Big Data and Deep Learning -A review

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ABSTRACT

Big Data has an important role in both public and private sector which can contain massive information. While deep learning is an extremely active research area in terms of machine learning and pattern recognition society.

In this paper, we provide a brief overview of Deep Learning and big data.

Keywords: Big data, advantage of big data, Deep Learning.

1. INTRODUCTION

Deep Learning and Big data are two most important trends in this digital world. Mass data of different organization are very difficult or even impossible to manage and analyzed using conventional software and tools. For example according to National Security Agency, the internet is processing 1826 petabytes of data per day. In 2011 the digital information has grown 9 times within five years and in 2020 its amount in the world will be 35 trillion gigabyte while big data offers the great potential for revolutionizing all aspect of our society where as deep learning is an approach towards machine learning it is also very useful to learn multiple level of representation and higher level abstraction in terms of image, sound and text for building intelligent system.

2. BIG DATA

Big data is a combination of old and new technology that helps companies gains actionable insight. Big data has the capability to manage huge volume of data at right speed within right time in case of real time analysis and reaction. Big data can be broken down into several characteristic.

Volume: the amount of data.

Velocity: the data accessing speed.

Variety: various types of data.

Variability: inconsistency data set can be managed.

Veracity: the quality of capturing data can be managed.

Complexity: managing data coming from various resources.

3. ADVANTAGE OF BIG DATA

3.1 Improved Risk management

Risk managent can be improved in the field of developing software. Software risk can be minimized and better quality software can be developed.

3.2 Improved management control

Big data continues to spread across industries and many regions more quickly than ever before. Companies are getting optimal return on their investment by analyzing historical data.

3.3 Better customer service

Now-a-days in call center or customer facing employees receive compliment and complain on a daily basic. They talk to customer via message, mail and phone for solving their problem while doing that they create massive amount of data. Big data enable them to better respond to the customer's request because they better know their customer.

3.4 It analysis

Big data analytics is an advanced analytic technique against very large and diverse data set. it can solve complex problem in an efficient way.

3.5 More market oriented product development

More market friendly product can be developed for the buyers having good quality and quantity with the enhancement of big data techniques.

Table 1. Total IT spending driven by Big Data(Million of Dollar)

year	Enter prize software spending for specified sub market	Social media revere, world wide	Big data IT services spending	Total
2011	2565	76	24,407	27047
2012	2918	1384	23,476	27778
2013	3516	1812	28,578	33906
2014	4240	2827	37,404	44472
2015	5207	3615	36,189	45010
2016	6461	4411	43713	54586

Also big data has huge application in health sector, logistic sector, language translation, backend operation. So big data is very essential part in the digital world for analyzing historical data efficiently. Now –a- days big giants companies like google, yahoo, and facebook are dealing with huge number of data.

Many companies now keeping the records of all processed data efficiently for their future use using big data analysis.

5. DEEP LEARNING

The main focus of machine learning is the representation of the input data and generalization of the learnt patterns for use on future unseen data. The advantage of the data representation has a large impact on the performance of machine learners on the data: a poor data representation is reducing the performance to the complex machine learner, while a good data representation can lead to high performance to the simpler machine learner.

4. FIGURES/CAPTIONS

Fig 1: Data capturing from different source

5.1 DEEP LEARNING IN MACHINE LEARNING

The main concept in deep leaning algorithms is automating the extraction of representations (abstractions). Actually Deep learning algorithms use a huge amount of unsupervised data to automatically extract complex representation. These algorithms are largely motivated by the field of artificial intelligence, which has the general goal of emulating the human brain's ability to observe, analyze, learn, and make decisions, especially for extremely complex problems. Work pertaining to these complex challenges has been a key motivation behind Deep Learning algorithms which strive to emulate the hierarchical learning approach of the human brain. Deep Learning architectures have the capability to generalize in non-local and global ways, generating learning patterns and relationships beyond immediate neighbors in the data. Deep learning is in fact an important step toward artificial intelligence. It not only provides complex representations of data which are suitable for AI tasks but also makes the

machines independent of human knowledge which is the ultimate goal of AI. It extracts representations directly from unsupervised data without human interference. Deep Learning techniques has been successfully implemented in Artificial Neural Network.

6. ACKNOWLEDGMENTS

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