ARTIFICIAL INTELLIGENCE AND ITS APPLICATIONS

Prof .(Dr.) Arvind Kumar Upadhyay
Amity University Madhya Pradesh Gwalior
akupadhyay@gwa.amity.edu

Abstract: The field of Artificial intelligence describes the Machine Learning ability as is done by humans and the ability to respond. Its need is increasing regularly. Since beginning Artificial Intelligence is changing technological advancements and business fields. The notion that machines could operate like humans started gaining inquisitiveness, more research followed to ascertain whether machines could think and learn by itself. The famous mathematician Alan Turing put his research idea and questions into actions by testing whether "machines can think".

Keywords: Artificial Intelligence, State space search, Machine Learning.

Introduction: It was John McCarthy in 1956 who first proposed the idea of Atificial Intelligence in his academic conference. A series of tests took place to ascertain that it is possible to make machines think like humans. The famous Turing test enabled to believe that machines can think like humans. There are many benefits of Artificial Intelligence like solving complex problems, decision making, increasing reliability etc. It is both cost effective and there is no chance of losing the data[1]. AI is prominently used in medical field, engineering, business applications etc. Reinforcement Learning is one of the pillars of Artificial Intelligence. It enables the machine to learn from its experiences to increase the reliability of application.

Artificial Intelligence Areas
1. Perception :
Machine Vision: It is dificult to understand what the images are representing. Machine vision is the area of Artificial intelligence that deals with it.

Speech Understanding: Speech recognition is an important area of Artificial intelligence. Systems have been developed to make the speech recognisable.

Touch Sensation: This aspect of Artificial intelligence is used in building Robots.

2. Robotics :
The days Robots are being extensively used as applications of Artificial Intelligence. Robotics simplifies the mundane tasks which were otherwise done by humans. It is task of AI to build Robots of well-structured tasks like painting the cars etc.

3. Planning :

It is because of good planning that actions are ordered and this helps in achieving goals. Planning the steps of manufacturing, scheduling the manufacturing and logistics are all planned in AI[2]. It is essential to achieve desired product. If planning is good then it would prove to be cost effective.

4. Expert Systems :

An important task of AI is to capture the human intelligence and expertise to build a computer so that it takes decisions as human beings do. These systems are called as expert systems. Some of the benefits of expert systems are as below:

• To operate the complex things, an expert system can reduce skill level needed.
• An expert system may help in diagnostic needed for device repair.
• An expert system may help in interpretation of complex data.
• An expert system may help in ``Cloning'' of scarce expertise.
• It may help in Capturing knowledge and combining knowledge of experts.

5. Symbolic Mathematics:

It deals with mathematical relations and formulas in the field of Differential, Integral calculus and Algebra etc[3]. Symbolic manipulations are suitable for program generator for actual calculations in engineering workstations.

6. Game Playing:

Since the games are formalised and self-contained, this field facilitates research. Because of this Games could be easily programmed. As Games involve competition therefore they can also be used in practical problems.

Techniques used in Artificial Intelligence:

In artificial Intelligence, knowledge captures the generalised concepts and common properties of situations are put together to exploit efficiency. In the AI , knowledge must be supplied that is well understood and be compatible to AI programs. Such techniques should be easily modifiable and reflect changes. In spite of being incomplete or inaccurate, it can be used.

Followings are some of the prominent techniques of Artificial Intelligence:

1. Problem Spaces and Search

In the problem spaces and Search technique to solve a problem requires the following steps:

a. First the problem at hand is understood with specifications and also the acceptable solution.

b. A rigorous analysis of the problems and its features is done to ascertain the effect on probable solution.

c. There after the background knowledge is separated and

represented for the solution of the problem.

d. Then select the best problem solving techniques in the solution.

2. Defining the Problem as state Search

In Artificial intelligence, problems start with defining a term 'State'. The status of the solution is nothing but a state in the procedure of problem solution. Therefore, the solution to the problem is assembly of problem states. An operator is applied to the state in the procedure of problem solving to get to the next state. A different operator may be applied to the state to reach to a different state. Such a thing is continued until the goal state is reached. The approach, however, is referred to as state space approach. In the problems of Game playing, the initial state is the opening position. The goal state is the winning position.

3. Formal description of a problem:

In the formal description approach, followings steps are included

a. First of all, a state space containing possible configurations of objects that are relevant is defined[4]. Here all states are not described.

b. The state space defined in step 1 illustrate problem in terms of states and operators that change states.

c. Next, few of the present states could be initial states.

d. Next acceptable solutions are specified and are termed as goal states.

e. For allowable actions, a set of rules are specified.

Conclusion and Future Work

Artificial intelligence is talk of day and time. Every human facet need it. There are several techniques of AI that are in use these days like Machine leaning, Deep learning etc. The techniques of AI prepare a beholder in a pre-empt manner. The future belongs to Artificial Intelligence. It may benefit the society in general.

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