

Demand for the Emerging AI, Machine, Deep Learning and Big Data Analytics Skill for 21st Century Jobs

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Abstract

This paper presents recent development, application and potentials of technologies like AI, Machine, Deep Learning and Big Data Analytics and ways in which big data can be leveraged to improve the efficiency and effectiveness of government. It describes the demand of skills for handling of massive and diverse sets of information that are gathered, processed, and analyzed for scientific discovery. Job prospect are also highlighted.

Introduction

Data generation is presently is light-years ahead compared to where it was a few years ago. With technological advances and use, huge digital information is now available that is beyond our imagination. It is widely accepted that Big data analytics has revolutionized digital transformation. It enables too quick and in-depth analysis, facilitating faster accurate decisions resulting in right insight. In fact, technological advances in data management have helped in timely capture of the informational value of big data. As a result, a wide adoption of analytics has happened that were not economically viable for large-scale applications before the big data era. Importantly, Peta bytes of raw data provide lot of clues for health care services through right use. Data is considered as gold in digital economy era. It is needless to mention that today analytics skills are extremely in high demand. A wide gap has been created in demand and supply of analysts throughout the globe particularly in western countries. According to the experts in the field knowledge of data analytics is essential for this next generation job aspirants. Now we are in the age of data. Everybody talks about big data across all the fields of science and technology. Even Big data analytics is attempted in the non-conventional areas. It is considered as a "the next big thing" will be. Now a day's data is generated in higher quantities from various field and analyzed at a faster and with higher accuracy that we could not have thought of a few years ago. Researchers adding every day, new tool to extract raw data into valuable insight enabling solutions to the critical problems. The application of big data is enormous in all spheres of scientific investigation. Technologies coupled with and internet

of things produces huge data globally. Innovative technologies have added capacity to generate, store, and analyze data from different sources for a various application. Some 2.5 quintillion bytes of data are produced every day, and approximately 90 percent of existing data was produced in the last two years alone [1]. These data are the potential sources for innovative research.

Are we ready to embrace Big Data? It is time to think whether we are capable to make use of big data's potential? Of course, success will obviously require new skills and new perspectives particularly for potentially disruptive business models [2]. New development in the areas of big data expands the suitable space for development of algorithms, AI and machine-mediated analysis. Companies that exploit the data are the ones turning data into gold. With the right aptitude in analyzing IoT data, one can make internal business changes to turn data into revenue by marketing insights which are in high demand [3].

Knowledge and Skill Requirement: Data without domain knowledge are just facts and numbers. Curiosity and passion are essential data analysts. One must accept that presently data is available, but knowledge is not only scarce but expensive too. Therefore, there lies the demand for Data Scientists with the skill and the mind-set to apply Big Data technologies in right perspective.

Application in Science and Technology

In the last five years, more scientific data has been generated than in the entire history of mankind. Now one can imagine

what is going to happen in the next five. Genetics and proteomics generate high-dimensional data in scale. In big data lies the potential for revolutionizing in the nonconventional areas like Police employing seismology-like data models to predict and check crimes. Astronomers using the Kepler telescope snag information on 200,000 stars every 30 seconds, which has led to the discovery of the first Earth-like planets outside our solar system. Businesses are switching over to social networking data for higher return. The same phenomena are true for public health. DNA sequencing has held big data's starring role, as a single human genome consists of some 3 billion base pairs of DNAs. Human genome's right analysis gives clues to infections, cancer, and production processes, customers and markets [4].

Real Time Analytics

As per latest information the NASA's Mars Rover spacecraft resorted to Big Data driven analytical engines for discovery. The Elastic search technology being open source is utilized by Netflix and Goldman Sachs. NASA's Jet Propulsion Lab's mission has now rebuilt its analytics systems around an Elastic search that processes all the data transmitted from the Rover during its four daily scheduled uploads runs the day-to-day mission planning [5]. Role of bigdata in pollution control is noteworthy. Interestingly, with the aid of sensors laid on roads take stock of the total emissions that traffic discharge during the day. The data is used to coordinate with the traffic police. Traffic data processing helps management for planned diversion through the less congested areas to minimize carbon emissions in target areas [6]. Recent development in the areas of Computer Science, the Big Data is booming as can be evidenced from its use by Fortune 1000 companies resulting in quick, financial growth for startups. According to the World Economic Forum Most Innovative Startups in the world are Diagnostics, Sweden; Agrosmart, Brazil, Appeal Sciences, USA; Applied Brain Research, Canada; Aqua Security, Israel; Armis, USA; Benevolent, UK; Best mile, Switzerland and many more. Every year, thousands of new companies aim on becoming the next big success story with innovative products, efficient operations and strong leadership and these companies are likely to shape the future.

Artificial intelligence (AI) is a hot topic now. AI these days are taking off as data availability is not a problem in the current Digitized world. As we know, Machine learning is used to develop predictive models by identifying patterns from huge datasets. Predictive data analytics applications are in wide use for price prediction, risk assessment, and predicting customer behavior. Machine learning provides computer science that gives computers the ability to learn without being explicitly programmed. It is in fact, deep learning is the main driver and the most important approach to AI. It may be noted that as per the industry-watchers many of the companies listed are utilizing artificial intelligence, as well as a number of biotech firms and block chain technologies. New technologies like machine learning and artificial intelligence are used by researchers

for innovation. Technology giants such as Google, Apple, IBM, Face book and many more are investing heavily for extracting intelligence. So, need of the hour is to acquire knowledge in the areas of Artificial Intelligence, deep learning, machine learning, to keep pace with industry requirements. Undoubtedly, data analysis is not simple that requires both human and machine's working in coordination.

Job Prospect

According to the survey report, repetitive jobs are most likely to be taken over by Artificial Intelligence (AI) in future like BPO, manual testing, system maintenance and infrastructure management etc. A survey reveals that Big Data and Data Science, Big Data Architect, Big Data Engineer, Artificial Intelligence and IoT Architect, and Cloud Architect Are the jobs will be high in demand in the near future. The demand for people with the deep analytical skills in big data including machine learning and advanced statistical analysis are very high. As many as 140,000 to 190,000 additional specialists may be required in addition to 1.5 million managers and analysts with knowledge and understanding of application of big data in real data life. Companies may take care of their recruitment and retention programs, along with training of key data personnel. According to Peter Fader "The real beauty of analytics is not just collecting a lot of data, but it's finding out ways to do it in a systematic manner". The greater access to personal information that big data often demands will place a spotlight on another tension, between privacy and convenience.

Conclusion

As per latest estimate, a reported 3.2 billion Internet users and over 4.6 billion of mobile phones users are regularly generating huge data through communication [7] and the number is increasing day by day. Within these data lies a lot of valuable information. Now it is the job of data scientists and analysts to extract knowledge out of the same. Here lies the demand for skilled manpower to execute the task using right tools and techniques for analytical insights. Literature on tools and techniques for handling these areas are covered [8]. Utmost care is needed towards data privacy issue as well.


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