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Automated artificial intelligence powered decision-making in big data

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Abstract

This paper covering the automation of business intelligence and decision making technologies. The dynamic BI and decision making technologies are crucial for business for the actionable insights and decisions to run the business more effectively and dynamically on-time with the real time data monitoring. With the help of full automation of optimized machine learning predictive models, narrative science technology, cloud, and big data usage making the Big data decision the most efficient way, self-service, user and business friendly for the organizations and all the top and preferred choice Big Data vendors are able to adopt these add-in technologies and approaching towards building the innovative technologies for the automation of business decision making products and services.

Keywords: Automation, artificial intelligence, big data, decision making, machine learning, narrative science, predictive modeling

Introduction

In our contemporary world, technology has taken a leading role in determining how we run our day to day activities. Our lives revolve around the use and manipulation of technology. One example of such a technology is artificial intelligence. It encompasses more than the mere automation of processes. Artificial intelligence entails setting an objective and allowing a computer program to achieve the specified goal (O'Leary 96). Consequently, this creative capacity is what gives power to artificial intelligence. Besides, it also challenges some of the existing assumptions about the function of computers, as well as the relationship between humans and them. Furthermore, artificial intelligence is critical in sorting data, describing patterns and making predictions. Some of the examples of the use of artificial intelligence in everyday life include translating and speech recognition services, search engines that categorize websites according to their relevance to the users, and email filters that separate junk mail from important messages (Lohr 1). Still, the list of artificial intelligence application is growing thus enabling a new wave of innovation across different sectors. Artificial intelligence refers to the analysis of information to model specific aspects of the world. Consequently, the inferences generated from these models are used to predict and anticipate likely future occurrences and events. Additionally, statistical models are developed by a series of algorithms or sequenced instructions that can be understood by computers to perform a particular role (Russom 40). As such, computer algorithms are crucial tools in the automation of different aspects of life. They are also necessary for adopting the sequenced routines that characterize operational and administrative tasks in various organizations, as well as digitize them. One possible approach to automation is to select different rules that apply to the inputs, hence result in a particular output. A majority of the current medical systems for self-diagnosis use this logic. This paper will look at artificial intelligence powered decision-making in big data.

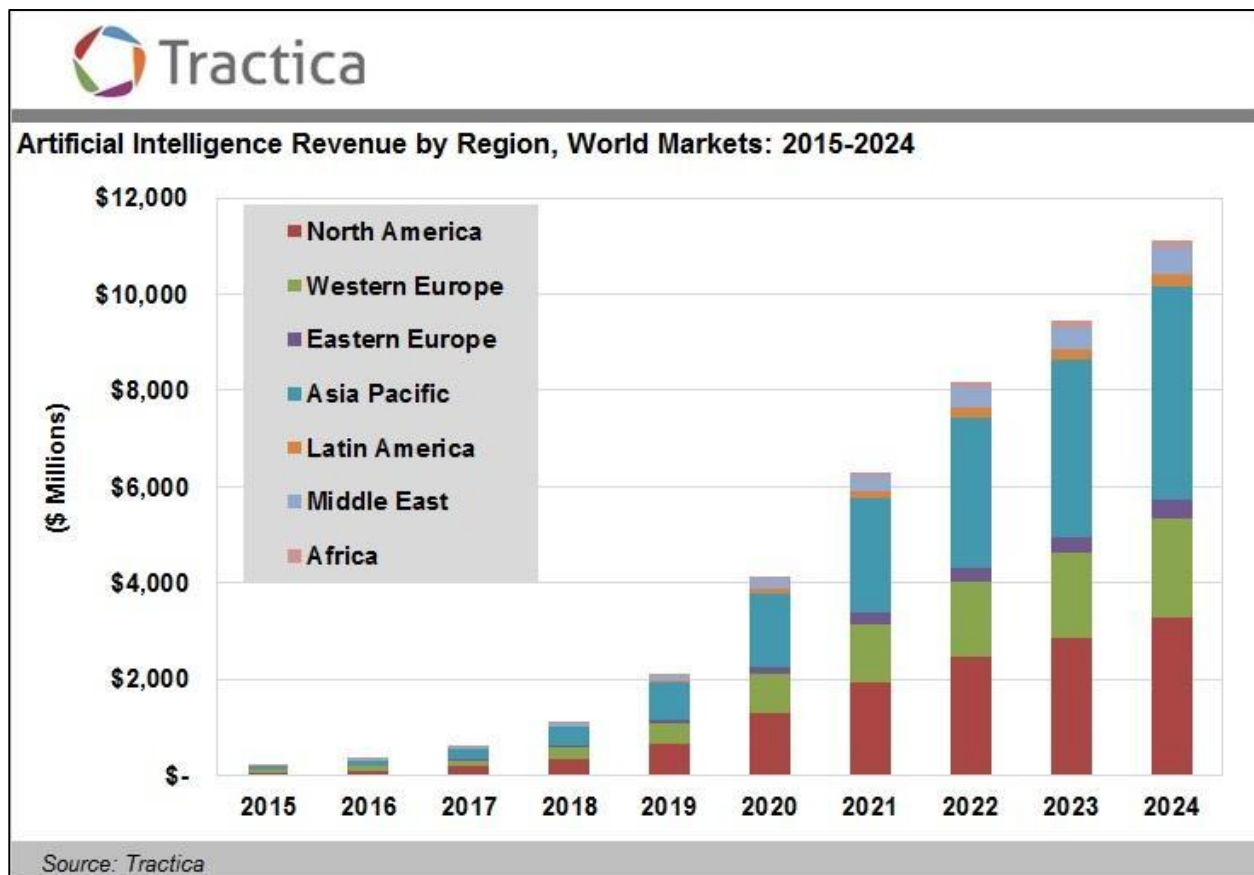
Over the past few years, it has become possible to develop machine learning using the available data and computing techniques. This involves algorithms that react based on their output. Besides, machine learning systems have been known to identify unique relationships in data that may have gone unnoticed. A majority of the machine learning approaches are not limited to generating a single prediction from given inputs. Various algorithms produce outputs based on probability thus offering a broad range of possible predictions together with detailed estimates of uncertainty (Simon 96).

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Such algorithms that produce these probabilistic results are capable of being understood by us. Nonetheless, in the case of sophisticated machine learning systems such as deep learning, there are several layers of mathematical operations between the output and the input data. Currently, the focus on machine learning lies in deep learning which is a supervised technique of combining layers of neural networks. This is in a bid to identify the characteristics of a data set that is critical to decision-making. As such, deep learning is a relevant addition to the machine learning approaches. Moreover, there has been continued interest surrounding machine learning regarding the potential it has in enhancing autonomous decision-making (Arel 13). Several algorithmic processes can be applied to make decisions in the absence of human input. However, real autonomy lies in the ability of a system to learn repeatedly and make inferences about the world in the absence of human input (Arel 14). For instance, self-driving

automobiles can make real-time decisions regarding speed and direction without requiring the input of a human driver by using several interlinked machine learning systems. In this case, they are not reacting according to pre-determined decisions but based on the changes surrounding them.

Additionally, companies that invest in analytics have found it more valuable than those who lag behind in the adoption of analytics. Further, a majority of mobile marketers have reported improved revenues from personalizing the application experiences with data about the customer profile (Purdy *et al.*, 5). Nevertheless, 'dark data' remains a major hindrance. This arises because many organizations take over legacy systems that prohibit effective data integration. This means that data is collected in various systems and converting all that stored data into useful big data is a complex and labor-intensive activity. Still, it is one avenue where artificial intelligence platforms excel.



Besides, artificial intelligence is not a field in itself. Rather, it encompasses a heterogeneous mixture of several research areas. Therefore, it's hard to define the impact of a well-defined on the economy. Nonetheless, artificial intelligence related industrial applications will replace human power in sectors such as customer service, call centers, as well as air cargo transportation (Purdy *et al.*, 6). Technologies that apply artificial intelligence are implemented in weather forecasting using repeated rain data patterns recognition, transporting goods and people using unmanned vehicles, creating robotic arms, as well as in the prediction of market values in the stock exchanges. Artificial intelligence is significant in robotics, machine learning, finance, health, transportation, e-commerce, and big data. All of these mentioned fields apply big data analysis hence underlining the importance of big data to the world of intelligent

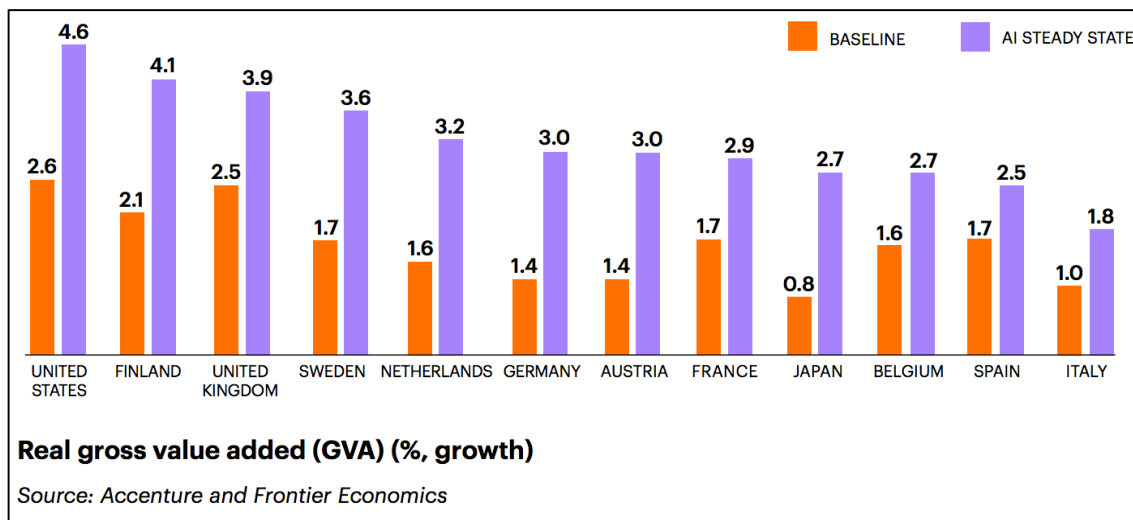
software and machines (Purdy *et al.*, 6). This means that artificial intelligence provides the methodology and technologies to enable big data to provide industrial firms with valuable information necessary for decision-making. These smart devices powered by software running on artificial intelligence can analyze previous data and establish patterns. An example of such a tool is IBM's Watson which used over two hundred million pages of structured and unstructured data, as well as a unique feature of hypothesis generation. This has resulted in increased attention and focus on the field of big data as the new frontier for artificial learning.

Artificial intelligence harbors great potential for enhancing productivity by assisting people and firms in the efficient use of resources and by streamlining our interactions with large sets of data (Simon 98). For instance, organizations

such as Amazon and Ocado are utilizing artificial intelligence in the optimization of their storage and distribution networks. Also, they use this technology in mapping out the most efficient delivery routes and proper utilization of storage capacity in the warehouses. Additionally, artificial intelligence can assist firms to perform familiar tasks in convenient ways (Purdy *et al.*, 14). Besides, it can allow the adoption of new business models including new approaches to problem-solving. In healthcare, data generated from smartphones and fitness trackers are analyzed using new techniques in machine learning aimed at improving the management of chronic conditions. This data can also be used to predict and prevent acute illnesses. Also, artificial intelligence can be helpful to both individual employees and companies in improving their productivity. Regular administrative and operational tasks can be understood by software agents who can resultantly prioritize tasks and manage daily interactions with colleagues. Email software such as Smart Reply from Google can compose messages to respondents according to previous replies to

similar messages. Additionally, newsrooms are increasingly adopting machine learning in writing sports reports as well as articles. Still, this technology can be used to produce financial reports including executive briefings. Besides, artificial intelligence can be helped to minimize the burden of searching through large sets of data (O'Leary 98). Organizations such as ROSS and CaseText apply artificial intelligence to sort court documents and other legal records based on their relevance in the different cases.

The potential of artificial intelligence is driving up the rapid intake in various sectors. An earlier report by the UK government on the value of big data estimated that the overall benefits of artificial intelligence to the United Kingdom would amount to approximately two hundred and forty billion euros between the year 2015 and 2020. The manufacturing sector is set to benefit most from efficiency savings. Further, a study done in 2014 of businesses in the US concluded that firms who make use of consumer data are more productive compared to those who don't.



Conclusion

The social and economic benefits of a robust artificial intelligence industry are immense. These technologies are creating a significant impact in various digital economy sectors. As such, the economic impact of artificial intelligence is expected to be high based on the current trends, as well as the impact of artificial intelligence on gross domestic product (GDP). In our modern world, there is technology that can be used to analyze massive quantities of data that were previously stored and ignored. This technology can be harnessed and used in various sectors to improve the efficiency of processes and the quality of outputs.

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