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APPLICATIONS OF ARTIFICIAL INTELLIGENCE

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Abstract

In the future, in many areas human capabilities will replace or enhance by intelligent machines. Artificial intelligence is the intelligence exhibited by software or machine. In many areas; the human life is enhanced by artificial intelligence as it is becoming a popular field in computer science. Artificial intelligence has greatly improved performance of the service and manufacture systems. In the area of artificial intelligence has given rise to the rapidly growing technology known as expert system. Application of Artificial Intelligence is having a huge impact on various fields of life as expert system is widely used these days to solve the complex problems in various areas as science. This paper gives an overview of the applications of artificial intelligence.

Keywords

Artificial Intelligence, Applications of Artificial Intelligence

Introduction

Intelligence is commonly considered as the ability to collect knowledge and reason about knowledge to solve complex problems and it is a way of making a computer, a computer-controlled robot, or a software think intelligently, in the similar manner the intelligent humans think. In the near future intelligent machines will replace and enhanced human capabilities in many areas. Artificial intelligence is the study and developments of intelligent machines and software that can learn, gather knowledge, communicate, manipulate and perceive the objects. . Artificial intelligence is different from psychology because it emphasis on computation and is different from computer science because of its emphasis on perception, reasoning and action. It makes machines smarter and more useful.

Artificial Intelligence

Artificial intelligence is an area of computer science that deals with giving machines the ability to seem like they have human intelligence. Intelligent agent is the field of Artificial intelligence that any device perceives its environment and takes actions that maximize its chance of success at some goal. It is a way of making a computer; software thinks intelligently, Artificial intelligence is accomplished by studying how human brain thinks.
learn, decide, and work while trying to solve a problem. There are some advantages of artificial intelligence

1) Error Reducing

AI helps us in reducing the errors and the chance of reaching accuracy with a greater degree of precision is a possibility. Intelligent robots are fed with information and are sent to explore space. Since they are machines with metal bodies, they are more resistant and have greater ability to endure the space and hostile atmosphere. They are created in such a way that they cannot be modified or breakdown in the hostile environment.

2) Difficult Exploration

Artificial intelligence can be put to use in mining and other fuel exploration processes. Not only that, these complex machines can be used for exploring the ocean floor and hence overcoming the human limitations**.**

3) Daily Application

Computed methods for automated learning and perception have become a common phenomenon in our everyday lives. **.** We are also hitting the road for long drives and trips with the help of GPS. Smartphone in an app and every day is an example of the how we use artificial intelligence. In utilities, we find that they can predict what we are going to type and correct the human errors in spelling.

4) Repetitive Jobs

Repetitive jobs which are monotonous in nature can be carried out with the help of machine intelligence. Machines think faster than humans and can be put to multi-tasking. Machine intelligence can be employed to carry out dangerous tasks.

5) Medical Applications

Doctors assess the patients and their health risks with the help of AI machines. . It finds a huge application in detecting and monitoring neurological disorders as it can simulate the brain functions. . Robotics is used often in helping mental health patients to come out of depression and remain active.

6) No Breaks

They are programmed for long hours and can continuously perform without getting bored or tired or even distracted. Machines, unlike humans, do not require frequent breaks and refreshments.

Application of Artificial Intelligence

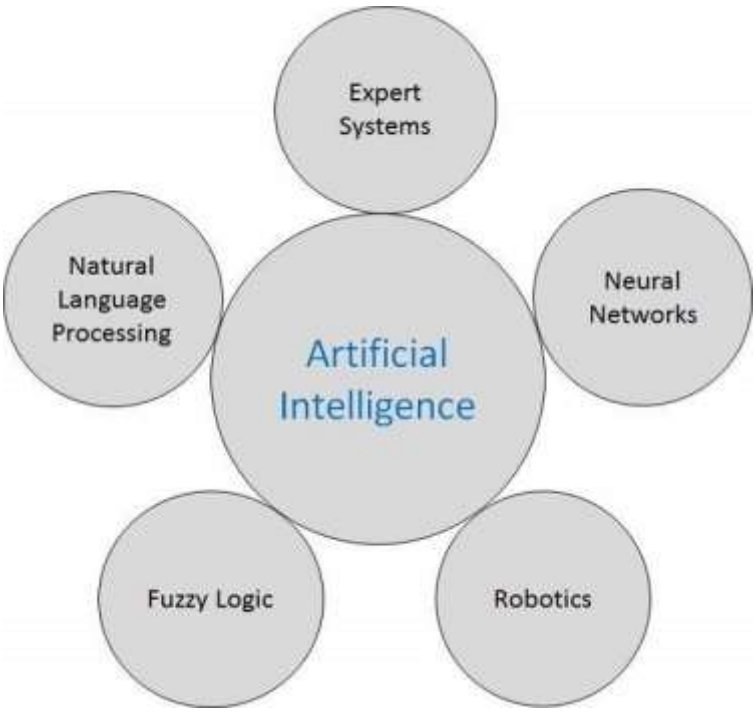

Fig. Application of Artificial Intelligence

1) Expert System

Expert Systems are machines that are trained to have total expertise in specific areas of interest. They are mainly developed to solve the problems. It is a piece of software which uses databases of expert knowledge to offer advice or make decisions in such areas as medical diagnosis**.** An expert system is made up of 3 parts

- **Knowledge base** It stores all the information, data, rules and relationships that are needed by the expert system to have total expertise in its area of interest.
- **Inference engine** It seeks information from the knowledge base on being presented with a analyses, query and it responds with a solution or recommendation in the way a human expert**.**
- **Rule** It is a conditional statement that links the given conditions to the final solution

Application of Expert system

i. **Financial Decision Making**Banker is assisted by advisory program to determine whether to make loans to businesses and individual. Insurance companies have used expert system to find risks.

ii. **Knowledge Publishing**

The expert system primary function is to deliver knowledge to the relevant user's problem. The two most widely distributed expert systems in the world. First is an advisor which counsels a user and second is a tax advisor.

iii. **Process Monitoring and Control**

Systems falling in this class analyse real-time data from physical devices with the goal of predicting trends, and controlling for both failure correction and optimality

2) Neural Networks

A popular target representation for learning is the neural networks. These neural networks are inspired by the neurons in the brain but do not actually simulate neurons. Artificial neural networks typically contain many fewer than the approximately 10^{11} neurons that are in the human brain, and the artificial neurons, called **units**, are much simpler than their biological.

Application of neural network

i. **Character Recognition**

The Handwritten Character is Recognized by the neural network.

ii. **Image Compression**

Neural networks can receive and process vast amounts of information at once, making them useful in image compression.

iii. **Stock Market Prediction**

Neural networks can examine a lot of information quickly and sort it all out, they can be used to predict stock price.

iv. **Traveling Saleman's Problem**

Neural networks can solve the traveling salesman problem, but only to a certain degree of approximation.

3) Natural Language Processing:-

Natural Language Processing (NLP) refers to AI method of communicating with an intelligent systems using a natural language such as English.Processing of Natural Language is required when you want an intelligent system like robot to perform as per your instructions, when you want to hear decision from a dialogue based clinical expert system, etc.

Application of Natural Language processing

i. **Machine Translation**

As the world's information is online, the task of making that data accessible becomes increasingly important. The challenge of making the world's information accessible to everyone, across language barriers, has simply outgrown the capacity for human translation.

ii. **Fighting Spam**

Spam filters have become important as the first line of defense against the ever-increasing problem of unwanted email.

iii. **Information Extraction**

Many of these financial decisions are impacted by news, by journalism which is still presented predominantly in English. A major task, then, of NLP has become taking these plain text announcements, and extracting the pertinent info in a format that can be factored into algorithmic trading decisions**.**

iv. **Question Answering**

A big focus of Google's efforts in NLP has been to recognize natural language questions, extract the meaning, and provide the answer.

v. **Robotics**

Robotics is the replica of the human beings. Its brings together several very different engineering areas and skills. There is metalworking for the body. There is mechanics for mounting the wheels on the axles, connecting them to the motors and keeping the body in balance. You need electronics to power the motors and connect the sensors to the controllers.

Application of Robots

i. **Industrial robots**

The industrial robots bring into play in an industrialized manufacturing atmosphere. Typically these are articulated arms particularly created for applications like- material handling, painting, welding and others.

ii. **Domestic or household robots**

Domestic or household Robots are used at home. This types of robots consists of for example- robotic pool cleaners, robotic sweepers, robotic vacuum cleaners, robotic sewer cleaners and other robots that can perform different household tasks.

iii. **Space robots**

This type of robots would consist of the robots employed on Canadarm that was brought into play in space Shuttles, the International Space Station, together with Mars explorers.

iv. **Service robots**

The service robots could be various data collecting robots, robots prepared to exhibit technologies, robots employed for research, etc.

5) Fuzzy Logic

The method of fuzzy logic reasoning is resembles that the human reasoning .The approach of fuzzy logic imitates the way of decision making in humans that involves all possibilities between values Yes and No. A computer can understand input and produces a output as true or false, which is similar to human as yes or no. Fuzzy logic variables may have a truth value that ranges in degree between 0 or 1. Fuzzy logic has the advantage that the solution to the problem can be cast in terms that human operators can understand, so that their experience can be used in the design of the controller. This makes it easier to mechanize tasks that are already successfully performed by humans.

Application of Fuzzy logic

i. **Business**

In a large company, fuzzy logic support for decision making, personnel evaluation etc.

ii. **Defence**

Fuzzy logic supports for underwater target recognition, automatic target recognition etc.

iii. **Financial**

Fuzzy logic support for Banknote transfer control, fund management, Stock market prediction etc.

Conclusion

The field of artificial intelligence gives the ability to the machines to think analytically. Artificial Intelligence will continue to play an increasingly important role in the various fields. This paper is based on the concept of artificial intelligence and applications of artificial intelligence. Artificial intelligence will enhance the power of human intelligence.

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Bio

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