive and intrusive.

AI may pose some ethical challenge for humanity if it reaches a very advanced stage. Whether the benefits overpower the challenges or not is up to each one of us to determine.

FUTURE OF INDUSTRIAL AI

Artificial Intelligence has become a household term used across popular culture, science, and technology. It is having great impact all over the world and transforming everything. It will rule the entire world in the future. Soon, machines will be able to make the same kinds of inferences that humans can.

Artificial intelligence is constantly breaking new grounds in social media. It has a bright future in social media industry as it improves user experiences and help brands to serve them better. AI technologies will likely influence the world of social media in the following ways [16].

- AI will enable the creation of hyper-personalized marketing messages
- AI will provide more robust buyer and customer personas
- AI will make it easier to distinguish between qualified leads and unqualified leads
- AI will enable bots to converse with prospects on just about any topic

- AI technology will help social networking companies to deliver better customer experience and help marketers to target the right customers that will increase their ROI.

The best we can do is to wait and see AI evolves.

CONCLUSION

Artificial intelligence is an umbrella term that covers many different technologies such as like machine learning, expert systems, robotics, computer vision, natural language processing, and more. Many companies already realize that AI is the way forward for progressing business.

AI will continue to influence social media networks as the technology develops and evolves. When it comes to AI in social media, the sky is the limit. The combination of AI and social media are proving to be greatly beneficial for businesses. The future is bright and exciting for any business that is harnessing AI tools. There is no question that AI will have profound impacts on media markets. More information about the uses of AI in social media can be found in the book in [17].

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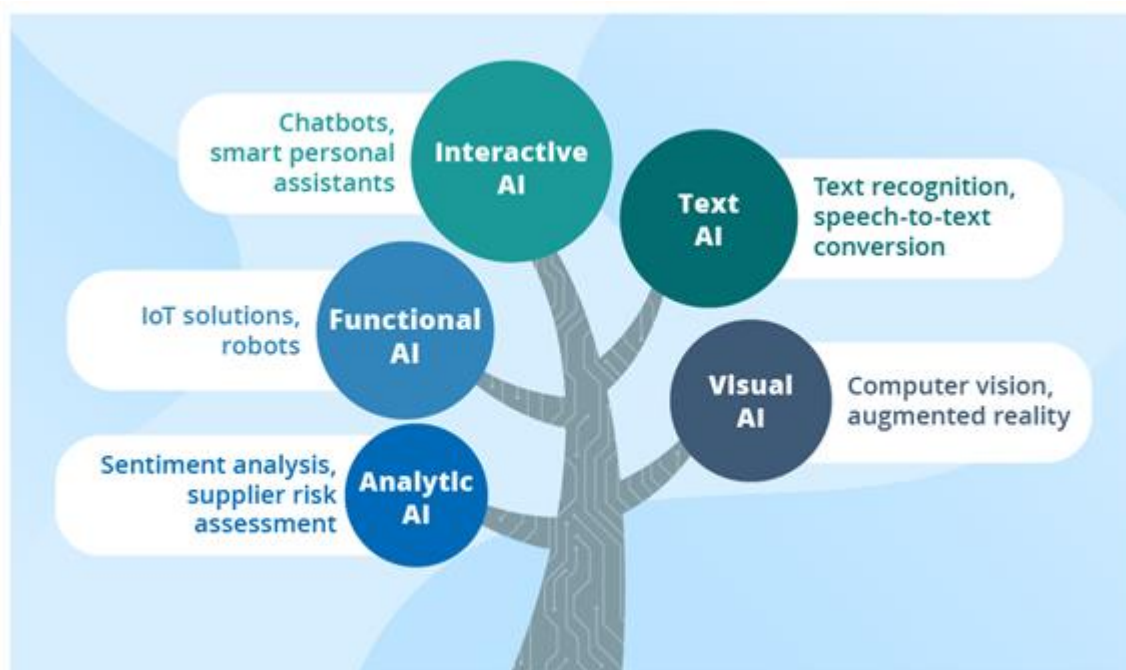


FIGURE 1: Different types of Artificial intelligence [7].



FIGURE 2: The impact of AI in social media [8].



FIGURE 3: AI in social media marketing [12].



FIGURE 4: Chatbots as AI in digital marketing [13].