

A SURVEY ON ARTIFICIAL INTELLIGENCE

Prashant Vikhe¹

¹ Assist. Prof., Department Of Computer Engineering, Maharashtra, India

ABSTRACT

In this paper we are going to introduce about the basic knowledge of artificial intelligence like meaning of AI, factors of AI, basic areas where AI is used, basic algorithm related to artificial intelligence and also discuss about some application of artificial intelligence like Neural Network, Induction algorithm and Genetic algorithm. Constructing the machines like human that can behave like human and perform activities like human is nothing but artificial intelligence.

Now a days different companies and industries refers artificial machines instead of human workers that machines can do maximum work than human and there is one time cost of that machines. The doctors are now exploring the use of many things from IBM's Watson supercomputer, to better take care of their patients.

Keyword: - Artificial Intelligence, Brain tumor images, Diagnosis techniques, Genetics Algorithm, Induction Algorithm, Neural network

1. INTRODUCTION

Artificial Intelligence is also called as AI and has the ability where computer act as a human being. There are various applications of AI which include software simulation and the robotics. Most commonly the artificial intelligence is used in the video games where the computer acts as another player [2]. By the software or machines the artificial intelligence is exhibited. The artificial intelligence is the branch of the computer science. The term of the artificial intelligence as computer act as human was done at Massachusetts Institute of Technology [7].

The problem of artificial intelligence are including the programming of computers for different classes as - Knowledge-The knowledge is main part of artificial intelligence. The machine can act and react such as the humans if they are having sufficient information about the world. Reasoning and Problem solving-The Reasoning and Problem solving is quite difficult approach. Learning-Learning without information should have ability to determine pattern in sequence of inputs. But learning with information includes classification and regression. Perception -It use the input to reduce the aspects of world. The computer vision is analyzing the inputs which are visualized. Planning-Ability to move objects robotics is field related with AI. It requires the intelligence of handling the task of motion and mapping as well as manipulation and the navigation of the objects.

2. MEANING OF ARTIFICIAL INTELLIGENCE

Combination of artificial and intelligence is nothing but artificial intelligence. Which is not real and natural is the artificial and ability to reason, to give new thoughts, to understand and learn intelligence is the intelligence. The area of computer science that mainly focus on the developing such kind of intelligent system that work and provide action same like human beings is called as Artificial intelligence.

It is combination of number of activities which involved for designing the artificial in computers that are like- construction and defining the difficulties in the problem. The intelligence is nothing but the system that adapts itself according to any environment or any particular situations. So it is also work into two different ways first is complex problem solved by the machine and second is similar to human beings.

3. LITERATURE SURVEY

As per the record of the addescence of AI in medicine, 5 April 1993[1] there is information about the intelligent data analysis in medicine and pharmacology. By "E.H.Shortliffe" [1] the gap between data generation and

data comprehension is widening in all fields of human activity. In medical and pharmacology, covering this gap is particularly difficult so the medicine decisions making essential to support by arguments depend on basic medical knowledge.

At the beginning of Artificial Intelligence every aspect of learning can in principle be so precisely expanded that a machine can be made to stimulate it. This idea has moved from this vision to promises for common human level Artificial Intelligence. Now Artificial Intelligence has now become a very easy guiding idea for current AI Research that focusing on special scientific and engineering difficulties and sustains distance to the cognitive science.

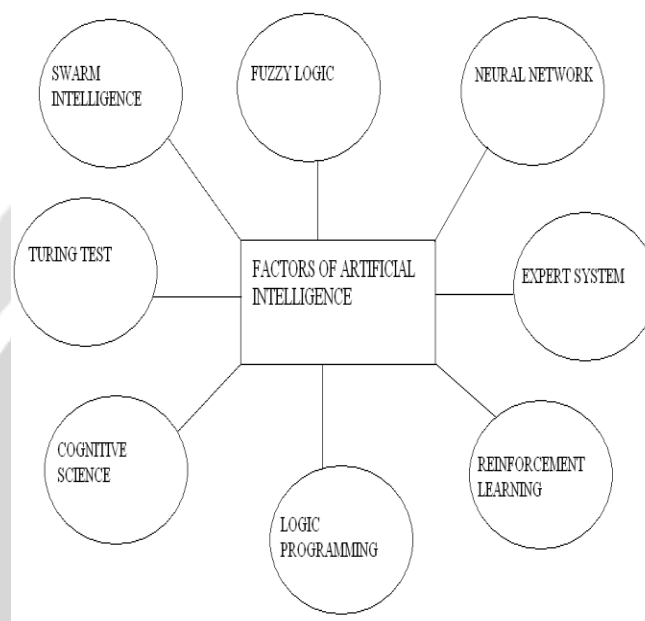


Figure 1:- Basic Terms Of Artificial Intelligence

When humans could generate artificial general intelligent at human capability then how the super intelligence might come then this creation could generate more intelligence. For this we generate a growth beyond human ability and intelligence explosion.

As Hawking say that generating prosperity in Artificial intelligence research would be the largest incident in human past life. In Philosophy and concepts of artificial intelligence given by Thessaloniki in October 2011. "Artificial general Intelligence" and Effects of Artificial general Intelligence both has organized by Oxford in December 2012. Medical artificial intelligence is primarily concerned with the signification of AI programs that perform diagnosis and make therapy reference. Another medical applications depends on other programming system, such as clearly statistical and probabilistic methods, medical AI programs are depends on symbolic models of disease entities and their connection to patient factors and clinical revelation.

The steps which are highly required to ensure the high accuracy of the subsequent steps are nothing but Image pre-processing. The MR raw images normally consist of many artifacts like intensity in homogeneities, extra cranial tissues, etc. which reduces the whole accuracy. To reduce the effects of artifacts in the MR images few surveys are reported.

All the features which are extracted do not have high accuracy. The computational time period is increased and accuracy of output is reduced by the presence of insignificant features. Since both these parameters are highly essential. To remove the unwanted features methodology must be framed. Feature selection is nothing but the technique of selecting an optimal feature set. To enhance the quality of the output feature selection techniques are used. A comparative analysis is also done with the largest likelihood classifier. Because of genetic based optimization, the learning time has been minimized accordingly; it is suggested by the comparative analysis with the unoptimized model.

4. ARTIFICIAL INTELLIGENCE APPLICATION

4.1 Artificial Intelligence Techniques In Power System Stabilizer Design(PSS's)-

In electromechanical oscillations to add damping the PSS's is used. PSS's is used as a part of an excitation control system. The main function of PSS is creating electrical torques to the rotor. Because of producing torque that damp out power oscillators. Damping torque is nothing but generated excitation system. In PSS's to optimize the problem we use different techniques-(Artificial Neural Network, Fuzzy Logic, and ES etc.)

Artificial Neural Network in the ANN is use a multilayer feed forward network. Fuzzy Logic is used to identify the incorrectness and uncertainty which is present in engineering problem. Five generator power systems are used for the robustness. Index is used to design a normalized sum-squared deviation.

4.2 Artificial Intelligence in Network Intrusion Detection-

It is very important to use artificial intelligence in Intrusion Detection system to protect the communication networks and computers from intruders. For detecting the occurred events in network and for monitoring the signs of intrusions. Artificial Neural Network in Intrusion Detection system to find the relation of particular inputs and outputs or to identify the patterns in data ANN is used in IDS. The model which is interconnected collection of neuron and construct the action on the information. Fuzzy Inference System (FIS) in IDS used for the construction of intrusion detection system there are two machine learning paradigms.

4.3 Artificial Intelligence in Medical Area-

In Hospital Inpatient Care Artificial intelligence in medical field gives the symptoms and demographic information on the diagnosis over the patient condition. Artificial intelligence is also used for finding the tumors in images of medical. For Medical Image Classification the output of computerized analysis of medical images are used by CAD. MRI Brain Tumor analysis we get the most accuracy of classification and also we get the better rate of time consumption.

4.4 AI in Accounting Databases-

In the current working accounting databases system we face some wide difficulties as - We cannot get the decision makers which are needed to meet in accounting information. The AI focuses on numeric data because to handle the computerized database of accounting are not easy to understand by human. These systems analyze the data to study the accounting events which is captured by the system. In AI the knowledge is stored in natural languages.

4.5 Application of AI in the Computer Games-

We can say that the better use of computer technology is nothing but in games. In games there are three dimensional graphical games with complex large worlds. The AI takes the user input and the game to provide the better entertainment. If the game is without use of AI there nobody are showing interest to play that game. The game with AI it is not difficult to win the game. The AI uses four techniques as Path finding, Bayesian networks, that assist a computer game provide character path finding that are not played and decision making as well as learning.

5 ALGORITHM OF ARTIFICIAL INTELLIGENCE

5.1 AI system can be further two section-

Knowledge Representation Systems-

This Systems, Called As Expert Systems. In Particular Domain This Capturing and Encoding the Human Expert Knowledge.

Machine Learning Systems-

By Finding from Previously Unknown Patterns in Data This System Creates or include new type of Knowledge.

5.2 Techniques of machine learning-

5.2.1 Neural Network-

Neural Networks Are Include always Different Layers. This Layers Forming From Richly Connected Sets Of Neurons. Architecture Of Neural Networks Consists Of An Input Layer And Output Layer. Input Layer Provide

Data To The Network And Output Layer Produces The Resulting Output. It Also Include Hidden Layers, Which Help In Propagating.

Every intermediate level is hidden. Every Neuron In The Processing Do A Weighted Sum. This Process Known As Activation The Sum Of Inputs Outrun Some Previously Set Threshold Then The Neuron Chooses To Fire. This Process Is Known As Transfer. Input With Low Weight Give Lesser Activation To A Neuron Than Inputs With High Weights. Below Shown An Some Application Where The Neural Networks Business Problems, Including Optical Recognition of characters, Market Demographics Trend Assessment, Financial Forecasting And Various Robotics Applications.

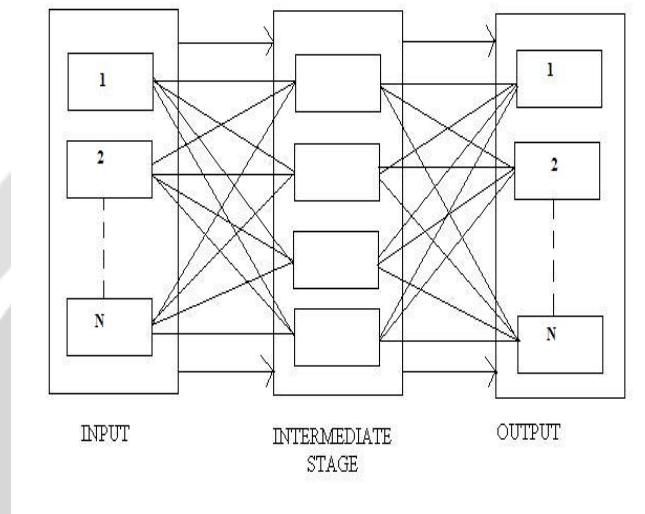


Figure 2:- Neural Network

5.2.2 Induction Algorithm-

This Is A Concept Of Machine Learning. This Algorithm Uses Inductive Reasoning Approaches. It Begins With A Set Of Observations And According To Observation Constructs Rules. Induction starts with a set of observations after that according to observations constructs rules.

The general patterns find by Inductive reasoning this patterns can detail explain the observations. The system is presented with a big set of data included number of input variables and one decision variable.

By recursively partitioning data sets depend on the variables that best differentiate among the data elements according to that system constructs a decision tree. That is, it attempts to partition the data so that every partition includes same value for a decision variable with data. By choosing the input variables which do the best job of partitioning the data set into same partitions.

5.2.3 Genetic Algorithm-

An Evolutionary Approach For Solve Optimization Problems Used Genetic Algorithms. Example Traveling Salesperson Problem. This algorithm is based on the concept of Darwin's theory of evolution. In the genetic algorithm approach Concepts such as reproduction, natural selection, mutation, chromosome, and gene are included. For Optimization Problems genetic algorithm very useful. This selects the possible solution for problem from very huge possible solution.

An important example of this is the traveling salesperson problem. If we consider salesman he must visit n means number of cities. The salesman's problem is to find the shortest path .the path which visits each of these n cities exactly once time, so that the salesman will visit all the cities and again back to the origin. Such type of problem included $(n - 1)$ factorial or $(n - 1)!$ Possible solutions. If we take five cities, then it means $4 \times 3 \times 2 \times 1 = 24$ possible solutions. For example the salespersons must visit to 100 cities. There are $99!$ Possible number of ways for this. For solving such problem brute strength method comparing all possible solutions that why it need lot of

time .the best approach for such type of problem is genetic algorithm. For the travelling salesperson problem, it includes chromosome means one possible path through the cities, and a gene is a city in a sequence on the chromosome. This algorithm first start with an initial population of routes and calculate each according to the total distance travelled in the route (fitness function). According to the fitness function selection is done means if fitness function is best then this chooses and those with the worst would be not selected. This includes city positions swapping among the chromosomes, resulting in child chromosomes. The process of how to select, crossover, and results of mutation in a new population for the next new generation. For finding an optimal solution. This procedure is repeated by many generations.

CONCLUSION

Now days, AI is emerging area of computer science, also AI is used in various fields like infusion detection system, robotics, in medical field. AI is well on its way to cover different challenges by creating new pattern detection techniques, algorithms, and novels that make use massive quantities of health data. Although the important roles of AI in care of patients to date have been in diagnosis of patient and image identification, the future holds great potential for Artificial Intelligence to improve many aspects of the patient care process. The rapid development of information technology had much positive impact and brought many conveniences into human lives. It caused issues that are hard to handle like cyber crimes.

REFERENCES

1. E.H.Shortliffe, "The addescence of AI in medicine", 5th April 1993.
2. Amanda Page, "Health Centre - 9 ways artificial intelligence affecting medical field", April 2012.
3. Yang Y, Huang S., "Novel statistical approach for segmentation of brain magnetic resonance imaging using an improved expectation maximization algorithm". Optical Applicator 2006.
4. Jiang C, Zhang X, Huang W, Meinel C., "Segmentation and quantification of brain tumor". IEEE International Conference on Virtual Environments, Human Computer Interfaces and Measurement Systems 2004.
5. D. Dasgupta, (2006) "Computational Intelligence in Cyber Security", IEEE International Conference on Computational Intelligence for Homeland Security and Personal Safety.
6. A. Patel, M. Taghavi, K. Bakhtiyari, J. Celestino Júnior, "Taxonomy and Proposed Architecture of Intrusion Detection and Prevention Systems for Cloud Computing" Springer Verlag Berlin Heidelberg.
7. B.G. Buchanan and E.H.Shortliffe, "Rule-Based Expert Systems: The Mycin Experiments of the Stanford Heuristic Programming Project", Addison-Wesley.