# Past, present and future impacts of artificial intelligence on humans. (March 2018)

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***Abstract*—This report is a review on Artificial Intelligence. It broaches major points and major subjects which interest our society. Nowadays A.I is seen by some as a danger or as an assistance buy others. You are invited to discover the advantages and disadvantages of AI nowadays. Afterwards we will analyze ethical aspects.**

***Index Terms*—Artificial intelligence, autonomous systems, intelligent robots, machine learning, neural networks, ethical issues.**

## I. Introduction

THIS document is an analysis on Artificial Intelligence (A.I). Nowadays, everyone seems to know what it is. We are all focused on a part of it. We prefer to see the pros otherwise we focus on the cons. Therefore, let's clarify this subject. Marvin Minsky considered as one of the more eminent scientists and researcher working on A.I gave us this definition: "*Artificial Intelligence is the science of making machines do things that require intelligence if done by men*" [1].

This interpretation is referring to the basis of A.I just as much as it defines the present-day mentality.

Everyone knows that something interesting is going to happen with A.I. That is why we are going to analyze advantages and disadvantages of it on our society. Finally, we will study ethical issues caused by A.I and how people react to these issues.

## II. The Advantages of artificial intelligences

To begin this part, we are going to see if computer can think or not. To achieve that interrogation, why not to use the most famous test on A.I machines?

### *A. The Imitation Game*

You have probably heard about the Turing Test. It is an adaptation of the human test called "the imitation game" [2] in which a person must identify the gender of two interlocutors (knowing that one is male and the other a female) in another room buy asking questions. Here, Turing's goal is to discover if machines can think. To do it, he replaces one of the two people in the second room buy a machine. Then, the questioner needs to analyze who is the machine. It is only 65 years after that a machine succeed. The computer called 'Eugene Goostman' successfully passed Turing test on June 2014. Even if this victory is contested by some scientists, it represents a true progress in A.I history [3].

The lesson we can learn after all, is that thanks to this test, A.I provokes consideration of scientists and normal citizen all around the world. It has become a famous subject of interest. We can notice here a historical and cultural benefit to humanity.

### *B. Helping civilization*

Max Tegmark professor at MIT and co-founder of *Future of Life Institute* had an interesting point of view on A.I. He said that we created our civilization thanks to our intelligence and everything that accentuate this intelligence and helps to develop this civilization is an advantage (like A.I) [4]. This analyze encourages A.I and gives it a true notoriety.

We are in constant need of development, moral, economic or geographic. We are also creating tools to help us making progress in all the fields we are working on. A.I can be one of these tools. It gives us the possibility to see and analyze the world and to discover hidden parts of knowledge. Now A.I machines have beaten our best Chess and Go players. These machines force us to exceed our limits. It seems that having an opened mentality about A.I machines can make it an advantage for us. To continue our development A.I is a good tool which accentuate our collective intelligence.

### *C. Neural networks*

In his book, Professor Michael Negnevitsky, attached many importance to Neural Networks' (N.N) subject. His introduction was that N.N tried to act like human brains and to potentially lead to an intelligent machine [5]. This study on N.N let us think on our intelligence and on the intelligence we are trying to create. This way of study let us think on how our own brain is operating. It is a great opportunity to discover stuff on our brain functions and at the same time create a powerful tool useful in our lives.

Thanks to brilliant scientist and researchers we have reached a point where A.I gives us the ability to accomplish new progress in our everyday lives and for the entire civilization. Moreover, while searching what can help us, we are taking many advantages from A.I machines.

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## III. The disadvantages of A.I

Nowadays we can say that there is no significant disadvantages of A.I machines as it is not still fully developed. However, we can discuss on probable issues created by A.I.

### A. Centralizing power

We do not need any reference to discuss on a major point which is relevant in many fields. Power attracts everyone on earth. To get power your need influencing tools like medias, or any kind of weapons. A.I systems could be one of these weapons to dominate the world.

When something is seen as intelligent, it is placed at the top above everything. Doing that, this thing develop itself and influence other things. We can compare this analyze to A.I, it can change the world, positively or badly.

### B. Ecological impact of A.I

When we think about computers and A.I machines we all see these tremendous datacenters consuming all earth's electricity and often built in the most hostile areas like next to the arctic circle or inside World War II bunkers. But A.I can help to counterbalance mass energy consumption and save it.

Many applications of A.I have been developed to reverse energetic impact of this machines. Actually, energy efficiency is a subject treated by many startups. The first company to use A.I for worldwide installations is Google. With their A.I called *DeepMind,* they managed to reduce energy consumption of their datacenters by 15% [6].

This is only the beginning, for now theses many computers and datacenters consume a lot which is not beneficial for world's ecosystem, however the example of *DeepMind* is a proof that computer can compensate their ecological impact.

## IV. Ethical issues in machine fields

Now we are going to examine ethics with A.I. Thinking machines are always compared to human, from the intelligence to the shape (humanoids). From this point it causes a problem: is it a machine or a human? You will see that this subject is quickly blurred.

### A. Human-like software

We previously said that we were confronted to A.I trying to imitate human intelligence and human beings. The one that I am going to present you is shown as a replacement of someone that has disappeared. It gives a second life called "digital moment" to someone dead [7]. This application named *Replika* and created by Eugenia Kuyda analyzes someone's online discussions, then it creates a virtual avatar of this person with which you can discuss by online chatting services.

This service is not-only breaking into a dead person's privacy, moreover it creates a feeling that we cannot describe for his relatives.

Additionally, what does this company do with all this data? To me transparency on all Big Data companies should be forced. Everyone has the right to know what the second use of our own personal data is, and what effect will it have on our online life.

### B. What about privacy ?

Richard O. Mason, a famous writer in Business area wrote in his book: "*Two forces threaten our privacy. One is the growth of information technology, with its enhanced capacity for surveillance, communication, computation, storage, and retrieval. A second, and more insidious threat, is the increased value of information in decision-making*" [8]. This investigate about privacy written in 1986 seems still available today. Moreover, it is taking importance with new A.I technologies.

Indeed A.I systems are mainly working with computation. Additionally, the different uses of data collected by these systems are treated in a hidden way. The question is to prevent privacy issues before it happens.

### C. A code of ethics for A.I machines

Suggesting that A.I systems become available for everyone as a large range, we may find a code of conduct which preserve both users and programmers.

As we can read in an article of *Future of Life Institute* [9], the need of a code of ethics is unmissable for specific sectors that implicate human lives. Consequently, the *Association for Computing Machinery* (ACM) and the *Institute for Electronics and Electrical Engineering* (IEEE) took it as a significant problem.

Paula Boddington who is philosopher at Oxford's Department of Computer Science did research on this potential code of ethics for A.I.

In her paper [10], she did not try to write a code of ethics but rather to help developing it by interpreting and finding solutions on all the interrogations involved in a such code. The investigation reveals major points such as the gap between technology and humans. She also exposes the unpredictable future of technology which also concerns A.I.

Then we may think on the ins and outs of A.I field. We may write a proper code of conduct resulting from theses researches. This code should be in consideration of all the disadvantages and issues that we have noticed in this report and all the others too.

## V. Conclusion

A relevant point that's appears in this A.I subject, is the analyze. The one that we do and the one that machine does.

As A.I are not fully developed, we do not really know what is going to append next. But we may predict and fix every bad points out of human rights.

This new world that's opening to us might be very useful if we use it well.

Superintelligence is not far. When machines and computers will reach the same calculation power than our brains, we will enter in this part [11].

To conclude no one knows to what A.I will really serve.

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