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Agenda: The Implications of Advent of Artificial Intelligence and Its Impact on the Various Sectors of the Economy

SERVICE BEFORE SELF
DELHI PUBLIC SCHOOL

A WORD FROM THE EXECUTIVE BOARD

Greetings Members,

This guide was created to serve as a starting point to your research and to give you a brief overview of the subject matter. It is important that you use this document as a reference point for further research and not as an end in itself. Another important aspect of your preparation will be to analyse your research. Do not just read documents; understand how they fit into the larger context of world events related to the agenda. I would suggest that you take notes on your research. This will help you refer to it during the committee as well as understand the underlying concept better once you translate it to words you are comfortable using. The committee, the Executive Board as well as the organizers want to make this as comfortable an experience for you as possible. Your comfort will be a priority for us at all times. Do not hesitate at any point to approach us with your doubts. As frivolous as they might sound in your head, trust me, we all had them when we were starting out as well. Your confidence will grow bit by bit as you get accustomed to your surroundings in the committee. Come with an open mind, come with a willingness to observe, and most importantly, come with a willingness to try. I have learnt that public speaking is somewhat addictive. Give yourself that first chance and it will grow on you.

I wish you all the best and hope that we can make this an enriching experience for you. We can be reached to address your doubts and queries at all hours; do not hesitate in contacting any one of us (however, please e-mail us and not contact us on Facebook as some of us are quite inactive on social media).

Regards,
Pratham Sharma
Chairperson

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WHAT IS ARTIFICIAL INTELLIGENCE?

According to the father of Artificial Intelligence John McCarthy, AI is “the science and engineering of making intelligent machines, especially intelligent computer programs”. Artificial Intelligence is a way of making a computer, a computer-controlled robot, or a software think intelligently, in a manner similar to how intelligent humans think.

AI is accomplished by studying how the human brain thinks, and how humans learn, decide, and work while trying to solve a problem, and then using the outcomes of this study as a basis of developing intelligent software and systems.

Philosophy of AI

While exploiting the power of computer systems, the curiosity of man lead him to wonder, “Can a machine think and behave like humans do?”.

Thus, the development of AI started with the intention of imparting similar intelligence to machines that we find and highly regard in humans.

Goals of AI

1) **To Create Expert Systems:** The systems which exhibit intelligent behaviour, learn, demonstrate, explain, and advice its users.

2) **To Implement Human Intelligence in Machines:** Creating systems that understand, think, learn, and behave like humans.

WHAT CONTRIBUTES TO AI?

Artificial intelligence is a field based on disciplines such as:
1) Computer Science
2) Biology
3) Psychology
4) Linguistics
5) Mathematics
6) Engineering

A major thrust of AI is the development of computer functions associated with human intelligence, such as reasoning, learning, and problem solving.

Out of the following areas, one or multiple areas can contribute in building an intelligent system.

APPLICATIONS OF AI

Gaming

AI plays crucial role in strategic games such as chess, poker, tic-tac-toe, etc., where machines can think of large number of possible positions based on heuristic knowledge.

Natural Language Processing

It is possible to interact with a computer that understands natural language spoken by humans.

Expert Systems

There are some applications which integrate machine, software, and special information to impart reasoning and advising. They provide explanation and advice to users.

Vision Systems

These systems understand, interpret, and comprehend visual inputs given to the computer.
For example:
1) A spying airplane takes photographs which are used to figure out spatial information or map of the areas.
2) Doctors use clinical expert system to diagnose the patient.
3) Police use computer software that can recognize the face of criminal with the stored portrait made by a forensic artist.

Speech Recognition

Some intelligent systems are capable of hearing and comprehending human speech. It can handle different accents, slang words, background noise, change in human's noise due to cold, etc.

Handwriting Recognitiion

Handwriting recognition softwares read text written on paper by a pen or on screen by a stylus. It can recognize the shapes of the letters and convert it into editable text.

APPLICATIONS OF AI

Intelligent Robots

Robots are able to perform the tasks given by a human. They have sensors to detect physical data from the real world such as light, heat, temperature, movement, sound, bump, and pressure. They have efficient processors, multiple sensors and a huge memory to exhibit intelligence. In addition, they are capable of learning from their mistakes and adapting to a new environment.

ADVANTAGES AND RISKS OF CURRENT AI

Our individual lives and our civilization as a whole are governed to an ever-increasing extent by algorithms and domain-specific artificial intelligence. Well-known examples include such ubiquitous things as smartphones, air traffic control systems and internet search engines. Financial markets are also dependent on algorithms which are too large and complex for any single human being to fully understand. The operation of such algorithms, for the most part, proceeds without incident, but there is always the possibility that an unlikely “black swan” event might occur and threaten to plunge the whole system into chaos. We have already witnessed one such event: in 2010, an unexpected "flash crash" in the US stock market left the financial world dumbfounded. The crash occurred as a result of computer algorithms interacting with the financial market in an unforeseen manner. Within minutes, important shares lost more than 90% of their worth and then quickly returned to their high initial value. If such an event were to take place in a military context, a comparable “return to initial conditions” would be improbable. To prevent devastating failures of this sort, it seems generally advisable to invest considerably more resources into the safety and reliability of AI. Unfortunately, current economic incentives seem to favor increased AI capacity far more than safety.

In principle, algorithms and domain-specific AIs bring many advantages. They have influenced our lives for the better and are expected to keep doing so at an ever increasing rate in the future, provided that the necessary precautions are taken. Here we will discuss two instructive examples.

Driverless Cars Will No Longer Be Science Fiction

They will be commercially available in the foreseeable future. The Google Driverless Car, which is driven completely by autonomous AI algorithms, took its first test drive in the USA back in 2011. Besides the time gained for work or relaxation, a second advantage to driverless cars is their higher safety. In 2010, 1.24 million people died worldwide in traffic accidents, nearly exclusively because of human error. Countless human lives could therefore be saved every year, as driverless cars are significantly safer than vehicles driven by humans. Naturally, a large number of people remain skeptical of driverless cars, mainly because they underestimate the safety benefits thereof whilst, at the same time, overestimating their own driving abilities. As an illustration of this latter point, one study came to the conclusion that 93% of all American drivers believe that their driving abilities are above the median—which is statistically impossible. Unrealistic optimism and the illusion of control also bias people towards underestimating the risks when they are behind the wheel.

ADVANTAGES AND RISKS OF CURRENT AI

Doctors, Too, Overestimate Their Capabiilities

This, in the worst case, can lead to deadly mishaps. In the US alone, between 44,000 to 98,000 people die each year in hospitals because of treatment mistakes. In this context, IBM's Watson is a welcome development. This AI gained fame in 2011 when it beat the best human players on the quiz show Jeopardy!. However, Watson isn't just better than humans in quiz shows. Hospitals have been able to hire Watson's computing power since 2014 for cancer diagnosis and other complex pattern-recognition tasks. Because "Doctor Watson" can rapidly collect and combine enormous quantities of information, it has partially overtaken the diagnostic skills of its human counterparts. The fact that current AI can make more accurate medical diagnoses than human doctors may seem surprising at first, but it has long been recognized that statistical inferences are superior to clinical judgments by human experts in most cases. Since AIs like Watson are ideal for making statistical inferences, it follows that using computers for certain types of diagnosis can save lives.

Cognitive Biases: To Err Is Human

One reason why human experts are less competent than AIs at statistical inferences is the aforementioned (and, unfortunately, all too human) tendency to overestimate one's own abilities. This tendency is known as overconfidence bias and is just one of many documented cognitive biases that can lead to systematic errors in human thinking. AIs, on the other hand, can be built so as to avoid cognitive biases altogether. In principle, increasing confidence in the predictions of AIs could lead to a significantly more rational and efficient approach to many social and political challenges, provided they are made safely and according to comprehensible criteria. The problem here lies in using the strengths of AI without simultaneously giving up human autonomy in the corresponding systems.

AUTOMATION AND UNEMPLOYMENT

In light of recent successes in the field of machine learning and robotics, it seems there is only a matter of time until even complicated jobs requiring high intelligence could be comprehensively taken over by machine. If machines become quicker, more reliable and cheaper than human workers in many areas of work, this would likely cause the labor market to be uprooted on a scale not seen since the Industrial Revolution. According to economists like Cowen, McAfee and Brynjolfsson, technological progress will widen the income gap even further and may lead to falling incomes and rising unemployment in large segments of the population. A 2013 analysis concluded that it will likely be possible to automate 47% of all jobs in the USA within 10–20 years. The hardest jobs to automate are those which require high levels of social intelligence (e.g. PR consultation), creativity (e.g. fashion design) and/or sensitive and flexible object manipulation (e.g. surgery). In these domains, the level of AI is still far below the level of human experts.

Advantages and Disadvantages to Automation by Computers

Those who will benefit the most from technological progress are the people and nations that understand how to make use of new technological opportunities and the corresponding flood of "big data". In particular, countries with well-trained computer specialists are expected to prosper in the face of technological progress. Moreover, it is likely that a thorough understanding of the ways in which various computer algorithms compare to human decision-making and working abilities—as well as the (dis)advantages of each—will become increasingly important in the future, thus necessitating high standards of education.

Following the automation of the production and service industries, one might expect only the entertainment industry to remain; yet here, too, we are already witnessing extensive changes. With flawless computer graphics, novel entertainment technologies, and countless smartphone apps all becoming increasingly affordable, the addictive pull of video games and internet usage is rising. While we have not yet been able to research the long-term social and psychological consequences of this development, several factors currently indicate that these trends are profoundly changing our social behavior, attention spans, and childhood development. These effects may be amplified by the increasing use of virtual reality technology, which is already available to consumers. As these become increasingly detailed and realistic, they may blur the user's boundaries between reality and simulation, thereby invading deeper into our everyday experience. The consequences of more regular immersion in virtual realities—including experiences like body-transfer illusions, in which subjective awareness is temporarily projected into a virtual avatar—should receive greater attention.

While the entertainment industry does offer significant opportunities for better education through personalized AI teaching and the gamification of learning material, it also increases the risk that a growing proportion of young people will have trouble completing their education due to a pathological addiction to video games or the internet.

UTOPIAS AND DYSTOPIAS

Technological progress increases societal productivity, in turn raising the average standard of living. If more work is carried out by machines, this frees up time for leisure and self-development for humans— at least those in a position to profit from it. However, a drawback to increasing automation could be that the increases in productivity will go hand in hand with increasing social inequality so that a rise in the mean standard of living does not coincide with a rise in the median quality of life. Experts like MIT economics professor Erik Brynjolfsson even worry that technological progress threatens to make the lives of a majority of people worse.

In a competitive economy where AI technology has progressed to the point that many jobs are done by machines, the income for automatable human work will fall. Without regulation, the incomes of many people could sink below subsistence level. Social inequality may rise sharply if economic output were to increase more rapidly than the wages needed to effect redistribution. To counteract this development, McAfee and Brynjolfsson suggest that limiting certain jobs to humans should be subsidized. Additional options for ensuring fair distribution of advantages from technological progress amongst the whole population include unconditional basic income, and a negative income tax.

Some experts also warn of future scenarios in which the projected changes are even more drastic. For example, the economist Robin Hanson expects that it will be possible within this century to digitally run human brain simulations—so-called whole brain emulations (WBEs)—in virtual reality. WBEs would be reproducible, and could (assuming that sufficient hardware is available) run many times faster than a biological brain, consequently implying a huge increase in labour efficiency. Hanson predicts that in such a case, there would be a “population explosion” of WBEs, who could be used as enormously cost-efficient workers. Hanson’s speculations are contested, and it should not be assumed that they sketch out the most likely future scenario. Current research in this field, such as the Blue Brain Project at ETH Lausanne, is still very far from the first brain simulations—never mind supplying them in real time (or even faster) with inputs from a virtual reality. However, it is important to keep hardware developments in mind in relation to the possibility of WBEs. If the scenario sketched out by Hanson were to occur, this would be of great ethical relevance. For one thing, many humans replaced by complex simulations could become unemployed; for another, there is the question whether the WBEs deployed would have phenomenal consciousness and subjective preferences—in other words, whether they would experience suffering as a result of their (potentially forced) labour.

QUESTIONS TO PONDER UPON

1) Is artificial intelligence beneficial for developing countries?
2) How will the advent of artificial intelligence impact the employment in various countries?
3) Is artificial intelligence profitable?
4) What new fields can artificial intelligence be used in?
5) Is artificial intelligence beneficial for the overall growth of an economy?

LINKS FOR FURTHER RESEARCH

https://www.bbc.com/news/technology-30290540

https://edge.org/response-detail/26177

https://www.sbs.com.au/news/artificial-irrelevance-the-robots-are-coming

https://www.bbc.com/news/31047780

https://www.edge.org/response-detail/26177

https://ed.ted.com/lessons/kevin-slavin-how-algorithms-shape-our-world#review