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Our Future: Artificial Intelligence, Expert Systems & Robots

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Abstract-- Artificial Intelligence is the concept of computer science which deals with building computers that exhibits the intelligent behaviour like us. In other words it concern with making intelligent machines which having ability of learning something, problem solving and understanding of language. These machines are called intelligent agent. This all can be done with the help of expert system. The paper briefs about what AI exactly means, why we need it, its application, future phases, advantages and some of disadvantages. This technology is user-friendly, smarter, and sensitive. Also makes our work easier. We use it in making of robots and robots are used in various fields for various purposes. This technology is answerable of some critical questions about human existence by understanding the nature of intelligence, but this all happen scientifically and technically by affecting many aspects of society and culture.

Keywords: Intelligent Agents, Expert System, Robots, Back propagation

I. INTRODUCTION

Artificial intelligence which is combination of two words one is artificial which means "manmade things which similar to natural things" and second is intelligence which means ability to react, thought and perform action. So

AI is conceptin which manmade machines havingintelligence power like us. Although term AI is introduced by Jhonmccarthy in 1956 and he defined it as developing computer programs(expert system) to solve complex problem by application of processes that are analogous to human reasoning processes.

Expert system (ES) are computer programs that are derived from a branch of computer science research called Artificial Intelligence (AI). In other word we say that "A machine which stimulates action, generate information, thought and act through present environment". AI's scientific objective is to understand intelligence by building computer programs that show intelligent behaviour. It is concerned with the concepts and methods of symbolic inference, or reasoning, by a computer, and how the knowledge used to make those inferences will be represented inside the machine.

II. WHY WE NEED AI?

Artificial Intelligence challenges to build intelligent objects aswell as understand them. AI discourses one of the ultimatepuzzles: How is it possible for a slow, little brain, whetherbiological or electronic, to distinguish, understand and manipulate a world far larger and more complicated thanitself? How do we go about making something with thoseproperties? These are hard questions but AI has solid confirmation that the quest is possible. AI presently encompasses a huge diversity of subfields, from generalpurposeareas such as perception and logical reasoning, too such as specific tasks such as playing chess, providingmathematic theorems, writing poetry, and diagnosisdiseases. AI is truly a universal field.

III. WHAT ARE INTELLIGENT AGENTS?

In AI an intelligent agent isa self-directedobject which detects and act upon an environment and leads it activity towards attaining goal.Intelligent agent may alsodescribed schematically as an abstract functional system similar to a computer program. For this reason, intelligent agents are sometimes called abstract intelligent agents (AIA).

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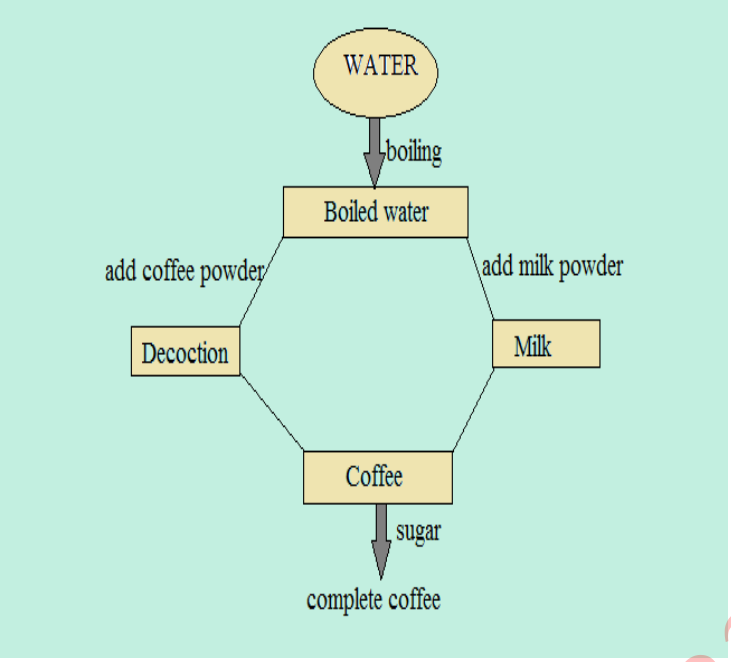

Fig 1: State Space Representation

IV. HOW PROBLEM TACKLE BY AI?

AI is a program which deals the daily life problem on a large scale. They have to take decision like human. There are certain method for it. Let's suppose there are 35^{100} possible position in game of chess and it is not possible to manage without AI.AI programs manipulate symbolic information to a large extent, in contrast to conventional program, which deals with numeric processing.

Before solving a problem, it is properly managed and arranged in AI. That is called Problem Representation of AI. The representation is used to simplify the problem.AI represent problem in two ways:

- STATE SPACE REPRESENTATION

In this type of representation, problem is divided into steps of sub problem called state. Suppose you are asked to make coffee. First of all you check tha availability of required ingredient like coffee powder, kettle, milk etc.

- Boil the water
- Add coffee to make decocted
- Add milk powder
- Mix both of them
- Add required amount of sugar

State space representation study every step of problem in a proper manner, so that the problem get easily understand and solved.

- PROBLEM REDUCTION

This method is all about decomposition of complex problem in sub problem and solving them by AND and OR operation. The sub problem is the all possible ways which required for solving problem.Let's suppose if you at place where an accident take place then there are some sub parts which are must for that use AND and those sub problem which having another option are use with OR.

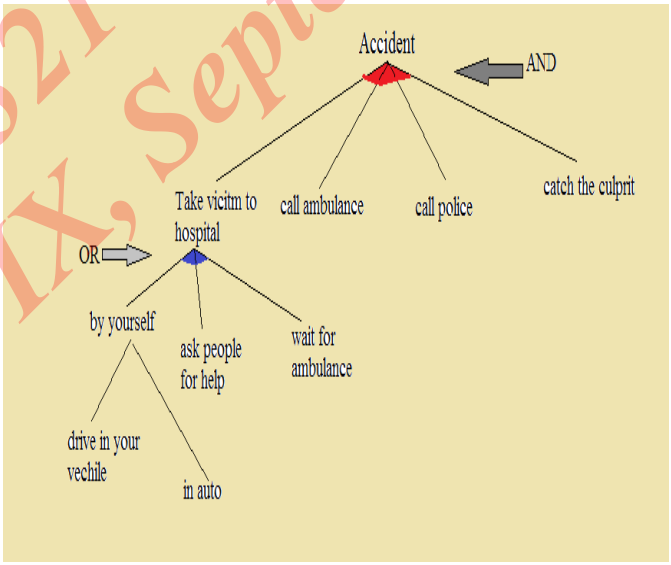

Fig 2: Problem Reduction

V. APPLICATION

AI has application in every field of human enterprise in the form of expert system and robots. Although we divided applications on the basis of field:

- INDUSTRIAL USES

Robots are used for lifting heavy goods. We have to develop an expert system whichbehave like labour which adjust in industrial environment.

- COMPUTER VISION

At present there are only limited ways of representing three-dimensional information directly, and they are not as good as what humans evidently use. The world is calm of three-dimensional objects, but the inputs to the human eye and computers' TV cameras are two dimensional. Some useful programs can work solely in two dimensions, but full computer vision needs partial three-dimensional information that is not just a set of two dimensional views.

- FINANCE SECTOR

Banks use intelligent software applications to screen and analyse financial data. Software programs that can predict trends in the stock market have been created which have been known to beat humans in predictive power.

VI. ADVANTAGES

AI having large number of advantages, few of them are following:

- Reduce human errors.
- Minimized time and resources.
- Provide answers for decisions, processes and tasks that are repetitive.
- Store huge amounts of information.
- Minimize employee training costs.
- The decision making process is Centralize.
- Make things more efficient by reducing the time needed to solve problems.
- Combine various human expert intelligences.
- Machines can be used to take on complex and stressful work that would be otherwise performed by humans.
- Use of robotics to discover unexplored landscape, outer space and also be useful in our home activities.
- Less danger, injury and stress to humans as the work is done by an artificially intelligent machine.

VII. DISADVANTAGES of AI

This is great discovery but, there are also disadvantages to artificial intelligence, such as:

- Absence of common sense used in making decisions.
- Increase in in employment.
- Lack of creative responses that human experts are capable of.
- Not capable of explaining the logic and reasoning behind a decision.
- It is not easy to automate complex processes.
- Not able to recognize when there is no answer.
- Human capabilities can be replaced using a machine

CONCLUSION

AI is a great discovery. Robotics and expert systems are major branches of that. One is to use the power of computers to augment human thinking, just as we use motors to augment human or horse power. The other is to use a computer's artificial intelligence to understand how humans think it also reduces our efforts.

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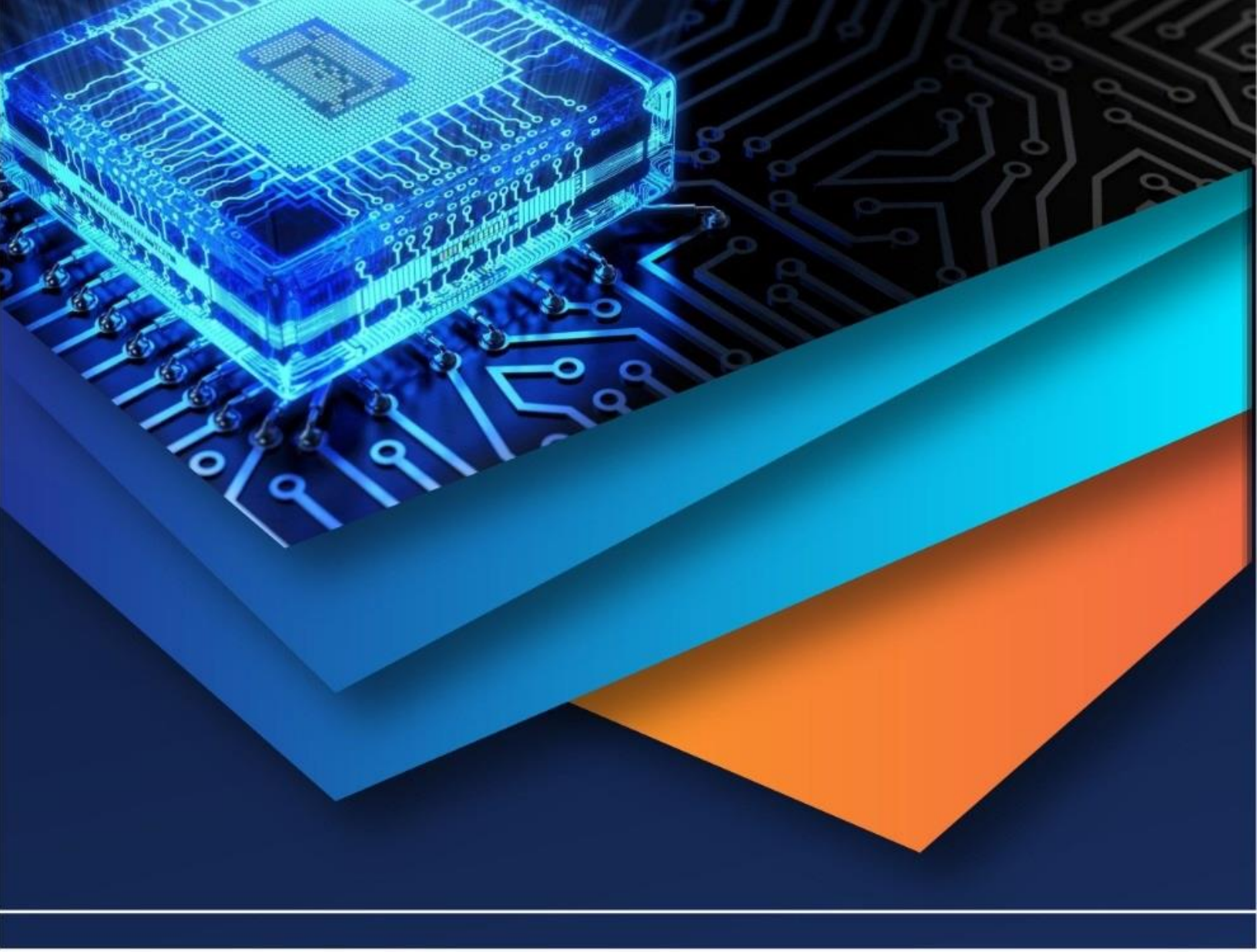

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