Applications of Artificial Intelligence in Real World with Examples

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Applications of Artificial Intelligence: Basically, AI is a broad area of computer science that makes machine same like they have human intelligence. Humans are the most intelligent creatures that we know. The goal of AI is to **create systems that can function intelligently and independently like a human does**. The term Artificial intelligence was first introduced in **1956 by Dartmouth professor John McCarthy**. In this article, we will discuss some of the major applications of artificial intelligence in the real world.
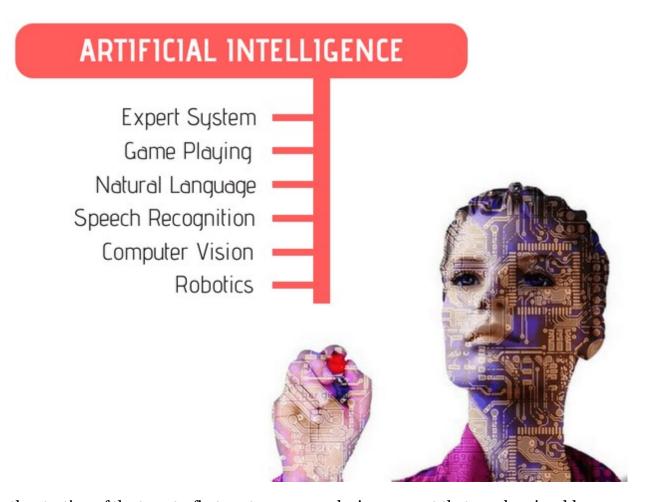
What is Artificial Intelligence?

The term Artificial Intelligence is composed of two words – Artificial & Intelligence. Now the word Artificial means non-natural i.e. anything that is man-made and Intelligence refers to the ability to understand, think and learn. So, combining both, The **AI can be defined as a man-made thinking power**. The basic idea of Artificial Intelligence is to mimic a human brain inside a machine. For example, if we want a car to drive on itself then we need to train that car based on driver's experience i.e. somehow we have to implement an expert driver's knowledge into that car.

In simple words, the **artificial intelligence is basically creating intelligent software and making a machine that is smart, a machine that has the power to think, the power to learn and analyse them to make decisions like humans**. For example, if I teach myself how to divide 10 by 2 then I don't think that I need to teach myself how to divide 20 by 2. That is nothing but intelligence. If we can put that intelligence inside a system that is called an Artificial Intelligence.

The base of AI is evolved out of 4 important subjects – **Psychology, Philosophy, Mathematics & Linguistic**. They are making a big role in the enhancement of Artificial Intelligence.

Major Areas of Applications of Artificial Intelligence

We can say the most important applications of artificial intelligence is to be able to design **human-like intelligence system**. Major tech companies are still working on it for a while but it still not have achieved accurately. It might take some time to achieve that goal. Apart from that, there are many important areas of applications of artificial intelligence can be found and we can classify them as follows :

In the starting of the twenty-first century, game playing was not that much enjoyable or interesting like graphics quality was not good and the artificial intelligence used at that times was also not well developed. But if we see nowadays, we can play the high-end games online and are more realistic in nature. The concept of artificial intelligence is implemented in modern games and we even can't feel that we are playing with a machine.

For example the chess game available on our computer, we can't win that game in hard mode easily. In such types of strategic games like chess, poker, tic-tac-toe etc, **AI can play a crucial role. Because based on the heuristic knowledge that AI has**, can think of a large number of possible and accurate positions to beat a world champion easily.

The expert systems are one of the important applications of artificial intelligence. The expert systems are basically some computer applications which stores the experience & knowledge of human experts based on some particular domain and are served to the users when needed. It has 4 major components – <u>User Interface, Inference Engine, Development Engine & Knowledge Base</u>.

An expert system can provide information at an extraordinary level based on a particular domain. Basically, a '<u>knowledge Engineer</u>' collects the data & facts from the human experts and stored in a centralized computer database. Then a computer application is developed with a good user interface to provide that knowledge or information to the users with 24/7 accessibility.

Natural Language Processing:

We know that machine doesn't recognize the languages like English, Hindi, Spanish etc. that we speak. They only understand machine language – i.e. the language based on the binary and hexadecimal number system. But the problem is that human being can't understand that language. So, to recognize and understand our natural languages by a machine, the concept of natural language processing comes up.

Natural Language Processing mainly consists of 2 components – **Natural Language Understanding** and **Natural Language Generation**.

Natural Language Understanding means how a machine can understand our languages, how our speech gets transformed into machine-understandable form. A complex processing algorithm is required to achieve this because a natural language can be very ambiguous. **Lexical ambiguity, Syntactical ambiguity, Referential ambiguity** are some of the important phases of Natural Language Understanding.

Natural Language Generation is the reversed process of Natural Language Understanding. The machine converts their language to human understandable natural languages. This process includes **Text planning, Sentence Planning, & Text realization.**

Speech recognization is one of the most commonly used applications of artificial intelligence. Basically, it refers to the ability of the machine that understands the words that we say. When a machine receives our voice, it first records it and then it analyses and translates the sounds into some predefined words to recognize. We can instruct a machine to do something with speech recognition.

Speech recognition and voice recognition, may it seems like both are same but they are two completely different concepts. Speech recognition refers to the recognizing specific words i.e. '**what was said**' but voice recognition refers to the recognizing a specific voice i.e. '**who said it**'.

Apple's Siri, Google's virtual assistant and Window's Cortana etc are some of the most commonly used speech recognition systems nowadays.

Computer vision is the ability to obtain a high-level understanding of the digital images and videos by the machines. The **primary goal of computer vision is to recognize and interpret images**. That means what is present in a scene or what actually going on.

Since images and videos are playing a vital role in all over technology, it is also important to manipulate images and extract information from them so that we can get the maximum out of an image. That is why the computer vision is considered as one of the important applications of artificial intelligence.

There are domains such as **surveillance, building 3D model, motion capture** – where the computer vision system can be seen to be implemented in varieties ways. The most common and real-life examples of implementation of computer vision system are face detection/smile detection on cameras, the face unlocking system on smartphones, making bokeh effects by smartphone camera etc.

Robotics is a branch derived from the **Mechanical, Electronics & Computer Science Engineering**. It is the s**tudy of designing, constructing, operating**

some intelligent machines that can make our tasks easy. A robot can do repetitive work without getting bored.

Robots are designed using different sensors that they can recognize the physical conditions like temperature, light, obstacle, gesture, distance etc. After recognizing the physical data, some computers programmes along with microcontroller are used to control and process that data to do various tasks.

Robotics is rapidly growing and are continuously being designed for different practical purposes whether **domestically, commercially or militarily**. Many robots are available today for doing dangerous and risky tasks like **defusing bombs, finding survival and unstable drones, exploring mines** etc.

These are the leading areas of applications of Artificial Intelligence that can be found in our tech world. But here I have to say that not only these above-mentioned areas that applications of artificial intelligence is limited or is applicable. But apart from that, there are many fields of areas where AI can be implemented. The concept of AI is still developing and the field of AI is continuously growing.