ISSN PRINT 2319 1775 Online 2320 7876

Research paper UGC CARE Listed (Group -I) Journal Volume 11, Iss 10, Dec 2022

DATA SCIENCE AND ITS APPLICATION

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ABSTRACT
Data science is an interdisciplinary field that extracts knowledge from numerous structural and unshaped data, using scientific methods, machine-learning algorithms, and big data. As we know the Data Science industry is growing, it is still very emerging but very promising. This industry is expected to grow by huge amount in coming time, and data science as a field is still unknown to many of us. In early days the extraction of information from data has been done by the use of statistics. However there are many reasons to consider Data science as a new field. First, the raw material, the data part of Data Science, is increasingly diverse and unstructured text, images, and video, frequently arising from networks with complex connections among its entities. In this research paper we are going to discuss different application of data science.

Keywords: *Data science, Big data, Data analytics, Healthcare, social media, Education, Business, Telecommunication*

INTRODUCTION
Data science has many application in real world like when anyone travel to an unknown place for the first time. The most common source available was GPRS services. So, when we start the GPRS for our road travel, it uses different branches of data science to search out for the shortest route, estimate time of arrival and nearby places. All these events are assisted by the data science application running in the background.

When the new technologies emerged it lead to research on the data themselves. Numerous fields such as business and health care got the benefit of that and they were capable to discover growth patterns of data and predict the scale of data in cyberspace for coming time. This causes to discover lot of new theories, inventions that have not been uncovered for years. Numerous health related issues have been identified and solved using data science analytics. Now let's us consider some of the important application of data science.

APPLICATIONS OF DATA SCIENCE

1) Health Care

The healthcare industry generates large datasets of useful information on treatment plans, results of medical examinations, patient demography etc. The data collected from the Internet of Things devices fascinate the attention of data scientists. Data science provides aid to process, manage, analyse, and assimilate the large quantities of structured and unstructured data created by healthcare systems. This data requires effective management to acquire factual results. Data science and big data can provide practical perceptions and aid in the decision-making of strategic decisions concerning the health system. It helps build a broad view of patients, clinicians and consumers. As the huge amounts of clinical data generated from the health care sector like the Electronic Health Records of patients, prescriptions, clinical reports, acquisition of medicines, medical insurance-related information, investigations, and laboratory reports, there lies an immense opportunity to analyse and study these using recent technologies. This huge amount of data can be fetched together and analysed effectively using machine-learning algorithms. Analysing the details and understanding the patterns in the data can help in good decision-making resulting in a good quality of patient care. It can help to understand the trends to improvise the outcome of medical care, early detection, life expectancy and identification of disease at an early stage and required treatment at reasonable price. Health Information Exchange can be implemented which will help in extracting clinical information across various distinct

2) Social Media and Networks

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Data science holds a huge promise in the field of social media as it provide a wide scale of analyses that range from advance analysis of all social media events to acute social listening. Data science also help in resolving the ad fraud problem by analysing the patterns behind each clicks. The exciting prospect that data science offers to social media is the prospective to map out the future.

Data science can help in grouping some movement on social media which belong to some category such as community. The benefit of this is that if the member of a particular community are targeted for any ad campaign it will produce better result. The way to begin working on community groupings is to identify key areas that are discussed positively and set them as a base for your social media marketing promotion.

One way for marketing team to better understand their possible consumers is by understanding their lifespan and this can be achieved through better visualizations. With the amounts of data to be found online reaching new heights every day, complex algorithms are required to understand their depths and represent them in enriching ways. This will lead to more focussed marketing promotions with much better results.

3) Education

As we know the world went through, COVID-19 epidemic, we saw utmost of the students roving around the house with their laptops at all times. The education system of India especially has taken another route – Online Classes and E-Submissions of assignments and examinations. It still is a massive challenge for utmost of us to do everything 'virtually'. Technology and current times have taken a route of transformation. Thus, Data Science in education is more important than ever, as it steps into our learning system. Each interactions of teachers and students are now being recorded via numerous platforms and class participation and other things are being evaluated. Because of this, the productivity of the Educational data has become more valuable with the increasing number of online courses. According to various Sources the Data science industry will be profited from this format of teaching. Some of these benefits are:

i. Data science would help and train the 'teachers' where they will be able to enhance their teaching method and understand various practices that interest the students more.

ii. Data science will inspire teachers to include data visualization, data reduction and description, and prediction tasks.

iii. Data reduction will simplify the process of grading and assignments for the students.

iv. The data visualization process will help students attract complex data in a more straightforward way and be trained them in a storytelling format.

4) Business

Business field is another major sector which get advantage from data science principals.

Data science is used in business fields with the objective of improving decision making.

Data about the client can disclose details about their demographic characteristics, habits, preferences and much more. With so many possible sources of client data, an introductory understanding of data science can help make sense of it.

For example we may gather data about a client each time they visit our website or store, add an item to their cart, complete a purchase, open an email, or involve with a social media post. After ensuring the data from each source is correct, we need to combine the data this process is called data wrangling. The process include matching a client's email address to their credit card information, social media handles, and purchase identifications. By collecting the data, we can draw decisions and recognise trends in their behaviours. After understanding how our customers are and what motivates them can help ensure our product meets their job to be done and our marketing and sales strategies are working. Understanding reliable customer data can also inform personalized experiences for specific users, and improvements to the website and product's user experience. Data science can also be used to increase the security of the business and protect sensitive information. Banks use complex algorithms to detect fraud based on deviations from a user's typical financial activities. These algorithms can catch fraud faster and with greater accuracy as compare to us, simply because of the total volume of data generated each day. Learning about data privacy can ensure your

ISSN PRINT 2319 1775 Online 2320 7876

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company doesn't abuse or share client sensitive information, including credit card details, medical information and contact information. It is the combination of algorithms and human judgment that can move businesses closer to an advance position of security and ethical use of data. An organization's financial team can use data science to produce reports, generate and analyse financial styles. Data on an enterprise's flow of cash, assets, and debts are constantly assembled, which is use by the financial analysts to manually or algorithmically identify trends in financial growth or decline.

In addition thread operation analysis can be used to calculate whether certain business opinion are worth the possible problems. We can also use data science in business is to identify ineffectiveness in engineering processes. Engineering machines collect data from product processes at high volumes. In cases where the volume of data collected is too high it will be difficult for a person to manually analyse it. By the help of data science to develop more efficient, corporations can cut costs and produce more goods. Collecting and analysing data on a larger scale can enable you to identify emerging trends in the market.

5) Telecommunication

Customer churn is the most serious issue that service providers face. Clients switching from one company to another is called churn. They state that attracting new clients is much more costly than retaining present clients. So each and every service provider is trying to prevent client chain by giving them a new retention offer. Data mining techniques are majorly used to recognize clients who tend to churn.

Challenges and barriers

For this process lot of private data were stored in each individual from any sector. With these huge amount of private data there are certain limitations and problems which the data scientists should be considered. Mainly in health data lot of patients are not comfortable with sharing their data in public. It is necessary to think about private data privacy rights and neural data privacy rights proactively to facilitate future directions in a mature, comfortable, and empowering way. With the huge technology development computer has become the decision maker, unaided by the humans and it raises multitude issues such as cost of incorrect decisions and ethical issues.

CONCLUSION

It is obvious Data science is a newly emerged science that requires overall knowledge mainly in computational science, statistics and mathematics. New technologies are emerged to dealing with huge amount of data in any field and benefits are many and they are ranging from health care to telecommunication. At the same time they should be handled cautiously to ensure that the respondent's information are not exploited. In the near future data science will uncover many discoveries that support humans to improve their life style in every aspect.

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