An Overview of Artificial Intelligence

Arockia Panimalar.S[1], Priyadharshan.R[2], Balaji.K[3], Visweshwaran.G[4]

[1]Assistant Professor, Department of BCA & M.Sc SS, Sri Krishna Arts and Science College, Tamilnadu

[2,3,4]III BCA 'A', Department of BCA & M.Sc SS, Sri Krishna Arts and Science College, Tamilnadu

---***---

Abstract - *In this paper we outline our approach to building the additional creatures of intelligence. The main fundamental thing is not to be independent information processing units that must interface each other through the representation. Instead of being independent all interface directly to the world through action rather than interfacing each other. The idea of central and near an edge systems evaporate everything is both same central and peripheral. Based on these principles we have built a great series of mobile robots that can able to operate without any supervision as creatures in standard office environments.*

Key Words: *AI, Deduction, Reasoning, Problem Solving, Robotics, Learning, Planning, Natural Language.*

1. INTRODUCTION

Artificial Intelligence (AI) is the intelligence produced by machines or software. It is also denoted as academic field of study that can be related to the study for how to create computers and computer software that are capable of intelligence characters. All the researchers in the AI are defined this field of study and designing the agents by referring textbooks in which there is a system that become aware through its environment and also take actions about its success. JOHN MARTHY, who coined the term in 1955, defines it as the science and engineering of making intelligent machines.

AI research is more specialized and technical and it is subdivided into subfields that may cause maximum fail to communicate with each other. There are some divisions occur by social and cultural factors by the types in subfields that have been grown up to the particular institutions and the researchers are individually worked. It is also divided by many technical issues. Some subfields are focused in the particular problems for a solution. Others are focused in one of the many possible sides or use of certain tool towards that application.

The main goal of AI research includes reasoning, knowledge, planning, learning, natural languages like communication, basic component in the formation of a concept and also having the ability to move objects. Now-a-days, intelligence is still a long-term goal, it approaches statistical methods and computational intelligence of AI. There are many number of tools used in AI including the search types and mathematical login methods.

The field is characterized by number of science and professors come together include of scientific types of languages as well as other specialized fields such as artificial study.

2. GOALS OF AI

The normal problem arises when creating intelligence that has been broken down into a number of specific small problems. These are consist of particular features in intelligent system to display and also described below have received more attention.

3. DEDUCTION, REASONING AND PROBLEM SOLVING

In early days AI researchers had developed algorithms in step by step process that are used by the humans when they solve puzzles. In olden days like 1980s and 1990s, AI research had also developed highly successful methods for dealing with incomplete information, employing concepts from probability and economics.

For difficult problems, most of these algorithms can require large computational resources – most experience of combinational explosion by the amount of memory or computer time required that related when the problem goes beyond a certain size. The searching for more efficient problem solving algorithms has a high priority in AI research.

Human beings solve most of their problems by using their judgments than the conscious like step b step deduction AI research was able to model.AI has made some progress of not genuine this kind of sub-symbolic problem solving agent ideas single out as importance of sensor motor skills leads to higher reasoning and also neural net research attempts to the structures inside the brain that gives rise to this skills. Statistical approaches to AI of the probabilistic nature of the human ability to guess.

4. ROBOTICS IN AI

Robotics is a field in artificial intelligence that is used to create a study of intelligent and efficient robots. Robots are the agents belonging to artificial in real world environment.

Robots are aimed to control the objects through the sense, picking, moving, modifying the physical properties of object,

destroy it or to have an effect by that means freezing manpower from doing insistent functions without getting bored diverted or washed out.

The robots have mechanical construction and electrical components where the mechanical construction is used to design the form to execute some particular task and electrical components may have a power and to control the machinery. It may also contain some level of programming to find out the robots action.

Locomotion is the process that makes the robots able to moving in its environment. There are some types legged, wheeled, combination of legged and wheeled locomotion and tracked slip/skid.

4.1 Legged Locomotion

Legged locomotion contains more power to walk, trot, hop, and climb up or down. This kind of movement requires more number of motors for suited in any kind of land surfaces. It has little difficult in execute because of stability problems. It may also come with a number of legs but it requires coordination. It can travel depend upon the number of its legs.

4.2 Wheeled Locomotion

Wheeled locomotion is easy to implement because of wheels it have a less stability and also it contains fewer number of motors to execute the movement. It is more efficient than legged locomotion. There are some varieties of wheels that may vary with the directions.

4.3 Slip/Skid Locomotion

In slip/skid locomotion contains tracks in there tank. The robot is indicated their moving directions using their tracks with the different speeds in the same or opposite directions. It may have more stability because of contact area of tracking.

Robots have some features like power supply, it powered by batteries, solar power and other power sources, Actuators that convert energy into movements, electric motors needed for rotational movement and sensors provide knowledge of real time environment .these are some features supports the robots to execute.

This is a technology of AI used for which the robots an see. It plays major role in the field of safety, security, health, access and entertainment. Computer vision can able to automatically extract, analyze and gives useful information from a single image or many images. This may also involves the development of algorithms for automatic vision.

5. KNOWLEDGE REPRESENTATION

Ontology represents knowledge as a set of concepts within a domain and the relationships between those concepts.

Knowledge representation and knowledge engineering are central to AI research. Many of the problem machines are expected to solve that will require range of knowledge about the world. Among them AI needs to represent the objects, properties, categories and relations between objects situations, events, states and time, causes and effects, knowledge and many other, less well researched domains. A representation of "what exists" is ontology: the set of objects, relations, concepts and so on that the machine knows about. The most general are called upper ontology, which attempt to provide a foundation for all other knowledge.

Among the most difficult problems in knowledge representations are

5.1 Default Reasoning and the Qualification Problem

Many of the things people know take the form of "working assumptions." For example, if a bird comes up in conversation, people typically picture an animal that is fist sized, sings, and flies. None of these things are true about all birds. John have a responsibility to represent, there tend to be a huge number of exceptions.

Almost nothing is simply true or false in the way that abstract logic requires. AI research has explored a number of solutions to this problem.

5.2 The Breadth of Common Sense Knowledge

The number of atomic facts that the average person knows is astronomical. Research projects that attempt to build a complete knowledge base of common sense knowledge (e.g CYC) require enormous amounts of laborious ontological engineering - they must be built, by hand, one complicated concept at a time. A major goal is computer have to understand the enough concept to be able to learn by reading from sources like the internet, and thus be able to add to its own ontology

5.3 Sub Symbolic Form of Common Sense Knowledge

Many things that the public know is not known by them in the form of solid proof and these things cannot be described correctly by them. . For example, a chess master will avoid a particular chess position because it's too risky or an art critic fake. There are some tendencies are represented in the brain without consciously and sub-symbolically. Knowledge like informs, supports that are provides a context for symbolic, conscious knowledge. Also like that frequent problems of

sub-related to reasoning arises it is hoped that situated AI, of computational intelligence also able to provide the ways to represent this kind of knowledge.

6. PLANNING

Intelligent agents must be able to set goals and achieve them. They need a way to visualize the future (they must have a representation of the state of the world and be able to make predictions about how their actions will change it) and be able to make choices that maximize the utility (or "value") of the available choices. In traditional way of planning the problems, the agent assumes that the world is acting and there may be several troubles of action. However, if the agent is not only the actor, it must periodically ascertain, it matches the world by its predictions and also it must change its plan as this becomes necessary. It requires the agent to reason under uncertainty.

Multi-agent planning uses the cooperation and competition of many agents to achieve a given goal. Emergent behavior such as this is used by evolutionary algorithms and swarm intelligence.

7. LEARNING

Machine language is the study of computer algorithms through experiences that can improve automatically. It has been central to AI research since field's inception

Unsupervised learning is the ability to find patterns in a stream of input. Supervised learning includes both classification and numerical regression. Classification is used to determine what category something belongs in, after seeing a number of examples of things from several categories. Regression is the attempt to produce a function that describes the relationship between inputs and outputs and predicts how the outputs should change as the inputs change. In reinforcement learning the agent is rewarded for good responses and punished for bad ones. The agent uses this sequence of rewards and punishments to form a strategy for operating in its problem space. These three types of learning can be analyzed in terms of decision theory, using concepts like utility. The mathematical analysis of machine learning algorithms and their performance is a branch of theoretical computer science known as computational learning theory Within developmental robotics, developmental learning approaches were elaborated for lifelong cumulative acquisition of repertoires of novel skills by a robot, through autonomous self-exploration and social interaction with human teachers, and using guidance mechanisms such as active learning, maturation, motor synergies, and imitation.

8. NATURAL   LANGUAGE

A parse tree represents the syntactic structure of a sentence according to some formal grammar.

Natural language processing gives machines the ability to read and understand the languages that humans speak. A sufficiently powerful natural language processing system would enable natural language user interfaces and the acquisition of knowledge directly from human-written sources, such as newswire texts. Some straightforward applications of natural language processing include information retrieval (or text mining), question answering and machine translation.

A common method of processing and extracting meaning from natural language is through semantic indexing. Increases in processing speeds and the drop in the cost of data storage makes indexing large volumes of abstractions of the user's input much more efficient.

9. CONCLUSION

AI is the centre of a new enterprise to build computational models of intelligence. The main assumptions in intelligence are that is represented like symbol structures and operations that can be programmed in a digital computer. So there are many debates arising due to that appropriate computer that won't be mind. But AI researchers don't need to wait for the conclusion to that debate and also for the hypothetical computer model of all human intelligence. Aspects of intelligent behaviour, like solving problem, making inferences, learning and understanding language. It have already coded as computer programs and also very limited domains like identifying diseases of soybean plants. It is a great challenge of AI is to find the ways of people's knowledge, experience and their every activity like holding a wide-ranging conversation. Conventional digital computers may capable of running that kind of programs. We may want to develop some new machines that can support the complexity of human thoughts.

10. REFERENCES

[1] Russel, Stuart J., and Peter Norvig "Artificial Intelligence: A Modern Approach"; Englewood Cliffs, NJ: Prentice Hall, 1994.

[2] Mueller, Robert A., and Rex L. Page. Symbolic Computing with LISP and Prolog. New York: Wiley and Sons, 1988.

[3] Russell, S. (2015); "Will They Make Us Better People?"; (http://edge.org/response-detail 57)

[4] Bostrom, N. (2014). "Super Intelligence: Paths, Dangers, Strategies", Oxford University Press.