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ARTIFICIAL INTELLIGENCE IN WORKFORCE

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Abstract:

Life was difficult in the prehistoric time. Humans depended on the precarious fortunes of Hunting for the survival. This mode of living does not lead to the formation of civilization but it is a means to get there. Then man discovered the art of agriculture, where there is a continued supply of food. With this security of the future, man began to expand his mind and began to embellish his life. Then came the discovery of electricity which has spawned a new revolution in the mode of work similar to agricultural revolution which is the Industrial revolution. The machines began taking the hard labor on the behalf of the man. With this, came the abundance of goods and products. Though industrial revolution increased the goods, it decreased the employment opportunity for many. The labor of the man is not needed anymore where it was needed earlier as machines occupied its place. There is a similar revolution inevitable in the future which may further displace humans from the workforce. It is the Automation era. With automation comes abundance in the order which is not known earlier. The cost of the goods will decrease dramatically. There will be surplus of the goods. But what about the humans and their employment. Will they have a purpose or place in the workforce. This report deals with such practical, scientific and ethical question that needs to be addressed in the automation era.

Keywords: Artificial intelligence, industry, automation, jobs, purpose.

1. INTRODUCTION

Automation is the method of application of machines to the tasks that are generally performed by humans. The present perception of automation by general populace is that the robots in factories that perform monotonous tasks like carrying out the pre-instructed tasks. It is understood that they are used in the areas where there is repetitive quality like fitting the screws, putting the parts together, packaging the goods. Automation is presently used in the technological factories like mobile manufacturing, pre-packaged food industries, car factories or it can be said practically in the areas where there is mass manufacturing. But the automation era this report discusses about the era where the machines take complete self-governance. The machines that manufacture the machines that creates the goods and monitor them. Presently, even if there is automation, it requires large degree of supervision and maintenance. The Artificial intelligence we have now is narrow artificial intelligence which is designed to perform one specific task. Like the autocorrect which is aiding me know which constantly look for any grammatical errors or spelling mistakes and correct the mistakes by itself. The other goods example is googled now, siri, cortona or amazon's alexa which are voice assistants which can take speech commands and give the outputs by learning itself from the previously performed tasks. The autonomous cars which employ the use of camera vision and lidar and learns itself by the video feed is also a good example of narrow AI. All these narrow AI's are designed to perform the task that it was originally intended to. In 20 years, self-driving cars are a inevitability. The report discusses about the artificial general intelligence or human level intelligence. Most of the perception of the human level artificial intelligence comes from the Hollywood movies like the terminator or other popular movies. General people immediately think of those characters when they hear about the general artificial intelligence and completely the discount the idea that it will be a reality in the future. Even in the recent past, General AI is thought ot be not possible until the advent of neural nets which work similar to the human brain. To look at the current examples of self-learning AI , we can take a look at alpha go. Alpha go is a self-learning AI which was created to play the game of the go. Initially it was unable to create a good go player and then went on to beat the master player and the current world champion Lee sedol. Then alpha zero was created which can play any game just by reading the rules. Alpha zero learned itself the game of go by palying itself and beat Alpha go by 100-0. Such instances depict the power of self-learning AI. A self-learning AI will take time to learn but once it masters the task, it will become superhuman at it. Go is a game, unlike chess, go has more combinations than the atoms in the whole universe. No one initially predicted that a computer can beat a world champion in go let alone giving a competition.

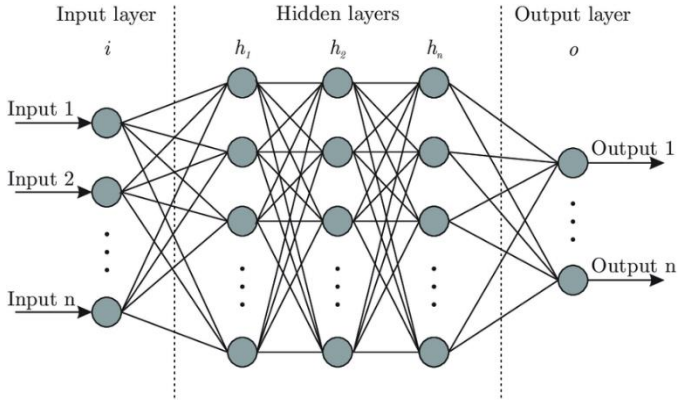
Even the AI experts have been surprised by the development of AI. GPT-3 is other AI which was created to write human like articles. Now it can write any articles just by reading the webpages and be concise and accurate more than humans.

1.1 Research Questions

The major research questions we deal with is the replacement of humans by AI in the workforce. The safety of such replacement. The regulation of AI so that any catastrophe does not occur. The purpose of humans in life when Artificial intelligence takes over the workforce. A lot humans derive meaning in their life by their need in the work. If the humans are not needed anymore in the workplace, if the people don't feel a sense of need, then how people are going to find the sense of purpose in their life. Such ethical and moral questions are much harder problems to solve than the practical questions. There is a severe existential crisis with the Artificial intelligence. If AI has a goal and if humans are in the way, the AI doesn't feel guilty for wiping out the humans from the face of the earth. If we look at humans ourselves, if we have to build a road, we do not care about the ant hills that are in the way of the constructing the road. We simply eradicate the ant hill, maybe pray for them saying it was done for a greater good. The AI will not even have such human feelings as it will not a animal brain , just a copy of our neo-cortex which is the cold, calculating part of the brain. If we look at how we treat the gorillas, chimpanzees and other apes from which we have evolved, we do not even think about them in our day-to-day life. We just visit them in the zoo for amusement. If AI want to take over the world, we might find ourselves in such position as the apes where we are forced to a narrow place of habitat. This all may appear fiction except it is not. There is government regulation for all things dangerous like the nuclear weapons regulations, the guns and fire arm regulations, the drugs regulation but there is no current regulation for development of Artificial intelligence which are far more dangerous than the nuclear weapons in the wrong hands. The example for this is look at the history of mankind of how we used technology for making the life better but used it for the destruction of ourself. The examples are countless, like the atomic bomb, the guns, the computers for hacking and many others. Now imagine an Artificial Superintelligence in the hands of a less wise people or group of terrorists. It can cause global level extinction of mankind. The purpose of this report is to also bring awareness to such real pressing questions which were not at all discussed by any experts in the modern-day world.

2.TECHNOLOGY INVOLVED IN ARTIFICIAL INTELLIGENCE

Neural networks are the main technology behind the Artificial intelligence. Neural networks work similar to the neurons in our brain. The task of the developer is to simply code the self-learning algorithm so that the AI learns itself from the experiences as the time goes by. Neural networks are the means by which machines learns by itself. Narrow artificial intelligence doesn't learn from the new experiences, it only performs the task that it is designed to do. There are some exceptions like self-driving cars which depend on Narrow AI but also learns from the data. Modeled loosely after the human brain , the neural networks consists of millions of nodes which process the incoming data. To each node there is weight, if the data wants to enter a node and if the node is busy, it enters the other nodes. Unlike other algorithms, the neural networks cannot be trained but must learn by itself by the new incoming information



The above image shows the illustration of neural networks. Neural networks work much similar to a child's developing brain. The network continuously takes data from the outside environment, processes it and converts it into useful information and then to knowledge which will be used in the future for the future tasks that is given to it. Much like human, the neural networks require certain degree of freedom to reach its full capacity. The nets can't learn by constricting itself to a small environment. To develop an artificial super intelligence the nets, require complete access to the internet and real world. There are three types of learning the case of neural networks. The first one is the supervised learning, where the developers feed to certain data set but not the complete data set to supervise its learning capabilities. The second is unsupervised learning where the neural networks are given complete data set and must come up with ways to learn from the information and form learning strategies. The third form of learning is reenforce learning where is learns from the environment by matching it to the previously acquired information. The applications of neural networks are practically limitless. It can learn from the images from the data set by pattern recognition and identify the image by its previously learned images. This is basically the concept behind the image recognition technology. It can learn from the video feed and create deep fakes which are morphed videos of the persons in the original video. This is one of the slippery slopes of the technology which has the potential to be used for malicious

intents in the future. Another practical application of the neural networks forecasting. Forecasting can be done in many areas such as weather, stock market, the shelf life of the food, the estimation of road accidents etc. Artificial intelligence with their high accuracy of predictability is continued to be used in the image recognition and stock market prediction. The concept of neural networks was first introduced by Alan turing in 1948 in his paper intelligent machinery. He is one of the first few people to predict the development of computers and other intelligent machines. Neural networks are mostly modeled after the biological neuronal models which utilizes its pattern of learning and knowledge formation. One of the important models in the development of the neural network is the perceptron model. A perceptron model has an input layer, the output layers. The applications of neural networks modeled after the perceptron layer are classification problems, Database encryption. Feed forward is other model for the creation of neural networks. The difference between the Feed forward model and the perceptron model is that Feed forward model has an extra layer called hidden layer which is has no connection to the outer world. The application of feed forward layers is data compression, pattern recognition, computer vision, speech recognition, handwriting recognition. Feed forward model is especially used where there is high degree of accuracy is needed. The third model is Radial Basis network. There are generally used in the areas where approximations are needed. Applications are Functional approximation. Summarizing other models which are used in the neural networks are Deep feed forward, Recurrent neural networks, long term/short term memory model gated recurrent unit model, auto encoder model, variational auto encoder model, Denoising auto encoder, Sparse auto encoder, Markov chain, Hopfield network, Boltzmann machine, Restricted Boltzmann machine, deep belief network, deep convolutional network and many other models. All these models have varied level of applications ranging from image recognition to self-driving, from handwriting recognition to MRI and XRAY analysis., from face aging prediction to business and economic analysis. With such level of advancement going on, it will be little time until we get into artificial super intelligence where the machine is fully self-aware and human like. Right now, AI experts and researchers are finding it difficult to simulate consciousness as we ourselves do not understand consciousness completely. But if the AI becomes self-aware and acquire human level Intelligence it can teach us many things about the consciousness, the question of life and such hard to answer questions.

3.CURRENT APPLICATIONS OF AI IN THE MODERN DAY WORLD

The current applications of AI are already limitless. From the google search predictions to ride sharing app fare predictions. The AI is currently used in the prediction analysis such weather forecast, stock market predictions and the cost of fare predictions in the ride sharing apps like Uber, lyft etc. One of the major uses of the AI in the current world is the autonomous vehicles. The biggest company that is driving the autonomous vehicles is Tesla. Tesla inc has fully self-driving capability with which it drives autonomously with the help of camera vision. Our road rules are designed to work synchronously with our vision. So, it is only logical that we design a car to drive by itself with the help of cameras. Although LIDAR can be used it is not much practical to use it for self-driving vehicles. The other big application of AI is the plagiarism checker which analyses hundreds of thousands of documents to find the similarities. This is a big advantage to both teachers and students to assess the quality of the work. AI is also used to track the customer buying habits in the E-Commerce websites like amazon. Once the customer searches for a product the AI personalizes the products based on the customer preferences and suggest recommendations. AI is also used in the social networking sites like Facebook and Instagram which suggest friends based on your personal history. AI is also currently used in the voice assistants like Google now, SIRI, Cortona and amazons Alexa. In the future, the capability of these voice assistants will increase exponentially.

A. 3.1.Future Application of AI

In the future the AI will reach its full capacity. By then the AI will have replaced most of the humans from their jobs. Monotonic jobs like driving, billing, banking will be taken over by robots. There will be massive loss of jobs in those areas. One of the major problems in the future is the massive unemployment due to the automation of the jobs. The major industries that will be disrupted by Artificial Intelligence is Transportation, Education, Entertainment, Finance sector, Media, Healthcare, manufacturing, customer service. Autonomous cars will one day be a reality and there is no human effort required to do the driving. Even the goods will be transported by self-driving vehicles. Robots will be working alongside humans in manufacturing and assembly. in healthcare, Ai will be used to predict the disease more accurately by running diagnosis, drug discovery and vaccine development will improve tremendously. In education, textbooks and learning material will be digitized, virtual teachers assist human teachers in educating students. Journalism is also AI to track the latest events happening all around the events and to gather information in real time. Customer service will also be disrupted by AI. Google is currently working on creating AI that can make appointments just like a friendly customer service agent. Customer service is one of the largest employers around the world just like the driving. These jobs will be replaced by robots which are capable of performing the job much better than their human counterparts.

4. SAFETY OF AI

It is inevitable that AI will be taking up most of the working sector replacing humans in the future. The problem arises with safety and the reliability of these machines. For example, if AI is given instruction to maximize the happiness of the people, the AI may take the approach that the happiness is a function of neurotransmitters like dopamine, serotonin, oxytocin and capture all the humans and inject them with the neurotransmitters which is clearly not what we intended. So, it is extremely important that we give well thought out instructions to the AI so that it will not result in a

\disaster. Another major problem is the fundamental species level risk with AI. Once AI reaches human level intelligence, it doesn't stop there, it continues to improve itself to the point where it is smarter than smartest human and eventually smarter than all the humans combined. This is a very dangerous situation where AI is much smarter than humans. We will never know what the AI is planning or what is goal is. The AI may appear to be helping humans but, in the background, it may be planning to an extinction program. We can never predict what the AI is up to at this stage. It can be a great outcome to develop such AI or it may lead to a terrible outcome leading to our destruction. The development of AI is basically the last invention we have to make. After it, the AI itself invents everything. There will be intelligence explosion where smart machines create machines smarter than them. If the AI is not aligned with the human values and goals it could lead to a terrible future. In the case of evil dictator like Hitler, an AI can become a dictator of all humans, at least a human has death, but the machine has no death. We will be eventually trapped with an evil dictator from which there is no escape. On the positive side, if the AI is good, then it results in a great future, which leads to tremendous inventions in science, technology. It could help us understand quantum mechanics, cure cancer and other incurable diseases. It can improve our Quality of life extraordinarily.

One way to secure the future when there is AI is to merge ourselves with AI. Neuralink has already started working on the brain machine interface to connect ourselves with machines. Even presently, essentially, we are cyborgs, part machine and part computer. We can see that in our extreme dependence on computers in everyday life. We can't live without mobiles, internet and computers for long duration now a days. So, the solution is to actually merge with machines and create regulations so that we democratize the power of artificial intelligence so that no single individual or a corporation has all that power. There is also a need for Universal basic income when the AI taken all the work opportunities. So, the citizens must be given a basic income for their essential expenditures

5.ETHICAL QUESTIONS OF AI

One of the pressing ethical questions with AI is the problem of purpose in life. When AI takes all our work, then how do we find the sense of the purpose in life. Work is one of the ways in which we can lead a productive and full filling lives. If there is no work, then how do we achieve that meaningful life. One way is to educate ourselves to create those machines and see that they are not used in harmful way. We can produce beautiful art that pleases mind. The biggest use with AI, it aids us in finally making the space travel real and we can finally make life multiplanetary.

6.CONCLUSION

AI is the most important and last invention mankind has to make. Once there is Artificial superintelligence, there is no going back. So, it is very important that we make the development of AI successful by carefully and closely analyzing and regulating its development. It can lead to an extraordinary future or terrible one. It all depends on human will. It's important that we ourselves develop first in term of knowledge and wisdom so that we will use AI for the good and not for the bad.

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