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# How Artificial Intelligence Changes Human Life

An essay on „Artificial Intelligence and its Impact on  
Technology and Society“

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## 1) Introduction

Intelligence. It is the quality mankind takes pride in the most. Intelligence allows them to dominate the planet and to reign over fire, plants and animals, it is the way how they conquered the sea, the earth and the moon and how they continue to do so in relation to the whole solar system. Because they are intelligent, humans invented the alphabet, the railway and computers. But what does “intelligence” mean?

Oxford dictionaries define intelligence as “the ability to acquire and apply knowledge and skills” [1], Cambridge dictionary claims it to be “the ability to learn, understand, and make judgments or have opinions that are based on reason” [2] and the Encyclopaedia Britannica considers human intelligence as a “mental quality that consists of the abilities to learn from experience, adapt to new situations, understand and handle abstract concepts, and use knowledge to manipulate one’s environment” [3]. That already makes three different definitions of intelligence. While the last one only specifically refers to humans, the second definition more or less rules out animals to be intelligent, because as far as it is known they cannot reason, in contrast to the first one that would actually allow animals to be seen as intelligent, like how dogs can learn commands or some monkeys use tools to collect ants. But then what about machines, can they be intelligent as well? Could we talk about them acquiring and applying knowledge or skills? Can they learn, understand, judge or reason, even though machines are not alive but rather made by humans? If they could, then humans would have created something like artificial intelligence (AI). It could be on a level below the humans’, at the same or even on a higher level. But artificial intelligence has already gone past the subjunctive, even though the meaning of “intelligence” itself remains somewhat fuzzy, and it has opened a completely new dimension to the way we work and live. Its impacts on technology and society are to be evaluated here.

## 2) Artificial Intelligence

When talking about AI, the first thing people think of is very often something like the supercomputer HAL 9000 from “2001: A Space Odyssey” (1968), the robot C-3PO from “Star Wars” (1977) or maybe the human-like Ava from “Ex Machina” (2015). They all seem to be able to think and have some kind of understanding of

themselves. But they are only science fiction (yet) and have hardly anything to do with the currently valid definition of AI: “the use of computer programs that have some of the qualities of the human mind, such as the ability to understand language, recognize pictures, and learn from experience” [4]. You can differentiate between two types of AI: narrow AI and general AI. Narrow AI is created to perform a specific task, at which it then can surpass humans, like detecting cancer, organizing huge amounts of data or driving a car. This type is the one currently in use and the one being further improved. The goal, however, is often said to be reaching general AI, that would transcend human capabilities in many if not all areas [5].

The field of AI has existed since 1955, but the greater achievements are to be placed in the 21<sup>st</sup> century and the last years of the 20<sup>th</sup>, starting off with may 1997, when a machine – IBM’s Deep Blue – beat the world champion Garry Kasparov at chess. Self-driving cars were developed, speech recognition programs appeared and AI expanded into the medical field as well. March 2016 followed another milestone, with Google’s AlphaGo defeating Lee Se-dol, one of the best players of Go of all times, a game far more complex than chess [6]. Since then AI computers have appeared that are able to beat the masters of almost every game, from poker [6] to real time strategy video games like Dota 2 [7].

But what is the real purpose of AI? It is not to create machines that can play games better than humans. It is not to create machines that have a conscious or emotions. Neither is it – or at least should not be – to create a machine that is more intelligent than humans because since intelligence is not defined, it is a meaningless question. Rather, the goal is to develop systems that can do what humans do and do it better or do what humans cannot or do not want to do themselves [8]. Thus, AI can be found in pretty much any area of society and life: medicine, military, Internet platforms, personal assistants, transport, production [9]. The changes that AI brings about are often considered as “the fourth industrial revolution” [6], with AI in its universal importance being – with the words of Andrew Ng, the former chief scientist of AI at Google Brain and Baidu – “the new electricity” [10].

### 3) Impacts on Technology and Society

AI is fundamentally changing the technology itself and the technology’s role in the economy, in consequence changing our lives and life-style and that way society itself.

Therefore, if we are talking about AI, it seems useless to try and separate the impacts of AI on technology from those AI has on society. Take transport as an example, or more specific: self-driving cars. "Self-driving" means that the vehicle can semi-autonomously or fully autonomously move to its destination. In the final version the car would not need a driver anymore but could decide on a route, speed and acceleration itself, being able to read road signs, respond to other road users and solve unexpected situations of danger such as a child suddenly running onto the street or an oil trail on the asphalt. For something as complex as this, AI is vital and an absolutely necessary feature to make it work, requiring a different type of car to allow an AI system to drive instead of a human driver with hands. This is no futuristic scenario anymore, with companies like Google and Tesla developing and selling self-driving cars already. Estimates say that there will be ten million of semi-autonomous or fully autonomous cars in use by 2020 [11]. This will possibly change how people use their cars and what they do during a journey, and very probably the transport sector when professional chauffeurs and taxi-drivers are no longer needed, the same applying to driving schools. Furthermore, streets and roads may have to be altered so they can be used by autonomous cars. Laws have to be created to deal with accidents or other violations of rules caused by self-driving vehicles. That way this one change in technology affects a lot of different areas of society.

However, as mentioned before, AI is not restricted to one sector only. It can be found in production halls, marketing and strategic decision-making in companies [9,6]. The military – of any country – is or would be interested in – for example – robots with AI to replace the weaker and less reliable human soldiers [9]. AI is being used in medicine as well, like how DeepMind Health focuses on AI technologies to help clinicians identify the right treatment for a patient faster and more accurate or to alert nurses to a patient's condition worsening earlier, saving time, costs and lives [12]. IBM's supercomputer Watson is being used in health service as well, with the hope of it helping in the battle against cancer. However, multiple of those projects have failed, with Watson partially giving advice that doctors deemed dangerous for the patients and not being able to give any ideas the doctors did not have themselves, because there are too many variables in this field so there are less patterns that could be generalized [13]. Even though, AI might solve those problems soon and conquer the health sector completely. Right now, it is only used to support the people working in the health sector, but at some point, it might be possible for machines to take over

the whole job of a doctor or a nurse, of which at least the first one is still unthinkable today. But jobs are indeed being endangered by intelligent machines, with automatization stealing the jobs where less qualification is needed, in agricultural and industrial production, office work and transport. In South Korea, for example, there already exist robot teachers that are able to give classes autonomously. People might say that real human teachers will remain irreplaceable, because teaching is not only about imparting knowledge but imparting human values and creating social connections as well [14]. But depending on the rapid development of AI systems and the way AI changes the values and beliefs of society, this might end up as an old-fashioned opinion. And AI will change the way society perceives and thinks, it is already doing so.

AI makes it possible to facilitate life considerably. You can have smart cars, smart phones and smart homes, with everything being interconnected and interacting, for example having a thermostat to control the temperature depending on your routines and schedules it learns from the Internet, or allowing a person to open the door with a mobile phone instead of a key or to start the coffee machine from afar [15]. Since these technologies depend on learning patterns and recognizing structures within masses of data, AI is their foundation.

This Internet of Things can exist on the level of a household, a factory, or a whole city, making lives easier for everyone with access to the technology. Soon, a world without AI won't be imaginable anymore, if we are not already past this point. And once this thorough change has been adapted to, society will think differently about what is normal to do and normal to have.

Another field of AI that has a huge impact on social life is everything connected to the Internet. If Amazon makes recommendations on what to buy based on your previous purchases or based on in general frequently purchased product bundles, if YouTube makes suggestions on what other videos to watch or what channels to follow based on what behavior you have shown up to that point, or if Google completes your search questions through data on country-specific usual word collocations, then AI is involved [6,10]. People are being sorted into categories with specific needs and wants, and they are caged within the selections made for them. Without you even realizing it, the contents you are shown have the potential of determining what you know of, what you think is important and what you believe the world should be like, or what not. The people controlling the AI systems will have a great deal of control over

every user of their systems, by selecting or manipulating the data the AI is learning from, what then is influencing the way the AI will react to people and do its tasks [16]. In fact, data are the roots of every AI, their foundation. Without the right set of data, no new search engine could compete with the existing ones, no speech recognition device can be built and no personal assistant. This makes data not only a market entry barrier [10], but valuable goods. The mining of data and the trading with the same is raising problems within society, especially in privacy matters, resulting in scandals like the one around Cambridge Analytica in March 2018, and new laws like the General Data Protection Regulation of the EU.

But that does not impact the fact, that AI is changing the world's hierarchy of power. On the world market, the six most valuable companies are not fossil fuel companies, like some might suspect in this age of oil, but rather companies involved with the Internet and AI, with Apple in the lead, with a value of almost 927 billion U.S. dollar, followed by Amazon and Alphabet (Google) [17]. A survey ordered by the Federal Ministry of Economy and Energy indicates that AI could be responsible for a rise in the gross value of the producing sector of 32 million euros in Germany alone within the next five years, which equals a third of the estimated growth in this sector within the given period of time [18].

Through numbers like these Politicians as well have understood, that AI will play a major role – if not the most important role – in the near future, and that the leading countries in this technology will be the ones leading the world. The German government is working on a masterplan for the country's AI strategy to make sure that Germany does not miss the boat but instead becomes one of the leaders in the field of AI. Other countries like France are already investing billions of euros into AI [19], because AI is not only the future but promises to solve a lot if not all of our problems. Partly influenced through movies like "Transcendence" (2014), people hope that a general AI with greater intelligence than humans might be able to find cures to all illnesses, including the "illness" of aging, that it could stop the climate change and ensure an equally good life for each and every person on this planet. And if there was a chance that this could be possible, then why should anyone listen to the scientists, philosophers and conspiracy theorists who fear that through AI we will make ourselves redundant, that machines with superhuman intelligence might take over the world, not necessarily out of ill-intent but simply because they are a better life-form, or will eradicate mankind because that was the ideal conclusion they

came to when they were told to solve all the problems of humanity [5]?

#### 4) Conclusion

As it has been shown, AI cannot be ignored. It is transforming technology and society at the same time.

AI opens up a lot of possibilities. Through its use for automation and the Internet of Things it can facilitate life tremendously. It can analyze amounts of data in a way that humans cannot, allowing improvements in marketing, logistics, production efficiency and security. It might one day be able to help in early diagnosis and treatment of the most vicious illnesses like cancer. And it is seen by some as the key to stop climate change [20].

However, AI systems pose threats as well. Privacy is one matter, increased military power through robot soldiers or similar opposing a country without that technology another, losing of jobs a third one. The loss of jobs occurring now in production and possibly occurring in the near to less near future in all areas, maybe even including law, research and politics, is at the same time probably the problem with the greatest impact on – our Western – society, since it leaves the question of how life and public order is to be maintained with the majority of workforce unemployed, or what kind of social system is needed then. Will it make humans redundant for this world or erect a form of society in which humans have nothing else to do than to amuse themselves? There are more questions like that one and some should be but cannot be answered before AI becomes an integral part of our world. Is AI really the trump card against social inequality and climate change, or accelerating them by strengthening current global relations, power hierarchies and conceptions of the world? Is to make everything more efficient really the right path to take, or will rebound effects make the situation worse? How will we make sure that AI does not supersede us, or that the AI which has superseded us will still be controlled by us?

And what will happen if everything could be solved with artificial intelligence so that there was nothing left for humans to do and to think about? If we did not need our intelligence anymore, because there was intelligence greater than ours to do everything for us, if we basically lost the quality we take so much pride in, would we still be humans, rulers of earth and conquerors of the universe? Hardly.

So, if we ask what impacts AI has on technology and society and look at the results,

the next question to ask should not be whether we can create machines that can do what humans do or even more, not whether we can create something that was intelligent, but rather whether we should. Because something with impacts on society of this scale is not to be taken lightly.

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