

# **ARTIFICIAL INTELLIGENCE- BENEFITS, CHALLENGES AND ETHICAL ISSUES**

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## **INTRODUCTION**

Nowadays, all big companies and most of small businesses are focused on increasing profitability and improving competitiveness. With this goal in mind, many of them turned to replace many tasks performed by humans with Artificial Intelligence. Artificial Intelligence (AI) is receiving an increasing attention lately and the debate is fiercely growing with a question not being answered yet: will it change the world for the better or for worse?

## **THEORITICAL BACKGROUND**

AI is considered the innovative technology that within the next few years it will replace many of the humans' work and many academics and researchers are focused in this phenomenon.

This research is made around an AI-based tools, as an innovation, the kind of information that plays a role in its function, which are the benefits, challenges and ethical issues that could arise when using such technology. This research will help us to understand some of the issues surrounding these new innovations.

AI is considered one of the most innovative technology of this century, where the computer systems are developed as to learn and be able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. Back in 2010 in a research by Singh<sup>1</sup>, AI is exposed as an "intelligent thought that can be regarded as a form of computation—one that can be formalized and ultimately mechanized".

It is clear now that Artificial Intelligence is not any more a science- fiction scenario, it is here for real whether we like it or not, and it is here to stay, whether we agree or not.

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<sup>1</sup> Sarbjeet Singh and Sukhvinder Singh: **Artificial Intelligence**, International Journal of Computer Applications (0975 – 8887) Volume 6– No.6, September 2010

Although, there are many people trying to resist technology and innovative products, as Brown and Duguid<sup>2</sup> emphasized, even these people, can hardly any more avoid taking advantages of “embedded microchips and invisible processors that make phones easier to use, cars safer to drive, appliances more reliable, utilities more predictable, toys more enjoyable and trains run on time.” Although, all this technology may have problems and issues, nobody can think any more life without them and in relation to their issues they just expect improvements to solve them.

Back in 2003 Gleick<sup>3</sup> mentioned, “every new medium transforms the nature of human thoughts” so it is expected that some innovation will bring about structural and cultural changes, and of course it is normal to create some social challenges and provoke ethical issues.

They were again Brown and Duguid who put together the 6D’s that information and technology will change worldwide: demassification, decentralization, denationalization, despacialization, disintermediation, disaggregation where society and social system will become less uniform, power and authority will not be any more central, borders between nations will disappear, it will become a universal cultural identity and intermediary agents will disappear. Of course, all these D’s will come with changes and many times issues will appear.

It is well known that some innovations were appreciated in their own time, but some were not. This phenomena is well explained by Roger’s<sup>4</sup> theory “Diffusion of Innovations” where he acknowledged that an innovation to be well received and adopted needs to pass the five step process:

- knowledge, where people become aware of an innovation and its functions
- persuasion, where people form a favourable attitude towards that innovation. If the people adopt a negative attitude in relation to that innovation the diffusion stops at this stage.
- decision, where people engage in activities that lead to a choice to adopt or reject the innovation

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<sup>2</sup> Brown, J.S. and Duguid, P. (2000) **The Social Life of Information**, Harvard Business School Press

<sup>3</sup> Gleick, J. (2011) **The Information: A History, A Theory, A Flood**, Pantheon Books (US)

<sup>4</sup> Rogers, E. (2003), **The Diffusion of Innovations**, (5th ed.) New York: Free Press

- implementation – people put an innovation into use
- confirmation – people evaluate the results of an innovation-decision already made

When it comes to innovations and to AI as one of the important innovations of our times, one of the strongest debates is "Brains vs AI"<sup>5</sup> where most advocates state that an AI will never, ever manage to replace completely the human brain. Gleick mentioning Claude Shannon's work mentioned in another context that the human mind explores around and question things "what if it were like this". In comparison with a brain, AI is a simple algorithm which gives results based on the labels installed in its program.

Gleick, referring again to Claude Shannon's work acknowledged that the fundamental problem of communication is that of reproducing at one point either exactly or approximately a message selected at another point. Frequently the messages have meaning. But can a programmed system learn from all the information provided and perform in a human-like way? A brain uses its senses to take a decision whereas an algorithm replicates a result what the system matches as the best result.

If we have to analyse information as the base of AI, we have to see what kind of information affects its functionality. According to Buckland<sup>6</sup>, there are three main concepts of "information":

- information-as-process- when someone is informed about something. In this sense "information" is the act of informing.
- information-as-knowledge- the knowledge communicated concerning some particular fact, subject, or event
- information-as-thing- such as data and documents considered as information because they are regarded as being informative

It is worth mentioning two aspects that have been pointed by Buckland, that knowledge, belief, and opinion are personal, subjective, and conceptual, and that

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<sup>5</sup> Nilsson, N. (2005) **Human-Level Artificial intelligence? Be Serious!** Winters Publishing, 25<sup>th</sup> Anniversary Issue

<sup>6</sup> Buckland, M.K. (1991) **Information as Thing**, Journal of the American Society for Information Science 42(5): 351-360

there is a strict correlation between information as knowledge and information as things since in order to communicate what you know you have to describe it and represent in a way and then it becomes information as thing.

Furthermore, Steiner<sup>7</sup> referring to the “value of algorithms” emphasizes that through complex tasks in fractions of a second they are able to analyse big amount of data which allows us “to squeeze more and more into our days”. Describing the story of Spread Network and why the speed is so important he mentioned that the speed is limited, at least temporarily by the hardware in which they run.

Since, in our lives algorithms and AI started taking over as Steiner emphasizes many and more problems and ethical dilemma arise. Quite a few of our decisions and sometimes very important decisions are taken based on information created by algorithms. But do we know how these algorithms retrieve this information? Do we know from what kind of information some results are created?

It was Turilli and Floridi's<sup>8</sup> research that underlined one serious ethical dilemma: It is not enough that companies display truthful information they should display also the way that info was gathered, selected and analysed.

Steiner said that algorithms are limited only by speed, but is this the only limitation?

### **What kind of information plays a role in artificial intelligence functions**

But what kind of information plays a role within this algorithm and makes it run at such performance? It could be stated that the “information as knowledge” that a programmer inserted made it possible for this API to load and process such volume of info, in the speed of light. But then as correctly pointed by Buckland, the information as knowledge becomes “information as thing” which is the algorithm itself. And then this algorithm gave “information as knowledge” to the enterprises that they use this API to analyse data. But if the information as knowledge was not totally correct it means that the information as thing that it

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<sup>7</sup> Steiner, C. (2012) **Automate This: How Algorithms Came to Rule our World**, New York: Penguin Books

<sup>8</sup> Turilli, M. and Floridi, L. (2009), **The ethics of information transparency**, Ethics and Information Technology 11, 105-112

will come out -the algorithm has some wrong roots, which leads to not accurate results!

A search through some websites that use AI for references about the criteria that the programmers insert the data in algorithms and how the information is processed didn't retrieve anything, besides the usual statements about how they collect information and how they make use and display the data. This aspect gives ground to the ethical dilemma raised by Turili and Floridi that a company should display data about these aspects too.

### **The limitations of data entry**

Brown and Duguid provide us with food for thought about "information constraints" and state that people are responsible for all information stored and they are the ones to decide "what it all means and why it matters." They also stressed that "theorists talked about the humanity's "bounded rationality" and the difficulty of making decisions in conditions of limited or imperfect information but what happens when humans insert wrong labels in algorithms and then these algorithms create information which will be used and needed on decision making? So, again a vicious cycle?

It was Ekstrom<sup>9</sup> in 2015 that said that algorithms are systematic instructions created by humans, and that "behind every algorithm there is always a person, a person with a set of personal beliefs that no code can ever completely eradicate. Here we cannot talk about digital divide, but if we are to talk about maybe we should add the 5th category such as "lack of marketing or any other specialty skills" of the programmer when inserting data on the algorithms.

Back in 1948 Claude Shannon said that human mind wanders around, and conceives different things day and night and that the human mind has the ability of questioning things.

Steiner was one of the first to question algorithmic decision-making. Although he believes that we need to accept our algorithmic overloads, before doing so we

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<sup>9</sup> Ekstrom, A. (2015) **The moral bias behind your search results**, [https://www.ted.com/talks/andreas\\_ekstrom\\_the\\_moral\\_bias\\_behind\\_your\\_search\\_results](https://www.ted.com/talks/andreas_ekstrom_the_moral_bias_behind_your_search_results)

should vigorously and transparently debate the rules they will impose. He continued saying that “the real question isn't whether to live with algorithms, but how to live with them!”

Ekstrom also said we need to filter the facts and value what is more important. It is well recognized and accepted that AI is a technology that comes with challenges, such as accountability, security, technological mistrust, and the displacement of human workers. When Gleick said about information that is “the blood and the fuel, the vital principle” one question rose; how the society would be if at some point AI will be considered the blood and the fuel in any industry and it will be proved to be preferred instead of human intelligence? Will that be for better or for worse?

## **CONCLUSION**

Despite the fact that it seemed that AI still has lots of functional and ethical issues, despite the confounding algorithm invincibility, AI is the innovation that helps to increase productivity and improve profitability. It makes medical procedures safer, boosts the economy, or it can be used in applications to improve the quality of life for the disable. Although, some may argue that artificial intelligence displays biased data we still have to accept that AI became vital for science, research and analyzing data.

However, since many scientists and researchers acknowledge that the information is not always easy to digest, asses or classify, maybe we should accept the fact that AI has limits and cannot be used in any situation and definitely cannot replace human brain and judgements.

## **BIBLIOGRAPHY**

- Brown, J.S. and Duguit, P. (2000) **The Social Life of Information**, Harvard Business School Press
- Buckland, M.K. (1991) **Information as Thing**, Journal of the American Society for Information Science 42(5): 351-360
- Ekstrom, A. (2015) **The moral bias behind your search results**, [https://www.ted.com/talks/andreas\\_ekstrom\\_the\\_moral\\_bias\\_behind\\_your\\_search\\_results](https://www.ted.com/talks/andreas_ekstrom_the_moral_bias_behind_your_search_results)
- Gleick, J. (2011) **The Information: A History, A Theory, A Flood**, Pantheon Books (US)
- Nilsson, N. (2005) **Human-Level Artificial intelligence? Be Serious!**, Winters Publishing, 25th Anniversary Issue
- Singh, S. and Singh, Sk. (Sep, 2010) **Artificial Intelligence**, International Journal of Computer Applications (0975 – 8887) Volume 6– No.6
- Steiner, C. (2012) **Automate This: How Algorithms Came to Rule our World**, New York: Penguin Books
- Rogers, E. (2003) **The Diffusion of Innovations**, (5th ed.) New York: Free Press
- Turilli, M. and Floridi, L. (2009) **The ethics of information transparency**, Ethics and Information Technology 11, 105-112