Moving Towards Non-AI To AI

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Abstract- A large number of researches have been conducted in the field of AI. This paper is all about the enhancements made in this popular field. Making a machine that is able to understand the background ideas of the words is very essential as it can increase the chances of better translation as well as can execute conversations as humans do. In particular, this paper states the difference between the AI and the Non-AI tasks. The work is generated for new candidates coming in the area of AI as well as some issues related to AI are also talked about.

Keywords – AI Task, Non AI Task, Artificial Intelligence, Machine Learning, Computer Vision, Computer Science, Data Science, Deep Learning.

I. INTRODUCTION

During the last decades, various types of softwares have arrived in the market that is based on the AI concepts. There are various subfields for AI such as image processing, machine learning, data mining as well as natural language processing. Google has made vast use of AI [1],[2]) like in Gmail spam filters as well as in Netflix for giving suggestions to users according to their interests. NLP is used in google voice as well as Siri of Apple. Various facial reorganization systems are also based on image processing. Data mining is also very vastly used in the IT industry for handling large junks of data as well as for interpreting the collected data. It is considered as a fantastic tool of today's technology culture. Figure 1 shows relationship between Computer Science, Computer Vision, Data Science, AI, Machine Learning, Deep Learning and Natural Language Processing.

II. **PAST**

AI ([3], [4]) began working in the 1940s and researchers showed strong expectations until the 1970s when they began to encounter serious difficulties and investments were greatly reduced. Since then, a long period began, known as the "AI winter". Advancements in AI in the 20th century is briefly explained as: 1923: A play known as "Rossum's University Robots" of Karel Kapek has used a word robot for the very first time in London. 1945: The term "Robotics" has been invented at Columbia University by Isaac Asimov, alumni; 1950: Alan Turing has invented a test for evaluating an intelligence of machines known as the turing test; 1956: The name Artificial Intelligence has been introduced by John McCarthy; 1958: A programming language based on artificial intelligence known as LISP is introduced by John McCarthy; 1964: Thesis submitted by Danny Bobrow at MIT showed that the problems based on words can be solved by the computer systems as well as can sense the natural language.; 1979: Stanford Cart, the very first autonomous vehicle which was under control of computer has been introduced in this year.; 1984: The problems related to various executed attempts for making robots understand the common sense like human beings.; 1990: Main achievements made by AI in various fields of AI: significant demonstrations in Machine Learning; Games; Natural language understanding and translation; Scheduling; Case-based reasoning; Multi-agent planning; Data mining, web crawler; Vision, virtual reality; 1997: The Deep Blue Chess Program beats the World Chess Champion, Gerry Kasparov. 2000: Interactive Robot Pets were available in the market. A robot that shows emotions like human beings has been introduced at MIT. There are two main techniques of AI: i) Top-Down and ii) Bottom-up; Top-down methods start from higher-level functions whereas the bottom-up method starts from a lower level and goes up to implementing the higher functions.
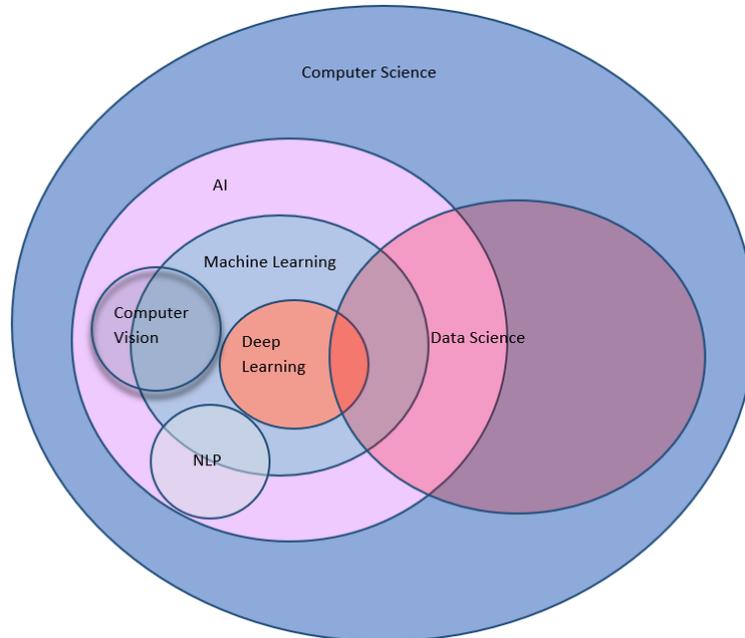
Figure 1. Relationship between Computer Science, Computer Vision, Data Science AI, Machine Learning, Deep Learning and Natural Language Processing

III. PRESENT

This *section describes the different applications of AI in the current scenario as follows:*

3.1 Gaming

Video gaming is a very popular aspect of AI applications among people for a very long time or we can say from the time of introduction of the first video game in the market. Nonetheless, there is a great inclination in its efficiency as well as in its complex nature from the past decades in terms of training the characters in video games about our nature and then give the relative response along with responding in an unexpected way sometimes. In the year of 2014, a video game is known as 'Middle Earth: Shadow of Mordor' has been created which is the best possible presentation of the unique characters provided to the non-player character, memories of past, as well as their flexible motives. The games known as 'Call of Duty' as well as 'Far Cry' are also based on AI concepts. In these shooting games some features like investigating the atmosphere for performing certain tasks that are beneficial for the survival, resulting in an increased possibility of winning. As much as AI goes, quite basic but still due to the increased demand from the users so much of efforts are required along with the increased financial demand for developing such games.

3.2 Natural Language Processing

Communication among humans is quite difficult as well as of a subjective nature. At present some input devices such as mouse or keyboard or some particular sets of commands are given verbally. But this is very different from the way of human interaction as human nature has a variable nature; in 'green apple', 'green' is unique from the 'green' in 'green plant'. The progress of NLP is hindered by the basic issue of the way in which the symbols, as well as words, are represented for communication purposes. The NLP can get the capacity for expressing their beliefs and can interpret human language so it can understand the basic difference of the red hair with the red apple, conquer these issues if these issues can be conquered as well as can perform actions according to the commands like 'put this pen on the table'.

3.3 Image Processing and Vision System

Currently designed systems are trying to escape from the model in which machines just gives replies of certain commands given with input devices like a keyboard or a mouse, or verbally. This great move will definitely demand great efforts for processing the images and to retrieve the data. Currently, available image processing systems do facial recognition through 2D spatial analysis or through a search of geometric edges as well as shapes of the faces. Whereas research proposes that most correct judgments regarding human behavior and his actions come from body language as well as facial expression analysis.

3.4 Virtual Personal Assistants

Nowadays, all the topmost IT companies like Google, Apple have their personal digital assistants. For example, in iOS, it's called Siri as well as Cortana in Windows 10. They are designed to assist us with recognition of the user's voice, for example, if we want to find out about the nearest hotel we can ask 'where is the nearest five-star hotel?' Then, this provided assistant will respond us back after analyzing the accurate information and after that gives the accurate answer on the smartphone or any respective device. These AI-based applications gather related information and generate the required results. It was said by Microsoft that their assistant is gradually learning about its users and ultimately it will have the capacity to predict or suppose about the needs of its users. The virtual helpers analyze the large clusters of data from various resources to study and know more about its current users so that it can help them to make their regular schedule arranged.

3.5 Self-Driving Cars

We have not seen anyone helping them for doing their nails as well as tying their ties and some other activities at the time of driving but smart cars are almost reaching this point of reality. There are two new applications of this technology; one is a self-driving car from Google, as well as Tesla, developed "auto pilot" feature. Google has made an algorithm for training the self-driving cars by some experience. According to this algorithm, these cars will be able to make their own decisions at the time of driving as well as help them to learn more. Whereas, the 'autopilot feature' is not developed completely but has been utilized on the roads indicating that they are on the path of progress.

3.6 Fraud Detection

These days people receive so many emails asking them about their purchase to confirm if it was really you who made the transaction or not. To investigate these kinds of frauds AI has helped a lot. Computer systems manage a number of genuine as well as fraudulent acts and also, and look into the categories of transactions to verify if it's any kind of fraud that is committed by some other person. In this process of detecting the fraud, these AI techniques learn by the training process which provides them with various kinds of experiences.

3.7 Security Surveillance

Human beings are not perfect at doing multiple tasks at one time because things will be messed up in our brain, also it is very tough for one person to manage a large number of security cameras and also it will be a quite boring task. Due to these above-mentioned reasons, it is required to train the systems. Based on the AI technique known as supervised learning in which they are provided with inputs through cameras. These cameras are trained to distinguish if there is a threat or not; if there is any kind of danger it will immediately warn the officers.

3.8 Handwriting Recognition
In this, the handwriting of a person is converted into a text it will be identified by the software and converted into text. For example, teachers writing on the smart screen and there handwriting gets recognized by the software and turned into a text in a similar way. This process of identifying the text is through letter recognition as well as converting them into ASCII codes.

3.9 Human-Machine Interaction

People who are well aware of the technology are familiar with the fact that communicating with a computer is not the same as with humans. There is an impulsion nowadays for creating machines who behave like human beings and eliminating the concept of mechanical feelings as input to the machines. Therefore, various new types of inputs like for detecting the emotions as well as verbal commands and for teaching the emotional curves on the face a video input is required and after that NLP is done. Perceiving emotion permits for machines to act in a humanoid way as humans will identify emotion as well as regulate the communication consequently. Through analyses of

facial expressions, conversational tones, body language, as well as actual dialog, systems could get ahead about human wants. This could also be valuable in emotional development research; tutoring as well as psychological ailments just to name few. Few of the advanced machines could be utilized as soldiers capable of lethal force, or as machines that could actually support the old or children. These machines have the capacity to make life-changing decisions due to limited understanding. Therefore, it is very essential for such machines to analyze the full picture accurately as well as react to basic commands that are given verbally.

IV. FUTURE

In the last few years, AI has achieved a lot in terms of developments. But then again a lot of work is yet to be done for developing the strongest AI. In process of machine learning, the critical part is to provide the common sense to machine A machine can transform the given input into an output, but for robust AI development, it is very essential for a machine to understand that what is the reason behind a certainly given output. Moreover, development of certain techniques is also required for perceiving the human actions as well as emotions. AI is associated with multiple subjects as well as needing progress in NLP, IP, machine learning, as well as linguistics for learning the human behaviour so that human emotions, as well as expressions, can be detected. The range of AI has grown enormously since the intelligence of machines with machine learning capabilities has created profound impacts on business, governments, and society. They also influence the larger trends in global sustainability. Artificial intelligence can be useful to solve the critical issue for sustainable manufacturing (e.g., optimization of energy resources, logistics, supply chain management, waste management, etc.). In this context, in smart production, there is a trend to incorporate AI into green manufacturing processes for stricter environmental policies.

In the following ways AI will be helpful in the coming future:

4.1 Automated Transaction

In the market, we have already started seeing smart cars, but still these types of cars need to have the driver at the wheel for safety purposes. Rather than these carried on advancements, this technology is not considered as safest one. Moreover, people need a certain time period for acknowledging these automatic cars. The transportation department in the U.S. has revealed definitions for various automation levels from the time Google has started testing automatic cars in the year 2012.

4.2 Cyborg Technology

Human beings have their own limitations. One of the major drawbacks of human beings is their body as well as the brain. As per a researcher known as Shimon Whiteson, it is probable for ourselves to get augmented with computer systems in the coming time for improving our naturally given qualities. Yoky Matsuka of Nest thinks that an AI system will be created that will be quite beneficial for physically disabled people as the human brain will interact with the artificially made limb for providing control to that physically disabled person.

4.3 Attaining Dangerous Jobs

Robots are able to do some risky tasks like diffusion of bombs. In technical terms, they are not considered as robots whereas they are supposed as drones that are utilized as corresponding to physical part in bomb diffusion, that are managed by human beings rather than an AI system. In this manner, they have saved a number of people. There are some other tasks also that are suitable for robot integration like Welding that produces loud noises, intensive heat, as well as poisonous substances that can be subcontracted to robots.

4.4 Robot as Friends

How fascinating is this sound to be friends with robots? As of now, they are emotionless. This idea of making robots our companion is firstly introduced by company in Japan. This companion "Pepper" has been introduced in the year 2014 and went for sale in the year 2015 and total of 1000 units were sold just in a minute as well as in the year 2016, it was available in the U.S. for sale and various other high-class robots of friendly nature will surely be followed.

4.5 Improved Elder Care

It is really a struggle for aged people to do their daily household jobs. So, mostly they hire helpers for their care and managing their houses or sometimes they become dependent on their families. At Washington State University, a scientist known as Matthew Taylor says that AI is at a stage where replacing this need isn't too far off. These robots will be able to assist the aged people with their daily activities as well as permit them to be independent which results in improvement in their overall comfort level.

V. EXAMPLES

5.1 Examples of Artificial Intelligence

The AI systems have an algorithm that is intensively based on human behaviour [14] that can adjust themselves according to our liking as well as disliking. These systems are very beneficial in enhancing their performances based on experiences. Following are some great examples of AI which are in trend:

5.1.1. Siri- She is a digital assistant founded by apple. She is a computer that is dependent on voice and we interact with her in our daily life. She assists us with accurate information regarding our queries like dates, directions, sending a text, etc. She works on Machine Learning so she is able to forecast our requests.

5.1.2 Alexa- These days, it is known as the smartest hub at home. When it was introduced by Amazon in the market, everyone's eyes were on it as it got so much attention. It is considered as the most innovative device as it can decode the voice from wherever in the home and it helps for scouring the information on websites, in scheduling our appointments, setting alarms and reminders etc. It is also a way for people with restricted movement.

5.1.3 Tesla- It is one of the revolutionary innovations and this you cannot realize without owning it. This car has received a number of awards. It is quite capable of prediction as well as has self-driving skills along with absolute technology or "coolness".

5.1.4 Cognito- Joshua Feast and, Dr. Sandy Pentland, are the founders of Cognito. It is another amazing application of adapting the human behaviour for improving the skills of recognizing the emotions by the customer support representatives. This is based on both methods such as machine learning along with behavioural science for improving the interactions on phones for the representatives.

5.1.5 Boxever

Dave O'Flanagan is the CEO of Boxever which is based on machine learning which enhances the experiences of its users as well as provides its clients with happiest moments and sweet memories throughout their traveling journey. This was made possible only through ML as well as other applications of AI. Moreover, it is still discovering new innovative techniques for engaging the customers in traveling.

5.1.6 John Paul This is a traveling company that is getting all of the admiring these days. John Paul, a highly-esteemed luxury travel concierge company helmed by its smart organizer named as David Amsellem, is considered as the influential instance of powerful A.I. in the predictive algorithms for interacting with customers, capable of understanding as well as recognizing their wishes. This company controls the care facilities for masses of clients by the world's major corporations like Orange, Air France, as well as VISA, which has been newly attained by Accor Hotels.

5.1.7 Amazon.com

The amazon based on transactional artificial intelligence has come into the market for some time which makes it able to earn millions online. As time is passing its algorithms are getting refined so the company is becoming master at guessing our purchase interest from our past experiences of online shopping. Though it plans to deliver our products at home even before we know we want them, it has not reached there as per the expectations.

5.1.8 Netflix

This is based on amazing technology for predicting the movies based on user's interest and for doing so it has to examine the billions of data sets regarding film suggestions based on their interest. It is becoming very smart with time. Though, it has a drawback that it does not take low profile movies into consideration so they are overlooked by it.

5.1.9 Pandora-
It is most probably one of the innovative technologies at the present time. It is known as "musical DNA". It is composed of almost 400 musical properties that are physically examined by musical professionals. This system has an amazing song tracker for suggesting different songs that will be loved and noticed by the users like never before.

5.1.10 Nest-
Almost everyone is accustomed to Nest, which has been developed by Google in the month of January, 2014 for $3.2 billion. It is a learning device. It is managed by Alexa and is based on algorithms related to behaviour for learning from the cooling as well as heating requirements. In this way we can regulate the home temperature as per our requirements as well as include a set of other devices such as cameras.

5.2 Examples of Machine Learning
We have gone through with various research articles ([5],[6].[7], [8], [9],[10]) and observed the various examples of the machine learning.

5.2.1 Image Recognition-
It is one of the greatest practices of ML. Here, an object can be classified as a "digital image". For instance, for black and white images, pixel intensity is the main measurement. In the case of coloured images, there is a total of 3 measures for every pixel based on 3 unique colours: "red, green and blue (RGB)". ML could be useful for detecting the facial features. Character recognition can also be performed using ML for discerning the handwritten and printed letters. A part of handwriting can be decomposed into comparatively small pictures having a one character per segment.

5.2.2 Speech Recognition
It is the process of translating the articulated words to relative text. It is also called as "automatic speech recognition". The software identifies the voice notes and then converts it into the corresponding text. The main measures in this software are a group of numbers representing the speech. This speech signal can be segmented based on various bands of time-frequency. Its main examples are voice-based searching as well as a voice user interface. In VUI call routing, controlling appliances, voice dialling has been included. This could be utilized as data entry as well as preparing the organized documents.

5.2.3 Medical Diagnosis-
These days, almost all the advanced techniques for the diagnosis of diseases are based on machine learning. All the medical variables are examined by these techniques as well as for their grouping for the prediction of the progression of the illness for the purpose of extracting the clinical information for research, for planning the therapy as well as nursing the patient. The computer-based systems can be integrated using this technique in the medical department.

5.3 Examples of Computer Vision
5.3.1 Unmanned Vehicles-
The highest way computer vision fits into the automotive engineering. Eventually, semi-autonomous as well as unmanned automobiles operate in various methods, all because of computer vision.

5.3.2 Personalization-
In upcoming times, specific car settings would be more efficient due to face recognition. Therefore, there will be special cameras positioned on the backside of the wheels. With the assistance provided by the computer vision, the vehicle can promptly identify the driver before he gets inside the car as well as play his favourite songs and along with this can change the temperature etc.

5.3.3 Interfaces-
Eye movements can be tracked by computer vision which is applied not only in gaming computers as well as normal computer systems to facilitate the people who could not move their hands. In the meantime, the process of regulating the gestures keeps on growing.

5.3.4 Household Appliances-
Costly cameras which display all the food items placed in your fridge is not innovative anymore. Whereas an application that examines the food items you are running out of is innovative. This

type of device is integrated on the wall of your fridge. Moreover, it alerts the user about the expiry dates of the food items as well as suggest some recipes from selected items.

5.3.5 Cameras- Fundamentally, cameras work on the principle of computer vision-hence, there is a number of intelligent as well as smart cameras having the latest capabilities that can overcome the limitations of human beings. We can sense that this concept will be employed in all aspects of our lives. In the meantime, for reaching at the peak levels of success you have to make use of such technology before your opponents.

5.4 Examples of Computer Science

5.4.1 Video Game Design- Video game design is the procedure of developing the content as well as rules of a video game in the pre-production phase as well as developing the gameplay, storyline, roles, along with characters in the production phase. The game designer is a lot like the director of any film; the designer is definitely the visionary of the game and regulates the technical and artistic components of the game in fulfilment of their vision. Video game design needs technical as well as artistic competence along with writing skills.

5.4.2 Computer Graphics- Computer graphics are photos as well as films created with computer systems. Generally, the word refers to computer-generated image data produced with the assistance of specialized graphical hardware and software programs. It's a great and recently developed region of computer science.

5.4.3 Database- A data repository is a well-organized collection of information, typically stored as well as accessed electronically from a computer system. Anywhere databases tend to be more advanced and they are oftentimes created using formalized design and modelling strategies.

5.5 Examples of Data Science-

5.5.1 Price Comparison Websites- At a fundamental level, these websites are now being driven by lots and lots of data that is fetched using RSS as well as API feeds. In case you've previously used these sites, you will know, the comfort of comparing the cost of merchandise from several vendors at one spot. Price Grabber, Shopzilla, Junglee, Price Runner, Deal Time are a few examples of price comparison sites. Nowadays, the price comparison site is found in nearly every domain, for example, technology, durables, automobiles, hospitality, apparel etc.

5.5.2 Airline Route Planning-
Airline Industry throughout the planet is recognized to bear serious losses. Except for a number of airline service providers, businesses are striving to keep operating profits as well as their occupancy ratio. With the excessive rise in air gas costs as well as giving major discounts to customers has further made the situation even worse. It was not for long when airline businesses started utilizing data science to determine the strategic aspects of improvements. Today using data science, the airline companies can- a) Forecast flight delay; b) Choose a particular class of planes for purchasing; c) Whether to land at the destination or have a break in between (For example A flight can have a direct route from New Delhi to New York. Otherwise, it can also decide to halt in any country.); d) Efficiently drive client loyalty programs Southwest Airlines, Alaska Airlines are amongst the top companies who've included data science for bringing changes in their way of working.

5.5.3. Delivery Logistics
Who says data science has restricted applications? Logistic businesses such as DHL, UPS, FedEx, Kuhne Nagel use database science to enhance operational efficiency. Utilizing this particular field of science, these businesses have found the very best routes to ship, the greatest method of transportation to select thus bringing about cost-effectiveness, and many others to point out. Moreover, the information that these businesses produce making use of the GPS, offers them a lot of options to explore utilizing data science.

5.6 Examples of Deep Learning-

5.6.1 Customer Experience- ML is adopted by various businesses for enhancing the user experience. Only a few instances contain online self- service solutions as well as for creating a dependable workflow. Moreover, for Chatbot's, some models based on deep learning are used. As deep learning endures to develop, it is expected to be widely spreading in many businesses in the upcoming time.

5.6.2 Translations- Though self-translation machines are not new, deep learning is assisting this kind of translation of texts for its improvement through ANN as well as permitting image translations.

5.6.3 Adding Colour to black-and-white images and video-
Nowadays filling of different colours can be done automatically with certain models based on deep learning. Earlier this process used to be very time-consuming.

5.6.4 Language Recognition- These machines have started differentiating language dialects. These machines chooses that a person is speaking in the   English language as well as involves concepts of AI for finding out the variations in dialects of languages it has   detected. Everything is carried out without any kind of human involvement.

VI. NON-AI TASKS

During the evaluation of various definitions of AI ([1], [11],[12]), it is becoming more difficult for developers to decide what it is or not. A parameter that decides that whether tasks come under AI or not is known as machine independence.

6.1 List of some Non-AI tasks-

6.1.1 Robots- Robots that talk with a metallic voice (and that are able to scheme against humans). Eg. Terminator/Skynet.

6.1.2 Conscious/feeling machines- No matter how good some machines might become in the near future at imitating feelings, we shall not forget that we are still far from replicating consciousness in digital computers.

6.1.3 Conversational interfaces- Ask Siri something off-script and it breaks down

6.1.4 General intelligence- Able to proactively abstract knowledge and skills from one domain and transfer it.

6.1.5 Empathy and Communication-
The methods for detecting ailments such as scans and various other tests are based on AI. Although we are making progress in AI, we are still very far from certain technologies that can actually identify emotions as well as react accordingly, therefore some tasks like therapists, caregivers, as well as physicians come under the category of non-AI tasks.

6.1.6 Critical Thinking-

Despite the numerous advancements in AI, there are some serious decisions regarding a particular matter which require human beings, in case of 'going with gut feeling' in some circumstances.

6.1.7 Creativity- Despite the fact that computers can provide us with a number of options, the quality provided by them is not at all assured. When there is an urgent need for creative roles like artists, musicians, writers as well as inventors, it can be fulfilled by humans so these tasks come under non-AI tasks

6.1.8 Strategy- Nowadays most of the marketing work is executed automatically by the systems. But still, these methods are not provided with optimal strategies along with their relevance. Therefore, any task that needs complex thinking along with strategies come under non-AI work.

6.1.9 Imagination and Vision-
*A*I functions by taking up the already present data then make some logical interpretations depending on certain variables that are provided. These mentioned forms of art are not at all programmable. Authors, speakers as well as leaders have unique importance than the existing technology of AI.

6.1.10 Automation- In this pre-programmed principles are followed whereas in AI simulation of human minds is performed.

VII. CONCLUSION

The research paper is grounded on artificial intelligence concepts as well as methods. It has the ability to make machines think in an analytical way. This technology will remain popular as well as useful for the Computer Science field even in upcoming years. Till now the researchers are unaware of the fact that potential in AI is unexplainable and also, a lot of other new innovations can be made using this technology for getting the desired output. In the future, the applications of AI are going to have across-the-board impacts on our lives. The main idea of this paper is to highlight the latest work done in this field however it has not paid attention to the detailed literature of artificial intelligence.

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