

Artificial Intelligence: Implications, Issues, and Balance in Today's Society

Artificial intelligence (AI) has become a norm in today's advancing society as humans long for the cheapest, fastest, and most reliable way to get a task done. AI has shown up in the home in the form of a simple voice recognition box, in the workforce as a way to mass produce products, on the road as a potential safety enhancement to the distracted driver, and in the medical field advancing the ability to diagnosis and treat.^{1,2,3,4} These phenomenal advancements are key to living in a modern society. However, these advancements have masked the potential problems with placing trust in AI. Unforeseen biases and ethical issues have risen out of these new advancements posing society with a new question of whether or not we are doing good or doing harm.⁵ AI is said to only be good as the algorithm with which its creator programs it with, leaving it susceptible to manipulation and biases.³ With people attempting to outdo one other to make a name in today's society, artificial intelligence has become a necessary application regardless of the ethical and economic issues they pose. Therefore, in order for artificial intelligence to succeed, it is important that there is a system of checks and balances so the consequences and complications that come with self-thinking technology does not begin to outweigh the benefits, leading to an endangerment of society.

Where did AI come from?

Modern society would not be possible without the advancements that technology has provided. At the forefront of this technological advancement stands artificial intelligence, which has now become a common household term. Before one can even begin to explore the limits of this technology, its origins must first be understood.

The idea of a technological machine that could problem solve and think like a human has been at the back of scientist's minds for decades. It was always a question as to how could this

be achieved? In 1950, Alan Turing made the first real proposal on the idea of AI at a conference held at Dartmouth University. He asked scientists the question of whether or not a machine could think like a human being. If human beings used reason, logic, and stored memories and knowledge to problem solve, why could a computer not use its stored information along with given information to come to the same conclusions?^{6,7} At the time, Turing's proposal only remained an idea due to insufficient technology and limited funding. Computers at the time could be programmed to do something, but they could not store that information for later usage.⁷ Each time using the computer was like starting on a clean slate. For example, computers today store search information and history in order to better suggest options in the future. Since computers lacked this ability and the cost of AI research was limited to large universities, AI was just an idea to be pursued.^{6,7}

Turing not only offered this idea of AI but, he also managed to give future inventors a test or a question to solve. This is known as the Turing test. This test became the basis for all future AI, and a challenge that modern day chat bots still struggle to achieve. The Turing test says that an AI computer must have the ability to hold a conversation undisguisable from that of a human. This meaning that if a person were to have the same conversation online with both a real person and a robot, similar responses would come from both, and the person using the chat system would not be able to tell whether they were talking to a human or a robot.⁸

This led to the first chat bot, Eliza, developed in 1965. This chat bot was made to mimic a psychologist to help those with depression or mental health problems that needed someone to confide in.⁷ This was the first attempt to pass the Turing test. Many believed this program successfully did so, when in fact it simply fooled its user into thinking it actually understood what they were saying. Instead this chat bot was programmed to be triggered by certain phrases

and redirect its client with questions to get them to continue talking so it would never have to provide a clear answer. Therefore, although conversations were similar to those held with a human, Eliza lacked the capacity to understand human emotion and language, limiting her responses.⁷

Although this was a failed attempt to answer the Turing test, it opened the doors for many more programs that tried to find a way to use stored data to master human language. Some programs developed analyzed large databases of conversations to help it give the best replies to the questions asked based on similar conversations the technology had learned.^{6,7} Other programs stored conversations it had in the past for future reference. Either way, technology was beginning to learn to store information to better analyze problems, which is fundamental to current AI including devices such as Alexa, Siri, and Google Home who have yet to master human language, but can answer thousands of requests based on their large data bases.^{6,7}

As computers ability to store and use information advanced, large businesses and investors began to take interest. In the twentieth century two out of the three largest monopoly holders in the United States, Rockefeller and Carnegie, began to pour money into AI in hopes to advance their own companies and profit off of this new technology. With Carnegie's investment, the first Autonomous car was created; Navlab. This was a van that by using technology, was able to navigate roads and avoid obstacles on its own.^{6,7,9}

These are a few of the early advancements of AI that lead to today's modern AI trophies that have become prevalent in everyday life. Without them many of society's improvements would be delayed.

Implications of Modern AI

AI has become so common that we most likely do not even realize how much it is used. AI is found not only in the household, but also in the workforce, on the road, and in the medical field. Each of these categories affects us, making the use of AI and dependence on its advancements unavoidable.

The most common use of AI and the most recognizable are the those found within the household such as Siri, Alexa, and Google Home; all in home voice recognition devices used to play music, control security, connect to in home control systems, and answer simple questions they are presented with. They are AI personal assistants to the homeowner that awaken with a simple command of “Hey Alexa,” or “Hey Siri.”^{1,10}

The roles of the intelligent personal assistants are often underrated by the average home owner but, have been found to be of great use to those who have disabilities or those who are of older ages. These at home AI devices offer speech therapy and speech accessibility for those who are visually impaired or have a speech impairment. With the elderly, the simple at home functions of these devices have shown to give aid to those who may not be as mobile as they used to. It helps them with environmental controls such as temperature and lighting with in the room all at the sound of their voice.¹⁰ For example, if they needed to use the bathroom in the middle of the night and needed light, they could simply give this command to turn the lights on before they try to blindly navigate, lowering their risk of falling. These devices have also been shown to help in emergency situations. Many elderlies live alone and a hands-free device that can call 911 may be the difference in saving a life.¹⁰

Moving to a larger scale, AI is not only found in the household but has been moved to the workforce as well. This technology has been introduced to assembly lines, mass producing products at much faster rates for more affordable prices. Human assembly lines have been

replaced by machine assembly lines, and the manual laborer is being replaced with the computer and science educated worker to run the technology. This shift in industry has not only changed the economy and production, but also the job market and opportunities available. In an advancing society, this change in the work force is inevitable as these advancements have helped companies interest investors and increase in their sales.²

AI affects people directly through home devices and indirectly through many products that were produced using AI technology. This AI is also right in the driveway and on the roads as partially autonomous cars have been brought to the market. These cars are made so that the driver need only to intervene in emergency situations in which the car is unable to react. These cars were created for reasons such as increasing mobility to those with disabilities and to decrease human error on the road. Companies such as Google, Uber, Tesla, and Nissan have invested in cars that break automatically for hazards, are able to navigate the roads on their own, and are able to avoid obstacles. The goal of these partially autonomous cars is to eliminate the distracted driver by replacing them with an always alert automated driver.^{3,11}

AI has also been introduced into the medical field for the similar reason autonomous cars were created; to help eliminate or reduce human error. The third most common cause of death within the United States is due to medical error. AI has been used to perform small surgeries hoping to minimize damage done to the patient from incisions and prevent human error. They use information from past surgeries to apply to the situation at hand.¹²

AI in the medical field has also been used to help pathologists in their diagnosis of abnormal tissues, such as cancer lymph nodes, decreasing their error reading rate from 3.4% to 0.5%.¹² This decrease in error and increase in the diagnosis speed that is now available because

of AI and will help patients receive diagnosis' faster with more reliable information, allowing them to get better and more immediate treatment plans.^{4,12}

Another implication of AI in the medical field is not within the body, but involves the mental health of patients. Chat bots have been introduced to help those with depression and anxiety and allow them to confide in something in order to relieve some of their grief.⁴

Overall, from the start of artificial intelligence as just a dream of science fiction, AI has implemented itself into every part of today's society. Not one person can avoid its influence for it has become key to modern day advancements.

The Issues Hiding Behind AI

In an advancing and competitive world, scientists have developed AI to make leaps and bounds it what we now can do. From all of the positives previously mentioned, there seems to be no question; AI is fundamental to modern society. Now the question that needs to be asked is have these benefits hidden the flaws that this technology has ultimately presented us with?

One of the fundamental characteristics to being a human is autonomy; the ability to think and reason on one's own. The ability to take the situation at hand, use past experiences and knowledge, and draw one's own opinion and conclusion on the matter. No other living species have presented this ability to reason, making the human race very unique. With AI, scientists have tried to capture this level of thinking into machinery and improve upon it.⁶ This ability has yet to be achieved. As long as we understand that these robots thinking mechanisms are still inferior to those of the humans reasoning abilities, we can understand not to put full trust in them. This though is not the case, and people are believing that these technologies are empty of error and biases.

These ethical concerns start small with the simple at home devices. There have been many privacy concerns regarding voice recognition systems in that they are recording conversations when they are not commanded to do so. In a recent study, it was found that if the microphone on the Echo device is not turned off or disabled, it does in fact record conversations even when not prompted to do so.¹ These devices are said to only activate when the correct commands are given. This is not the case though and they have been recording whether told to do so or not. This brings up the ethical question of privacy. Should a company be allowed to record private in-home conversations of people without them knowing? We are supposed to feel safe and protected within our home, but how can we do so knowing we are being listened to?¹

This information is not only recorded, but used for marketing purposes as well. Amazon has claimed that it only records the information said after the wake word “Alexa” is used. This information is stored and used to promote potential products of interest. The problem is, the research showed amazon devices have recorded without the wake word, meaning they will use this information to market as well, once again inflicting on our privacy.^{1,13}

Privacy at home is only one of the smaller issues involving artificial intelligence. Another growing issue is AI influence on employment as it invades the workforce. As discussed previously, AI in the industry has become necessary for the modern-day economy. The problem with this invasion of technology is its effect on the unemployment rates. Substituting the manual laborer with a machine has led to mass unemployment as employers are now demanding new requirements and skills from their workers. Technology only requires the few workers to man their efforts as compared to the many who did the labor themselves before, causing a decrease in the job market. This effect has been slightly undermined by the fact that now products can be produced faster and for more cost-efficient prices. The problem presented with this imbalance is

although this new form of industry may increase societies wealth, it is not meaningful unless there are consumers to buy the products. If the consumers are unemployed, they cannot make the money needed to buy the products. This will cause the opposite of what AI set out to do and instead harm the overall economy.²

These two areas show how AI is effecting our privacy and job markets but, AI on the road brings about new ethical problems and biases that now threaten human life. Partially autonomous cars are meant to be self-driven, with the expectation that the human driver is ready to take over in an emergency situation in which the car is unable to react.¹¹ This brings up the point that these AI machines are only as good as the algorithm they are programmed to react with. These algorithms are created by humans who are subject to potential error.^{14,15} These algorithms have shown many faults including biases to age and skin color. Autonomous cars are better able to recognize Caucasian pedestrians than they are able to recognize those of color.³ This is a racial bias that we expect machines not to have, but they do. The issue with this is because we expect them to be bias free, we are putting our full trust into them and many times the drivers are not ready to react when a situation occurs causing accidents.³ This brings up the question of are we now replacing human error and distracted driving with autonomous driving errors?

Another question many philosophers have brought up involving these AI cars is how can humans program them to react to every situation when we ourselves do not know the answers to every situation, and who is to decide this for all? What gives them the right to?¹⁴ Take for example the famous ethical conundrum, the trolley problem. The trolley cannot stop, and is headed right for five workers in which it will kill. You have the option to pull a lever to redirect the trolley, but it will still kill one person who is stuck on the track. Who do you choose? The

answers to this question are endless as every person has their own reasoning and own solution. We do not like to think that this trolley problem could exist in real life, but situations similar to it could. If we cannot decide on a solution, how can we program technology to do so? This goes back to our fundamental ability to reason when presented with a situation. We have the ability to react when presented with emergencies, whereas technology has the ability to react to situations only with which it is familiar with.¹⁴

This leads to AI in the medical field. Often times if a surgery is done using AI, a surgeon is close by monitoring the process. We trust that this technology will eliminate human error, but once again, is it impossible to program it with the ability to react every emergency situation? Just like with the partially autonomous cars, if we are not ready to react when the technology can no longer respond, it will replace the human error fatalities with machine lack of response fatalities.³

Another addition of AI to the medical field is the introduction of chat bots for depressive patients. At a glance, this sounds like a good step in the fight against mental health. When we look closer we begin to realize this may not be the best idea. Often times those facing mental health problems who seek guidance from a psychiatrist need that human interaction and sympathy to confide in. With the use of chat bots, we are replacing this human interaction with technological interaction, dissociating those who need people the most. Chat bots often deceive their patients into thinking they understand them when in reality, they are using a database of information to give the best answers. Mental health patients do not need conversations with the best possible answer, they need conversations with someone who will listen and empathize with them, really understanding their unique situation. Chat bots do not treat patients as unique individuals, but as a database of information.⁴

These are the situations of the current AI, but already the future of AI has posed many problems. Through new advancements and continuing research, AI robots are now more lifelike and more autonomous. This brings about problems involving morals and harm. As these robots become more autonomous, the question asked is do they have a moral status? This means that they would have the ability to feel pain and suffering and they would have to demonstrate higher intelligence and awareness, showing their ability to reason. If AI can do such things, which would show we have mastered the ability to transfer our autonomy into machinery, then they would be subject to laws protecting them against discrimination and give them equal rights in society.¹⁵ This seems like a far off probability but, there have already been situations where these life like AI robots have demonstrated this problem of harm. In 2007 a US colonel had to call off an exercise operation because he witnessed robots who had lost their legs keep crawling to get away. He deemed the situation as inhumane to keep attacking as these AI robots because they looked as if they were suffering. We also see these new AI robots entering everyday life, not just the battle field. There has been a robot created by the name of Sophia who can participate in full interviews, and as of 2017, became a citizen of Saudi. The question for future AI is are these advancements truly necessary? What is their purpose for the betterment of society? These new AI robots pose a threat on society as people are viewing them more as humans than the machinery they are, forgetting they were created and programmed by humans, so they cannot be without bias. They are only as good as the algorithm in place, and unless that algorithm is resistant to manipulation, they cannot be perfect.¹⁴

This trust in technology comes from human's predisposition that technology is supposed to be flawless and all knowing. We forget that technology is in fact made by humans and still subject to human error. If we are not careful and are not curious and question this technology,

we are subject to harm. AI has powerful influence over society and without a checks and balances, can end up being societies downfall.⁵ A competitive market calls for the best of the best methods and technology to outdo the others. Eventually, these benefits that the technology provide fall short to the unforeseen consequences in the long run. It is important that we remember what makes the human race so different from others and that is autonomy, the ability to reason. This ability is so important and cannot be replaced with technology without bringing along potential dangers. AI can make a nation powerful and an industry rise above the others, but without checks and balances to make sure what the AI is doing is truly beneficial, it can also be the poison apple that causes the downfall.⁵

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