~~Artificial Intelligence~~

Team 9 (pm)

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Artificial Intelligence (AI) Explained:

In the simplest terms, AI which stands for artificial intelligence refers to : systems or machines that mimic human intelligence to perform tasks and can iteratively improve themselves based on the information they collect. AI manifests in a number of forms.

A few examples are:

- Chatbots:

use AI to understand customer problems faster and provide more efficient answers.

- Intelligent assistants use AI to:

parse critical information from large free-text datasets to improve scheduling.

- Recommendation engines:

can provide automated recommendations for TV shows based on users' viewing habits.

- AI is much more about the process and the capability for superpowered thinking and data analysis than it is about any particular format or function.
- Although AI brings up images of high-functioning, humanlike robots taking over the world,
- AI isn't intended to replace humans. It's intended to significantly enhance human capabilities and contributions. That makes it a very valuable business asset.

- types of artificial intelligence:

Narrow AI edit:

- It is artificial intelligence that specializes in one field,
- for example, there are artificial intelligence systems that can beat the world champion in the game of chess, which is the only thing they do.

Artificial general intelligence:

- This type refers to computers with the level of human intelligence in all fields,
- that is, it can perform any intellectual task that a person can perform,
- creating this type of intelligence is much more difficult than the previous type and we have not reached this level yet.

Artificial superintelligence edit :

- Oxford philosopher Nick Bostrom defines superintelligence as "thought much smarter than the best human minds in nearly every field, including scientific creativity, general wisdom, and social skills."

- Because of this type, the field of artificial intelligence is an interesting area to delve into.

Importance of Artificial Intelligence in our life:

The importance of artificial intelligence and its subsequent components have been known for quite a long time now. They are being looked upon as tools and techniques to make this world a better place.

- And it's just not that you have to go to these fancy tech gadgets to be able to use them. You can simply look around, and I am sure most of your tasks are made smooth by artificial intelligence.

- Its importance lies in making our lives easier. These technologies are a great asset to humans and are programmed to reduce the human effort as much as possible. They tend to possess the capability to work in an automated fashion. Therefore, manual intervention is the last thing that could be asked for or seen while operating parts associated with this technology.

- These machines tend to speed up your tasks and processes along with a guaranteed level of precision and accuracy, and therefore this is what makes them a useful and important tool. Apart from making the world an

error-free place by their simple and everyday techniques, these technologies and applications are not only related to our general and everyday lives. It is also impacting and holds importance for other domains as well.

- Top 4 Uses of Artificial Intelligence

- The artificial intelligence has made a phenomenal impact in the medical industry and therefore changes the medical industry's face.

- There have been various machine learning algorithms and models working efficiently to predict various critical use cases such as determining whether a particular patient has malignant or benign cancer or tumor based on the symptoms and the health records and history. - It is also being used in future predictions where the patients are being told well about their deteriorating health and the preventions they should take to get back to a normal and healthy life.

- **Artificial intelligence has created a virtual care private assistant who is specifically built for people's needs and is widely used for monitoring researching different types of cases and analysing past cases and their outcomes.**

- It also seeks to improve their models and assistant's efficiency by predicting what could be improved and making themselves smarter.

- The use of healthcare bots is another efficient move taken by the medical industry to work their way up in the field of medicine which is known to provide 24/7 assistance and take up the less important work of managing appointments.

- This has not been possible without the intervention of these smart artificial intelligence-based machines.

In the Field of Air Transport

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- One of the major systematic transport in the world is air transport and there became an urgent need to optimize the way they are operated.

- Here came the involvement of artificial intelligence where the machine is involved in planning the routes, along with flight landing and take-off charts.

- The navigation maps and taxing routes, along with a quick check of the entire cockpit panel to ensure the correct

working of every component, have been performed using artificial intelligence in many aircraft.

- This has been delivering very promising results and therefore, is being adopted very frequently.

- The ultimate aim of artificial intelligence in the field of air transport is to give humans ease and a more comfortable journey.

In the field of Banking and Financial Institutions

- The artificial intelligence has been playing a significant role in managing financial transactions and also to handle numerous other activities in the bank.

- The banks' day-to-day tasks such as transactional and financial operations, stock market money and their management, etc. are being worked upon by these machine learning models in a much easier and efficient way.

- Use cases such as those of Anti-money laundering where the suspicious financial transactions are being monitored and reported to the regulators is a classic example of the use of artificial intelligence in the banking and financial industry.

- Other use cases include those like credit systems analysis which are popular among credit card companies where the suspicious credit card transactions are tracked on the geographic level and based on various parameters is worked upon and resolved.

In the Field of Gaming and Entertainment

- From virtual reality games to modern games today, this is one industry where artificial intelligence has taken the biggest leap.

- The bots are always present to play with you, and therefore you are not required to have a second person to play.

- The level of personal details and the graphics are also possible due to the advent of artificial intelligence and is taking this industry on a different level.

- ## Top Common Challenges in AI

1. Computing Power

The amount of power these power-hungry algorithms use is a factor keeping most developers away. Machine Learning and Deep Learning are the stepping stones of this Artificial Intelligence, and they demand an ever-

increasing number of cores and GPUs to work efficiently. There are various domains where we have ideas and knowledge to implement deep learning frameworks such as asteroid tracking, healthcare deployment, tracing of cosmic bodies, and much more.They require a supercomputer's computing power, and yes, supercomputers aren't cheap. Although, due to the availability of Cloud Computing and parallel processing systems developers work on AI systems more effectively, they come at a price. Not everyone can afford that with an increase in the inflow of unprecedented amounts of data and rapidly increasing complex algorithms

2. Trust Deficit

One of the most important factors that are a cause of worry for the AI is the unknown nature of how deep learning models predict the output. How a specific set of inputs can devise a solution for different kinds of problems is difficult to understand for a layman. Many people in the world don't even know the use or existence of Artificial Intelligence, and how it is integrated into everyday items they interact with such as smartphones, Smart TVs, Banking, and even cars (at some level of automation).

3'Limited Knowledge

Although there are many places in the market where we can use Artificial Intelligence as a better alternative to the traditional systems. The real problem is the knowledge of Artificial Intelligence. Apart from technology enthusiasts, college students, and researchers, there are only a limited number of people who are aware of the potential of AI.

For example, there are many SMEs (Small and Medium Enterprises) which can have their work scheduled or learn innovative ways to increase their production, manage resources, sell and manage products online, learn and understand consumer behavior and react to the market effectively and efficiently. They are also not aware of service providers such as Google Cloud, Amazon Web Services, and others in the tech industry.

4. Human-level

This is one of the most important challenges in AI, one that has kept researchers on edge for AI services in companies and start-ups. These companies might be boasting of above 90% accuracy, but humans can do better in all of these scenarios. For example, let our model predict whether the image is of a dog or a cat.

The human can predict the correct output nearly every time, mopping up a stunning accuracy of above 99%. For a deep learning model to perform a similar performance would require unprecedented finetuning, hyperparameter optimization, large dataset, and a well-defined and accurate algorithm, along with robust computing power, uninterrupted training on train data and testing on test data. That sounds a lot of work, and it's actually a hundred times more difficult than it sounds.

One way you can avoid doing all the hard work is just by using a service provider, for they can train specific deep learning models using pre-trained models. They are trained on millions of images and are fine-tuned for maximum accuracy, but the real problem is that they continue to show errors and would really struggle to reach human-level performance.

Artificial intelligence applications :

Artificial intelligence has been used successfully in a wide range of fields including expert systems, natural language processing, voice recognition, image recognition and analysis as well as medical diagnosis, stock trading, robotics, law, scientific discovery, video games, toys and Internet search engines. Often, when technology is widely used, it is not seen

as artificial intelligence, and is sometimes described as the impact of artificial intelligence.[136] It is also possible to incorporate it into artificial life.