Artificial Intelligence and the Ethics Behind It

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Abstract

Artificial intelligence (AI) has been a widely used buzzword for the past couple of years. If there is a technology that works without human interaction, it is labeled as AI. But what is AI, and should individuals be concerned? The following research aims to define what artificial intelligence is, specifically machine learning (ML) and neural networks. It is important to understand how AI is used today in cars, image recognition, ad marketing, and other areas. Although AI has many benefits, there are areas of ethical concerns such as autonomous cars, military applications, social media marketing, and others. This paper helps define the benefits of AI and the ethical issues.

Introduction

Among the software development community and possibly the rest of the professions, AI has become a popular topic, but what is AI? The following research is meant to help examine more precisely what AI is. Most people use some form of AI every day, whether they recognize it or not. Although individuals use AI very often, there are ethical concerns surrounding the use of AI. Do not read the following without understanding that there are many benefits of AI, but the ethical concerns are real and need to be addressed. Unless these concerns are studied, and regulations are implemented, AI could grow unchecked. If AI grows unchecked, the issues will soon outweigh the benefits.

What is Artificial Intelligence

When a person sees the term "artificial intelligence," there may be many things that come to that individual's mind. For the purposes of this research, it is important to define what artificial intelligence is and how some of its constituents work. Without the proper understanding of what "artificial intelligence" is, the ethics behind it cannot be fully understood. Artificial intelligence (known as "AI") can be summed into the following definition: "artificial intelligence involves computational technologies that are inspired by – but typically operate differently from – the way people and other biological organisms sense, learn, reason, and take action" [1]. With the definition above, there are many things that can be molded around it.

The following lists some of the popular areas of artificial intelligence:

- Face recognition
- Search recommendations
- Chatbots
- Social media suggestions
- Advertisements
- Self-driving vehicles
- Image recognition
- Social network moderation

The above examples are already utilized in many areas of an individual's life today, but how do they work? *Deep learning* is the driving force behind these ideas.

Deep Learning

Deep learning is a more specific area of artificial intelligence, but it is utilized in some way by most AI. Deep learning is defined as, "…representation-learning methods with multiple levels of representation, obtained by composing simple but non-linear modules that each transform the representation at one level (starting with the raw input) into a representation at a higher, slightly more abstract level" [2].

A way to help visualize the definition above is to look at image recognition, one of the largest areas of AI. Developing image recognition technologies includes showing a computer system a set of images and manually classifying those images. As the image is shown to the computer system, the algorithms will extract certain data from the image. The image can then be classified as a house, cat, dog, or of whatever the image consists. As more images are input into the computer system, the algorithm becomes more accurate and can better classify the images. As each image is shown, the machine outputs a vector of scores for each category. The scores help define the category to which the image most likely belongs. A function is developed to help calculate how much the vector scores were off from the desired vector scores. The machine will

fine-tune different parameters to help get closer to the desired score. As more images are processed, the better the machine becomes at classification [2].

Neural Networks

Deep learning makes use of neural networks. Figure 1 helps show where neural networks sit within the scope of artificial intelligence. Neural networks are designed to mimic the way a human's brain works, and they consist of four components: inputs, weights, bias, and output [3]. IBM provides the following formula and similar examples to help explain neural networks.

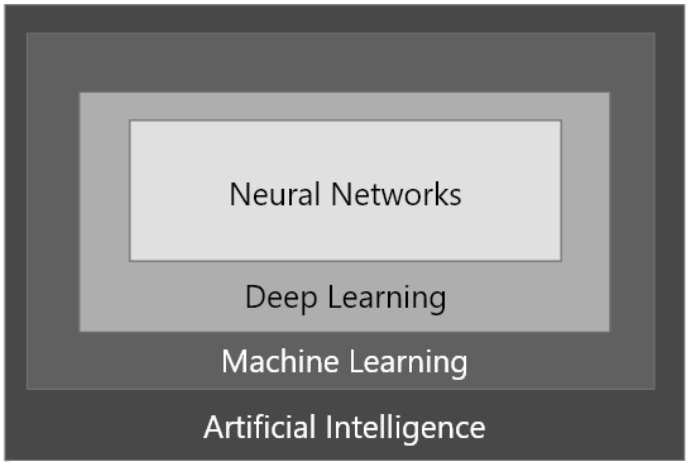

Figure 1- Breakdown of fields within artificial intelligence

$$\sum_{i=1}^{m} w_i x_i + \text{bias}$$

Imagine an individual is considering whether to buy a gym membership. There are three factors to consider:

1. Will it help with a healthier lifestyle? Yes[1]/No[0]
2. Will it save money? Yes[1]/No[0]
3. Will it help the individual lose weight? Yes[1]/No[0]

x_1= 1, exercising leads to a healthy lifestyle
x_2 = 0, gym memberships are expensive, and it would be cheaper to work out at home
x_3 = 1, exercising can reduce an individual's weight

Weights must be assigned to the three options above to help clarify which ones are most important.

w_1 = 5; individual's desire to be in shape
w_2 = 3, individual has a good job but is saving for a new car
w_3 = 2, individual wants to lose weight but not necessarily the most important

The bias provides an adjustable value by which the equation can be changed to best fit the data model [4]. If the input above is plugged into the equation, the output is one. This indicates that the individual should buy a gym membership. In the same manner that the above data can be calculated, neural networks plug-in image data to classify the image. The above is meant to serve as a basic understanding of how artificial intelligence works. Although neural networks are not used within every type of AI, they are still widely used. Different areas of where AI is applied are outlined in the next section. The above definitions and examples are used to help illustrate how AI might possibly work within different applications.

How Artificial Intelligence Is Used Today

Whether an individual recognizes it or not, they have most likely encountered some form of artificial intelligence. If a person searches on their phone, artificial intelligence is being utilized by the search browser. The user is given the most relevant results based on their past search history, trending results, purchase history, location, and other factors. All of that contributes to returning certain search results to a browser. The following helps describe some of the common areas of artificial intelligence, along with a short description.

Face Recognition

Humans have been recognized by their faces since the beginning of time, but computers are now being trained to recognize faces. Facial recognition has been implemented across many

different platforms. From security cameras to mobile phones, facial recognition is widely used. There are various methods by which companies identify and match faces, but Principal Components Analysis (PCA) is one of the most popular [5].

Voice Assistants

Whether it is built into an individual's phone or connected to a home speaker, voice assistants provide quick answers to questions, help turn the lights on or off, or perform speech translation. The majority of voice assistants can be awakened by a keyword or phrase [6]. Once awoken, the voice assistants can be told a command. What can be done varies from performing a web query to turning the lights off in a house. If a user wishes to turn the lights on in their house, they may use something like, "Hey SMARTDEVICE, turn on the kitchen lights." The individual's phone would send a notification to the light bulb manufacturer server, and the server would then send a signal to the light telling it to turn on. There are many smart devices that connect to the cloud, but there are still few devices that make use of local processing [7]. Security is a major concern as most smart devices send sensitive information across the internet. There is the possibility that if someone is able to hack a house's Wi-Fi signal, they will be able to control various elements of the house including thermostats, lights, TVs, coffee makers, and speakers.

Self-Driving Cars

Cars have begun to offer more self-driving features. Most new cars come standard equipped with lane-drift detection, smart cruise control, and the option to add more features. One of the current leaders in self-driving cars is Tesla. Tesla cars have the ability to drive without input from the user while on highways, and more features are coming to allow them to navigate

almost fully autonomously. Self-driving cars work by taking input from sensors and cameras. Based on what data is received, the car's computer system performs various calculations like how far away the car in front is, which lane the car is in, current speed, and the speed limit. Autonomous cars are one of the heated topics concerning AI ethics. Stilgoe states: “With machine learning, as with other emerging technologies, society has not yet worked out the terms of responsibility, the distribution of liability, the thresholds of acceptable safety or the lines dividing recklessness from negligence” [8]. There have been multiple deaths surrounding autonomous driving, but the question to ask is, Who should be held responsible for the accident? Is the individual within the car responsible? Since the cars utilize machine learning, the algorithms used by the cars’ computer systems will become better over time, but there will undoubtedly be a cost for that learning, including accidents and fatalities.

Social Media

Individuals enjoy spending time on their cell phones and other connected devices. Things like Instagram, YouTube, Snapchat, LinkedIn, and Facebook can keep people distracted from life. The term “phubbing” has been used to describe the action of snubbing other in-person individuals in order to be on one’s electronic device [9]. Most of the social media services are free, including Instagram, Facebook, Snapchat, LinkedIn, YouTube, and TikTok, while some include the ability to pay for premium features. These services are not truly free; in fact, quite the opposite. Instead of paying for the services with money, individuals trade their privacy for the use of these applications. Companies create a “model” of users. In that model, they store the individual’s interests, which are evident by how much time an individual spends looking at a post or product. The tech giants then display ads based on what the individual’s stored model is

perceived to like. "The primary focus of social media, gaming, and most of the Internet in this ‘surveillance economy’ is to gain, maintain, and direct attention—and thus data supply" [10]. Users form almost an addiction to reloading their social media feed. By creating and feeding this addiction, the companies can keep users engaged more often and present more ads. Artificial intelligence provides a way for the digital copies of users to be categorized by what they like and their interests to present more relevant ads and results. In exchange for these free services, users have given up their privacy. These users are often unaware of how well the algorithms know them, possibly even more than they know themselves. Yuval Noah Harari presented the following question: ‘What will happen to society, politics, and daily life when non-conscious but highly intelligent algorithms know us better than we know ourselves?’ [11]. By knowing so much about each individual, algorithms can target users and influence their decisions [10]. This plays a major role in purchases, political viewpoints, and education.

User Recommendations

When a user goes to Netflix or Amazon Prime to watch a movie, they are sometimes overwhelmed by the many options. They can watch anything from a comedy to a horror movie, but it would take forever to watch the trailer of every movie before deciding which one to watch. Netflix uses an AI-powered recommendation system. There are many companies that use a similar approach to recommending items to users. The system in a generalized approach works as follows. Once a user buys/watches/rents an item, they are oftentimes asked to leave a review. On the front end, all the user sees is that the average rating for a particular item might have increased or decreased based on the rating they assigned. But on the back end, companies use that rating to determine what other items that user might like. This is known as collaborative

filtering. "Collaborative filtering (CF) is a subfield of machine learning that aims at creating algorithms to predict user preferences based on known user ratings or user behavior in the selection/purchasing of items." [12]. For example, say that User A and User B rate Movie1, Movie2, and Movie3 as five stars. User A then watches another movie, Movie4. User A gives Movie4 another five-star rating. When User B gets on to their streaming service, they see Movie4 in the recommended movies list. Since User A and User B both previously liked three of the same movies, it is suggested that User B may like to watch Movie4. The relationship between User A and User B can be seen in Figure 2.

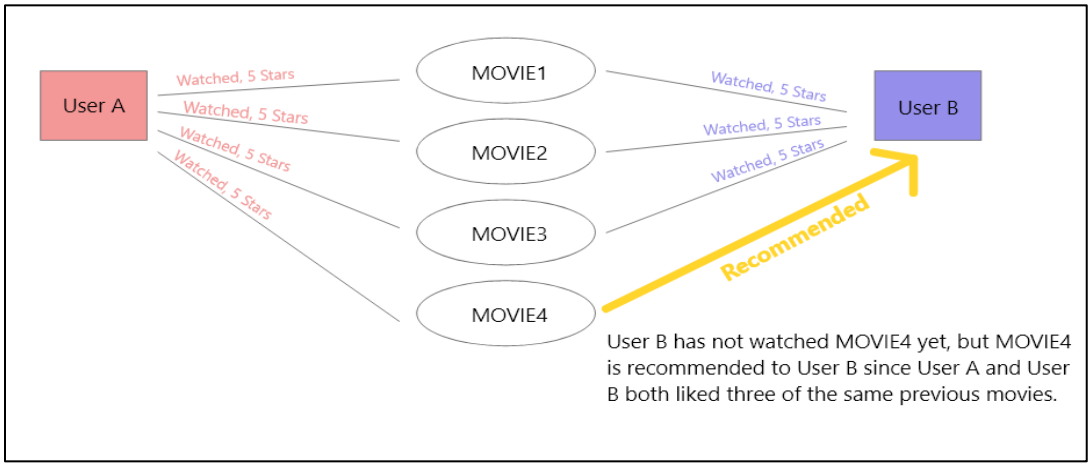

Figure 2 – Relationship between User A and User B

As more and more ratings are given, the data model becomes larger. As the data model becomes larger and the algorithm becomes more precise, users will become highly influenced and trust what to watch based on their recommended results since the previous recommendations have been enjoyable.

AI and Ethics

The five examples of artificial intelligence above, face recognition, voice assistants, self-driving cars, social media, and user recommendations, are all relevant examples of how AI is

being used today. Although there are many other uses of AI, the five above will constitute the main discussion of the ethics behind AI. Each presents its own problems regarding security, privacy, moral behavior, and of course, ethics.

Benefits of Artificial Intelligence

The primary purpose of this research is not to determine whether artificial intelligence is good or bad. Rather, the goal is to help outline some of the ethical issues involved when using AI. If AI were not beneficial to consumers or businesses, it would not be used, and the discussion of AI ethics would be unnecessary. To understand why companies are utilizing various forms of artificial intelligence, the following research will help relay the benefits of artificial intelligence in regard to businesses and consumers. PricewaterhouseCoopers estimated, "artificial intelligence technologies could increase global GDP by $15.7 trillion, a full 14%, by 2030" [13]. One way in which AI has proven beneficial is an increase in security, which has led to the protection of citizens [14]. One example of this is the AI being used by the City of Chicago police. They are able to use AI to predict the possibility of previously arrested individuals becoming future perpetrators [14]. Another way that it has helped protect and rescue citizens is its ability to spot individuals who are forced into human trafficking. This could be utilized at airports, train stations, and public spaces.

24/7 Availability

As humans, each person requires sleep, food, and breaks. On the other hand, artificial intelligence runs on electricity. With the help of AI, specialized services would be available to offer 24/7 support. Chatbots can provide assistance to customers on eCommerce sites 24/7, whereas humans work a set amount of hours each day with a lot of transition throughout the day.

Human interaction would still be needed to some extent in case the chatbot could not solve the issue. Offering services 24/7 would increase customer satisfaction.

Weather Prediction

One of the first things people do when they wake up is to check the weather for the day. Is it going to be cold or hot outside? Thanks to mathematical equations, weather forecasters are able to predict what the weather will be like for a set period of time. Some of the forecasts are not accurate, and that is where artificial intelligence could help. With artificial intelligence, the computer would be able to recognize past patterns much better than a human. By looking at a larger set of data, a more accurate prediction can be given. There has been a huge success in using AI in the field of weather forecasting. Dynamic Integrated forecast (DICast) was one of the earliest successes of using AI in weather forecasting. DICast has been used to predict temperature, dew point, wind speed, irradiance, and the probability of precipitation [15].

Fight Wars

Throughout history, the United States has fought many wars. Countless people have lost their lives. Could AI step on to the battlefront? It has. Autonomy has already been implemented into the military, and it has raised a major alarm concerning the ethics of killing humans with autonomous weapons. These autonomous weapons can include drones, military robots, and other AI led weapons. Drones are one of the largest currently used AI machines within the military. A human can control the drone from thousands of miles away in a safe environment. This allows US soldiers to fight without being in harm's way. The push of one button thousands of miles away could potentially kill thousands. As AI becomes more advanced, human interaction may

not be necessary. This gives rise to many ethical issues regarding artificial intelligence, human value, and war.

Handle Repetitive Tasks

Whether working a white-collar or blue-collar job, most people perform repetitive tasks throughout their day. They can be time-consuming and require a lot of attention. Artificial intelligence has taken over some repetitive tasks [16]. Robots are better at handling details and can do it much faster. This gives employees more time to focus on tasks that are not repetitive and tasks that also require out-of-the-box solutions. Job replacement is one of the areas of greatest concern regarding artificial intelligence. If AI is able to perform the simple, repetitive jobs, what stops a company from "hiring" AI instead of human manpower? Many argue that by performing repetitive tasks with AI, the people that would have been performing that job will be doing something that requires human interaction. The argument that they present states that humans will need to manage the AI.

Spot Cancer

According to cancer.gov, 9.5 million people have died worldwide due to cancer [17]. One of the issues with cancer is detecting it and then diagnosing the specific type. "Histologic identification of tumor cells in lymph nodes can be laborious and error-prone, especially for small tumor foci" [18]. By using deep learning (a subset of AI), doctors could use the technology to spot possible cancerous tumors on patients by using image recognition and stained images. LYNA is one of the current AI technologies for detecting certain cancers. A study found that of the three positive cases that were found by humans, LYNA was able to correctly diagnose the

cases as positive for cancer [18]. There are still many limitations in this field of study, but it is evident that there is a lot of potential to use AI for lifesaving causes.

Reduce Road Accidents

Cars continue to be sold with larger amounts of AI/autonomy. By using image recognition, radars and GPS cars are on the way to being fully autonomous. Currently, semi-autonomous cars require a certain amount of human input, but not a lot. If a driver becomes tired and veers off the road, most cars have detection systems to alert the driver and keep the car centered in the lane. Although cars are not fully autonomous yet- "In the future, automated systems will help to avoid accidents and reduce congestion" [19]. By using fully autonomous cars, drivers will not have to worry about fatigue and/or sleepiness. Smart cars could also help mitigate traffic. By having cars that interact with each other, cars could better plan out routes for users to help avoid traffic.

Prevent Drug Overdoses

It is no surprise to see that opioid abuse is happening across cities in the United States. If there was a way to monitor certain data sets, it might be possible to help stop or limit the amount of opioid abuse occurring each year. There are various methods that have been suggested to help mitigate opioid abuse that uses machine learning. The first includes social media. By using social media, organizations would be able to detect chatter containing keywords. Then by feeding that data to the machine learning system, it would be able to detect whether the chatter is of concern or not. The second method includes using the Gaussian Process Subset Scan (GPSS). This process uses "extensions of the fast subset scan, which detects anomalous patterns by efficiently maximizing a log-likelihood ratio statistic over subsets of data points" [20]. The hardest part of

this method is receiving valuable data to plug into the model. Although these methods are still being researched, they have opened the eyes of many to the possibility of using AI to help monitor drug abuse.

Summarized Benefits

If it is not clear, the above cases help show that artificial intelligence and its subsets have many benefits when implemented correctly. There are concerns, though, with how heavily artificial intelligence is applied. Will unmanned drones kill innocent civilians without human input? Should the government be able to implement face recognition to track citizens? Should an autonomous car hit a pedestrian on a sidewalk to avoid an accident on the road? These are all questions that must be asked when looking at artificial intelligence and the ethics behind it.

Artificial Intelligence and the Ethics Driving It

Artificial intelligence has many benefits, but each new benefit brings a new concern. The following is meant to help discuss some of the ethical concerns surrounding artificial intelligence and its subsets. Like any other issue, there are heated arguments on both sides of AI. The issue is finding the balance between allowing AI to help humans and not controlling humans.

Policy Governing Artificial Intelligence

Artificial intelligence has grown in popularity over the years, but there has not been much regulation put in place regarding the issue. There have been many calls to implement regulations but little action in relation to those calls. The EU recognizes that there is a need to have global rules for AI [21]. Creating global rules would help put forth a level playing field by which each country can develop responsible AI. The European Economic and Social Committee (EESC) argued that AI should be developed with a human-centered focus [20]. If artificial intelligence

continues to grow unchecked, there are no limitations in how it can be used. The EESC's statement on AI establishes that humans should always have final control over AI. This means that humans could always intervene and halt the "projected" action of AI.

Jobs and AI

AI has become one of the hardest-working employees. It does not require breaks and does not get paid a salary. This raises the flag- "What happens when AI takes a human's job?" Edvard Duka discusses three possibilities for the future of AI and jobs.

1. Stalemate: AI does not continue to grow as expected. Hence minimal adjustments are needed to be made regarding AI and jobs.
2. Check: AI does grow larger, but the economy and job markets are able to adjust. There may be a short period of insecurity, but eventually, the markets return to normal.
3. Checkmate: AI grows exponentially without the ability to control it. Jobs are lost, and the economy goes into dishevel as governments are unable to adequately adjust [22].

It is hard to predict what role AI will play in job displacement, but there are a couple of indicators to look at. In the past, there have been many technological innovations, take, for instance, the internet. The internet may have caused some people to lose jobs, but now the internet job industry is booming, replacing some of the jobs it may have taken. Many proponents that support the rapid development of AI would conclude that AI is not different than other technological innovations. For companies that have implemented AI, research has shown that these companies also have added three new job categories: trainers, sustainers, explainers [23]. Trainers are responsible for training machine learning models. Explainers are the people whose sole focus is relaying technological terms to the business-oriented individuals within a company.

Sustainers ensure that AI is operating ethically and properly [23]. They will help ensure that AI stays in check. Each of these jobs will have its own set of requirements and certain training.

The state of the chess metaphor (stalemate, check, or checkmate) will not be known until society arrives at one of them. It is for that reason there should be a failsafe in place for a checkmate scenario. All three scenarios have their own issues, but checkmate presents the most catastrophic. The check scenario is one of the most widely accepted scenarios and offers the most beneficial approach to human-AI interaction when related to the workforce.

Biased AI

Can a computer be biased, or can it be trained to be biased? Will human bias be injected into the AI? If individuals take a second to look across their community, it is evident that most people have a biased mindset, some unintentional and others on purpose. This includes but is not limited to racism and discrimination. As discussed earlier, AI consists of many different branches. When studying bias and AI, often time machine learning introduces the largest concern of bias in AI. Machine learning works by taking large sets of data, inputting the data, and then having the model predict or act upon that data. The data is collected by humans, which can result in an uneven, underrepresented sampling [24]. Consider AI used to spot cancer. The techniques used by this AI could possibly work better for people with white skin compared to people with darker colored skin. Another example of where biased AI would be detrimental is the hiring process. "Historical bias was discovered in an automated recruitment screening system at Amazon (discontinued early 2017) that discriminated against women—presumably because the company had a history of discriminating against women in the hiring process" [10]. This historical discrimination played into the automated recruitment system's selection. One of the

largest deterrents of using AI is the question of whether a biased human race can design an unbiased AI platform. The issue is that although individuals try their best not to be biased, there may be unintentional biases.

Remote AI/Drones

Although drones are not specifically in line with AI, they still consist of similar technologies with similar ethical issues. The main focus of this section is drones used for military purposes. The military has used weaponized drones for many years now. Military personnel can be sitting at a secured base and be safely flying a drone over enemy territory. From the remote command center, missiles can be deployed to attack foreign enemies. This has brought rise to many discussions about what modern warfare should look like. Although purely fictional, the movie *Eye In The Sky* helps represent the struggle between the benefits of using drones and the ability to completely ostracize human compassion during a modern war. There are different levels at which to discuss military drones: controlled and artificially led.

Controlled

Currently, the military uses remote-controlled drones. These drones respond to a pilot's input, but the pilot is not flying from inside the drone, rather thousands of miles away in a secure bunker. Most of these drones are used for surveillance, but there have been multiple drone strikes. The Bureau of Investigative Journalism reported that between 2010 and 2020, there have been approximately:

- **14,040 confirmed strikes**
- **8,858 - 16,901 total deaths**
- **910 - 2,200 civilian deaths**
- **283 - 454 children killed**

The preceding numbers are representative of drone strikes in Pakistan, Afghanistan, Yemen, and Somalia [25]. In order for controlled drones to act, the command chain must give authorization. The ethical decision of whether to strike is still maintained by humans [26].

Artificially Led

As advances are made in artificial intelligence, drones are becoming more and more valuable. They allow countries to keep their troops safe while performing air strikes abroad. More and more responsibility is given to the computer system directing these drones. In the future, these drones would be able to determine whether to strike a certain area. This issue returns to the conclusion that "[a] democracy cannot delegate the right to kill to a machine" [26].

Drones present a promising future for modern militaries. They are able to attack their enemy while keeping military personnel safe. In the coming years, there will need to be a code of ethics concerning drone usage. Unless that ethical code is established and followed, each country that has drones has the potential to remotely attack their enemies. As AI is implemented into military drones, human decision making is removed from the process of killing other humans. Are drone cameras, AI decision making, and safety plans enough to safely and ethically continue to develop military drones?

Autonomous Cars

Autonomous cars would use some of the same technology utilized by drones, disregarding the weaponry. Earlier, the benefits of autonomous/self-driving cars were discussed. Although there are many benefits, each benefit has an ethical concern lingering. One of the common scenarios concerning autonomous cars is, who to kill? The question itself is morbid, and the decision processing is no easier. For example, take the following scenario. There are

three occupants inside of an autonomous car. There is one pedestrian walking on a sidewalk. The oncoming traffic hydroplanes and is about to crash into the autonomous car. The autonomous car can either continue in its projected path, or it can swerve off the road. By staying on the projected path, the autonomous car will be hit, and the occupants of the car will most likely be injured or killed. If the car veers off the road to avoid being struck by the vehicle that hydroplaned, the pedestrian on the sidewalk will be killed. Neither scenario is favorable, but one of them must be chosen. Patrick Lin presents the following situation.

> Imagine in some distant future, your autonomous car encounters this terrible choice: it must either swerve left and strike an eight-year old girl, or swerve right and strike an 80-year old grandmother. Given the car's velocity, either victim would surely be killed on impact. If you do not swerve, both victims will be struck and killed; so there is good reason to think that you ought to swerve one way or another [27].

These scenarios must be pondered and debated regarding whether it is appropriate to put the fate of who survives in the hands of a machine. One online article started with the following title- "Your Self-Driving Car Will Be Programmed to Kill You-Deal With It" [28]. Research shows that people want cars that will save the most people (crashing into a car with one occupant as opposed to hitting a bus); however, the same people that say that are not willing to be the occupants of the car [28]. Will car manufacturers offer higher accident prevention ratings to individuals that are willing to pay for it? Due to the large unknowns of AI, there are limited amounts of regulations regarding autonomous vehicles in this specific area.

To ensure that individuals are treated equally, regulations need to be established for scenarios like those previously mentioned. The IEEE is a group of like-minded technologists that

partake in research and development. The members of this group commit themselves "to treat fairly all persons and to not engage in acts of discrimination based on race, religion, gender, disability, age, national origin, sexual orientation, gender identity, or gender expression" [29, 30]. Programming a vehicle to kill based upon the above scenarios would go against the fundamentals of the United States. A possible solution to this issue is to require human intervention in situations where an occupant or nearby individuals could potentially be killed. If an algorithm is given a choice on who to kill, the response would be consistent and predictable. Is predictable the correct option? Either way, the future of autonomous cars requires more discussion to produce a community of developers that value life regardless of who a person is.

Social Media – A Doppelganger in the Cloud

Social media has changed the landscape of the American culture. People can now be connected to others across the country. In the blink of an eye, thousands of people can see a post by a user. In this age, information is shared quickly without a filter. Most of these services are free. Instagram, Snapchat, Facebook, LinkedIn, and Twitter are all free services; granted, some do have premium features. How do social media giants offer their services for free?

Social Media Profits

Most people are able to easily sign up for a social media account and use it for free. The companies behind these platforms have to be making money, but how? Advertising. Every user's activity online is recorded. This data is then shared with advertisers. When a user searches for "Nike shoes" on Google, in many cases, an ad appears on Instagram or any other social media site. AI is used to help create powerful ads containing "Nike shoes" and then place the ad on an individual’s social media feed at the right time [31]. By creating ads that are more efficiently

targeted towards their audience, social media giants are able to charge companies more to advertise on their platforms.

Data Collection/Privacy

The issues of artificial intelligence and data privacy run parallel to each other. Companies try to collect as much data as they can for each user so that they can provide more targeted advertisements with the help of AI. At first, the use of AI in advertising does not seem to have adverse effects; however, the issue at hand is the type and amount of data collected by social media platforms about each user. Companies keep track of how long a user stays focused on individuals' posts/advertisements, what the user "likes," what videos they watch, and so on. By keeping track of all this data, social media platforms have a digital copy of their users. It has been said that social media knows individuals better than they know themselves. A simple, similar example of how this is true is discussed during a Ted Talk. During the talk, speaker Jennifer Golbeck recalls a scenario involving Target-

> A 15 year old girl had received coupons from Target in the mail for baby products two weeks before she had even told her parents that she was pregnant. How did Target know she was pregnant? Target keeps track of their customers and what they purchase. By doing this they are able to compare purchases to thousands of other purchases. By comparing this data, they are able to find common patterns. They then take those patterns and suggest what the user might buy [32].

In the same manner, social media platforms keep track of all of its users' data and are able to use that data to hyper-target ads to users. This can influence the user's purchases more than they realize. The EU has taken steps to implement user privacy. One study found "display advertising

became far less effective at changing stated purchase intent after the EU laws were enacted, relative to display advertising in other countries" [33]. Social users need to decide how much information they are willing to give up to use social media and other resources for free. To make sure that tech giants are not taking advantage of consumers, there also needs to be regulations established concerning the use of individuals' data and integration with AI-led marketing.

The Future of AI

AI has continued to grow over the past few years. Throughout this growth, the benefits that AI can contribute to society, companies, and governments can be seen. These benefits could save lives; however, it is not without risk. There are many ethical concerns surrounding AI, so the future of AI should be considered carefully.

Humans In Control of AI

It is important to realize that as AI grows, humans need to be able to remain in control of AI. The Pew Research Center performed a study and found five concerns involving the evolutions of humans and AI:

1. The use of AI reduces individuals' control over their lives
2. Surveillance and data systems designed primarily for efficiency, profit and control are inherently dangerous
3. Displacement of humans' jobs by AI will widen economic and digital divides, possibly leading to social upheaval
4. Individuals' cognitive, social and survival skills will be diminished as they become dependent on AI

5. Citizens will face increased vulnerabilities such as exposure to cybercrime and cyberwarfare that spin out of control… [34]

All of the issues above represent an AI future where humans are controlled by AI rather than AI is controlled by humans. "Controlled" in this sense does not mean forced. Contrastingly, it just represents a relationship between AI and humans where humans are dependent on AI to lead functioning lives. There are a few ways to help mitigate the risk of AI controlling humans.

1) Implement rules across nations on how AI should be used. Doing this creates a common ground and keeps individual countries from developing AI that could harm society.
2) Limit AI where possible. AI has many useful benefits, but as AI becomes more prevalent, humans will begin to decrease in their functionality. Limiting AI applications prevents humans from becoming unable to perform common tasks.
3) Shift towards prioritizing humans' improvement.

One of the individuals that responded to the Pew Research survey, Byron Johnson- CEO of Kernel, said

> I strongly believe the answer depends on whether we can shift our economic systems toward prioritizing radical human improvement and staunching the trend toward human irrelevance in the face of AI. I don't mean just jobs; I mean true, existential irrelevance, which is the end result of not prioritizing human well-being and cognition [34].

Byron Johnson highlighted the fact that by using AI for repetitive and minuscule tasks, humans will have the ability to learn more relevant things. If society neglects to improve human intelligence and functionality, the end result of AI could prove to be catastrophic.

AI's Roadmap

Artificial intelligence has proven its benefits along with its ethical issues. It has already brought many benefits in health care, transportation, the environment, criminal justice, and economic inclusion [35]. Although it is impossible to predict the future, from the trend of AI, it appears that AI will continue to grow. As people become more aware of how AI can invade their privacy, they may change their minds. However, many people are willing to trade-off privacy for convenience. Michael Roberts, CEO of ICANN, suggests- "The record to date is that convenience overwhelms privacy. I suspect that will continue" [34].

Conclusion

A hundred years ago, people would have only dreamed of what artificial intelligence could do. From research, developers have been able to build complex systems to aid humans, companies, and governments. In trade for these benefits, individuals have given up privacy and other certain abilities. The full scale by which AI has changed the world cannot be fully understood. The immediate benefits and dangers can be seen, but not the less-noticeable areas of influence. Some of the most challenging concerns facing AI include privacy and the possibility of what AI might look like in the future. This has raised many ethical concerns. Without proper discussion and regulation, there is no indication of how AI will be controlled in the future. In conclusion, this research was meant to discuss the benefits that AI provides and the ethical concerns. From those concerns, there should be a call to discuss the future of AI to ensure that society and individuals can function independently of AI.

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