

Using Artificial Intelligence on Data science and Data Analytics Applications- A Review

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Abstract

The technique of artificial intelligence (AI) is growing widely in current trend. The AI aims in identifying the patterns and insights hidden in given data sets and predicts the query of the client. The decision making is carried out without any need of human simulation. This paper aims in discussing the trending methods and techniques available in the field of data science and analytics with the help of artificial intelligence. The outcome of the work was satisfying and encouraging the future to come up with more brilliant algorithms so as to make AI more efficient and flexible.

Kwy words: algorithms, artificial intelligence, data analytics, data science

INTRODUCTION

Data science and artificial intelligence are some of the most popularly vital technologies in the Field of information technology. The data science is involving Artificial Intelligence (AI) in all of its works and operations. Data science is most trending technology which has caught the attention all around the world companies. The outcome is they are devoting a large amount of data to the industries involved in large production for better products. The industry has become dependent towards data for their projects. So the society has ended as data –driven society. The data

science is having various steps in it like extracting the data, manipulation, maintenance and visualizing. The person dealing with data must have good knowledge about machine learning algorithms also. The machine learning algorithms are known as Artificial Intelligence. The intelligence which are owned by the machines are known as Artificial Intelligence (AI). This is making use of various algorithms and data to do the required functions. The AI algorithms available in present days such as Deep learning are capable to understand designs and discover the goal hidden in given information. The AI is involving many software engineering principles in order to create outcomes to the existing problems. Many major technologies such as Google, Amazon, and Face book are leaning on to the AI for their growth in separate systems. Out of this the most popular instance is Google's Alpha Go(Carlos., *et al.* 2018). The AI is involved in various fields for numerous works for better performances and better results. AI is known to use a cluster of data consisting of various patterns, designs from the data cluster and making few predictions based on that information.

They are also working in data analytics places, for instance in Google analytics, many automation platforms, CRMs and many more. The AI in data analytics can help in getting more values with the data we have currently. It helps in unifying our data and can make some predictions regarding the client's needs. The AI is excelling in detecting the insights and patterns from large data clusters in short time span. This helps in predicting the results and outcomes for a successful project. The AI can access millions of data in short span of time and come up with results. They are also used to find solutions in data analytics for better results. The current world is completely relying towards the bid data, where the data are having more information regarding their patterns, insights and their potential. These data are representing the success of most data-based organizations. The understanding of these data information is depending upon the field of



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data science and person who is said to be expert in this field is known as Data scientist. The main key to these data science field is the technology of Data Analytics(Cao, 2017a).

ADVANCEMENTS IN DATA SCIENCES AND ANALYTICS.

The growth involving AI rather than with big data or machine learning process has become more predominant and faster in this era of Information technology field. The AI is a high class technique helping the systems to perform jobs without any decision making process. The AI can make predictions of certain tasks and can guess the insights of the given data. This helps in predicting the domains of patterns recognition and natural language processing(NLP) in advance(Tambe *et al.*, 2019).

Growth of Data Science with AI

The data science began with the various data and information collected from statistics. Now they have evolved in to concepts and practices like Artificial Intelligence and Machine learning and IOTs. As there was a huge development in the growth of internet the data were collected and stored in larger amount. The growth in the use of internet made many organizations and enterprises to store data floods in some safe and sound place. As the growth of business began the use of these stored big data also raised up steadily(Cao, 2017b). The information from the data clusters were applied in various fields such as medicine, engineering, social sciences. The work of a data science involved with AI is to identify the patterns and insights in the provided data which are hidden and to involve in decision making without the involvement of human sources. This is usually done by experts known as data scientists(Nadikattu, 2020). The major task of the data scientist is to involve the data in correct software. That software is responsible for tasks like collection of data, processing of data, and modeling the data in to required needs. They use the principles of Data Science, and all the related sub-fields and practices encompassed within Data Science, to gain deeper insight into the data assets under review.

Growth of data analytics with AI

There was a tremendous growth in the IT field because of using AI. Some revolutionary achievements were achieved by involving them along with data analytics. Firstly they upraise happened from the place of data warehouse where all the dealings regarding the business and customers were processed. That was commonly referred as enterprise consolidated ware house (eCDW). Here the process was carried out by

using some tools like ETL & BI(Gruson, *et al.*, 2019).There were some limitations in the use of these tools. After few methods then the process was transferred to big data. The enterprises wanted their staffs to support engineering platforms in handling a vast amount of data with a quick and effective processing engine. They were engaged only in a firm's internal transaction system. This big data was also facing setbacks in handling a large amount of data(Agarwal and dhar, 2014). Today most of the organizations prefer the use of smart machines that has automation in aspects like decision making process. Many companies are working hard to build the concept of consumer AI controlled platform to make them more efficient. These have taken idea from the personal AI agents commonly known as bots to make their jobs. These bots don't need any personal human simulation for the daily tasks to be executed(Concolato and Chen, 2017) .

ARTIFICIAL INTELLIGENCE IN DATASCIENCE AND DATA ANALYTICS

The growth of big data and fast computing power, many CEOs, and decisions makers of organizations and companies are coming up ideas to upgrade their level of companies. The rapid growth in AI and machine learning are preferred by the enterprise at a rapid speed. To make this more success they are involving in data analytics for finding the insights and patterns of the data sets. AI is a technique to use intelligent-seeming algorithms as the front end and back end of the system. The AI helps to support the human thoughts or actions in to working of a system. Here a part called machine learning is introduced, which helps machine to learn about the ways to solve problems on their own(Wong *et al.*, 2019).This was possible only after certain amounts of failure and endurance. Machine learning can be defined as a branch of AI, where the data based algorithms allows the software to predict the outcomes accurately without any explicit programs. This work is mostly involved in programs involved with predictive modeling and data mining. Today all are experienced with this machine learning along with the work of AI when we are making use of OTTs, and other online shopping sites like Amazon, Netflix and others. The AI is also involved in other fields of computer science like image processing, where it helps in identifying the details of various viruses and diseases (Shi *et al.*, 2020)

The method of converting raw data into useful source of information is known as data analytics. They are making use of new advancements like AI, machine learning to make them perform even better in the future works. They are involved in various system languages like python, dot net and others. (Raschka *et al.*, 2020)

The data analytics is composed of many steps and procedures to follow. They are consistently developing because of the use of tools and simulation programs as an upgrade. They are involving in concept of data wrangling used for understanding the data available, integrating data from multiple sources, identifying missing, messy or anomalous data, and extracting features in order to prepare data for computer modeling. The AI will help with an automation in each stage of the data analytic process resulting in better performance results. This technology may also revolutionize the capacity and performance speed where the data can be changed into useful resource. This is mainly used in the various departments of intelligence also such as cyber security(Sarker et al., 2020).

The involvement of AI in the area of analysis of the data is widely recognized by many analysts and data scientists. So, they made it a notion to involve the concept of AI in their works for better performances and outcomes. The AI is taking part in tasks like acquiring, understanding, and planning the data. The data here are used for the classification and description of the issues. The AI is also making sure to do a good job in organizing the data, data quality, featuring the given data and classifying the data according to the groups they belong to. This helps when the simulation is given to identify the pattern and various insights in the data. During this process at times the machine is facing some difficulties and setbacks because of the quality of data provided.(Sharma, 2019).They are overcome by involving in some counter measures and the job is executed without any barriers.

PREFERENCES OF AI WITH DATA SCIENCE AND ANALYTICS

There are many opportunities to use the technology in various fields. Many industries and firms are adopting to make use of AI in areas like retail, ecommerce to make

sure the safety of data and their process. The trend to stick on to techniques like data analytics, AI, cyber security and rest others came in picture since the year of 2020 because people were exposed to face certain unexpected and tough challenges. These modern techniques made the life easier and also led to growth exponentially in the business scenarios(Sarker, 2021). This led to the vast improvement of technologies like intelligent machines, hybrid cloud, increased adoption of NLP, and overall an increased focus on data science and AI were put in to action.

The world is expecting a few more technologies to arrive which may take the data analytics in AI to another level. They are like pragmatic AI, containerization of analytics and AI, algorithmic differentiation, augmented data management, differential privacy, and quantum analytics, among others. The data is becoming more critical and important when considering the trend after the situation of pandemic(Goyal et al., 2020) A report from a magazine called Analytics India Magazine has stated that the annual data science and AI trends are in the first positions of trends which are defining the industry every year. The trends created in any domain in the field of computer science is defined by certain constraints like

- ◆ Accelerating change in data and analytics: grasping to the innovations in AI for more improved diverse of data sources.
- ◆ Operational business value: allowing to make better decisions in analyzing the data and integrating to new part of development.
- ◆ Reliability: The data accessed in AI must be from a reliable source to produce better results.

Table 1. Advantages and disadvantages of AI on Data science applications

S.No.	Author	Aim	Advantages	Dis-advantages
1	Alonso-Fernanandez et al. (2019)	To implement the AI in analyzing large cluster data	Increased efficiency.	Applicable in limited versions of software.
2	Gorriz et al. (2020)	Implementation in business management	The works were designed at rapid pace	Applicable only in certain business fields
3	Salazar-Reyna et al. (2020)	Framing the presence in industrial development	Obtained value enriched data.	Cannot be used in other industries.
4	Bichler et al. (2017)	Applying in mobile apps	Made easy for the clients and customers	Many similar apps availability
5	Vicario and Coleman. (2020)	Applying in the fields of data mining for field of medicine	Retrieval of data was very quick and reliable.	Men made mistakes are expected.

The smarter are the algorithms and programs in AI working makes the result more smart. The AI is also responsible for enabling the better learning methods in systems. As many firms and organizations have started to make use of AI, the system is needed to figure out to scale the technologies available. The data in analytics is to be more composable to involve components from multiple data. The AI is developed more flexible and user friendly for better performances(Khan, 2019). Composing new applications from the packaged business capabilities of each promotes productivity and agility. Not only will composable data and analytics encourage collaboration and evolve the analytics capabilities of the organization, it increases access to analytics.

Data are getting more complex as the digital business accelerates and the use of data fabric architecture for supporting the data and analytics along with their various other components(Alonso-Fernandez *et al.*, 2019) The AI is involving in small data to large wide data. It helps in solving various big problems for the companies. The aim of xops in AI is to enhance the efficiency and performance of the process. They are also intended in activities like reliability, reusability and avoid the problems of storing repeated data. The AI system is having engineered decision intelligence to solve any sort of issues during the process.

APPLICATIONS OF AI IN DATA SCIENCE AND DATA ANALYTICS

The applications making use of AI has grown widely because of its characteristics and flexible capacity. They are involved in many devices which people are coming across in day-to-day life, such as auto complete feature in goggle, smart face look system is mobile phones and virtual assistants like alexa. They are also involved in several other fields like medical sciences, finance management, and engineering concerns(Gorritz *et al.*, 2020). The departments of data science and analytics, machine learning, and artificial intelligence has become the topics researched more in past few decades. This is because of their wide usage in several fields(Salazar-Reyna *et al.*, 2020). The AI has outsmarted the above techniques and involved in several fields like robotics, speech recognition system, Google and many other expert systems. Today the need of AI has been wide spread as they are involving even in business administration process also(Bichler *et al.*, 2017).The AI is emerging out as fashion frame in the areas of business and industries. This has happened only because of their characters. The aim of the data science was to come up with even more better performance to the field of information technology and business administration. The traditional methods were quiet tiresome and their performances were also not

up to the mark(Vicario and Coleman., 2020).As a counter measure for the issues, the development of AI along with the use of data analytics was encouraged and now it is used in several fields of sciences and managements. The comparative analysis of the above discussion is shown in below table 1.

CONCLUSION

The industry of information technology is now facing advancement in the area of machine learning. It has come up with the method of artificial intelligence, where the system is provided with required knowledge to make its own decision. The decision is made from the information retrieved from the data. The data sets give the ideology and query behind the data *via* their patterns and insights. The AI is now being used worldwide and used in all of departments of sciences and technologies. AI is also implemented in non-science fields such as management and financial sectors because of their flexible nature. The system is having few draw backs but they can be solved by few counter measures .The future is encouraging in developing many more efficient and brilliant algorithms to guess the queries of the client.

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