Artificial Intelligence: a survey

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Abstract

Intelligent machines can replace or changes human life in so many areas in the future. Artificial intelligence is the intelligence of machines which is related to humans brain, i.e computers behave like humans. Application area of artificial intelligence has a huge impact on our day to day life to solve any complex problem in many areas like science , business, engineering, medicines and the systems that can learn data i.e Machine learning , describes the ability of computers to learn more data. Artificial intelligence is used to design power system oscillations which is due to networks like communication networks. As the size and quality of power system consisting of generators, transmissions etc, increases the risk of faults. As the power system explores day by day because if Artificial intelligence, it seems to be more complex because of the technology, requirements. etc. This paper gives an overview of these technologies and describes Machine learning feature, algorithms etc.

Keywords: *Artificial Intelligence, Neural Networks, Power System Stabilizer, Expert System.*

1. Introduction

Media It is true that Artificial intelligence is playing an crucial role in the field of research areas like operation research, science any many other areas. The word intelligence gives the human the ability to reason and solve any kind of complex problem. Machines can replace human sources in many ways in the future. it is related to intelligent machines . Intelligent machines which is developed by human programmed with a software called Artificial intelligence. These are the machines / computers which behave like humans. Artificial intelligence makes the machines more smart and valuable with the help of artificial neurons. There are so many branches of artificial neurons. One of them is Machine learning that tells us about how the systems can learn data for example one of the feature of machine learning is that it sends or receives messages and tells us about the type of message and differentiate on the basis of messages. Detection of face, robots etc, are one of the application of machine learning. One of the test in machine language is TURING test which differentiates a human and a machine and tells us about which one is human and which one is machine. This test was designed to test whether a machine can reason, learn or not. Expert systems are computer programs which obtains the extra intelligence of human expert. Artificial neural networks are systems that convert a set of inputs into outputs. Fuzzy logic works as a human brain work because of artificial intelligence. This software is used everywhere as it grew up day by day the technologies, requirements etc also grows.

Since the computers were made,people have been always in search of ways to teach them for their own purposes, hoping that they would be able to find a new program to improve their experience[1-3]

2. Areas of Artificial intelligence

a)Problem solving:

Ability to solve any complex problem and to know about the new information which is needed

>   1.1 computing

>   1.2 solves a problem more quickly

>   1.3 program writing

b) Understanding of language:

The ability to learn,reason, and understand natural language and translate one language to other language.

>   2.1 Question answering

>   2.2 Translation of languages

>   2.3 speech understanding

c) Robots:

The ability of a machine to move from an area to another and manipulate objects . It is the combination of all of the above qualities.

3. Applications where Artificial intelligence are used

a) Artificial intelligence in Power system stabilizer (PSS):

Power system stabilizer is installed in the same frequency generator in the system that improves the small frequency power system by damping out signal oscillation in power system.

The stability problems be like:

i.   Rotor angle stability :   It consists of generator which remains constant after meeting some disturbances
ii.   Small disturbance stability : stability with small disturbance voltage , here the disturbances are very small

b) Artificial intelligence in medical areas:

Artificial intelligence is almost used in every part of medical sciences. In medical area fuzzy logic plays an important role, as it is used in diagnosing cancer and predict patients about the survival of breast cancer. Most used form of medical applications are Genetic Algorithms [5] . It is based on that it uses to obtain the outcome of ill patients. MRI is done through these evolutionary computation.

c) **Artificial intelligence in computer games:**

Artificial intelligence is the most important thing in any kind of computer game . Without artificial intelligence the computer game is so simple and easy to play .if there is no software like artificial intelligence in computer games then there is no fun at all to play. Artificial intelligence can be used to solve any kind of complex problem and makes the games more interesting. There are so many ways by which artificial intelligence contributes to computer games (Non-playing character) is one of the feature of computer games , path finding , learning, make any decision etc are examined. There are so many ways by which Artificial intelligence is contributed to computer games.Most probably are unit movement , perception , allocation , target selection and many more like Animation and audio effects. [7]

c) Artificial intelligence in network intrusion detection:

It uses various AI techniques for protecting various communication networks from thrusts. It is the process of detecting the intrusion signs .Artificial neural network is used in INTRUSION DETECTION SYSTEMS (IDS) to model such a complex connection between the inputs and outputs . In this system a neuron works as it calculate the sum by multiplying input by weight and to put threshold and then the result is transferred to neurons. In generalization [4]

$$Y_i = f\left(\sum W_{ik} X_k + \mu_i\right),$$

where W_{ik} the weights , μ_i is threshold, X_k is the input, Y_i the output of neurons and $f(*)$ is transfer function.

As the power system goes on increasing rate it becomes more complex because of advancements, requirements etc. There are many types of power plants known for electricity generation.

a) Thermal power plant
b) Hydro power plant
c) Nuclear power plant

We may expect that mobile sensing plays an important role in detecting the presence of signals in power systems. AI is exhibited by software e.g, computer programs .Expert systems are computer programs which have the ability and skill in any particular field , the way of writing codes for these programs is so simple than estimating the value of experiment used in distribution , generation and transmission etc . Approximate values are mostly used in the data of power systems, fuzzy logic is the best method to derive the stable and exact output

4. Artificial intelligence in Machine learning (algorithm)

Decision tree algorithm is the best method to understand the learning methods and decision making [8-10]. This method is based on discrete values instead of continuous data. Therefore, this method is the method for estimating the function using discrete values. So, the decision tree is used for estimating function in tree learning, e.g Titanic data set to check whether a passenger will survive or not?Below model consists of three features i.e age, sex and the number of spouses and children along (sibsp). Decision tree describes samples of trees from roots to leaves. In this decision tree, each node classifies the features of sample and outer area

(outside the node) specifies the amount of the feature [11-12]. The figure given below is an example of such kind of tree.
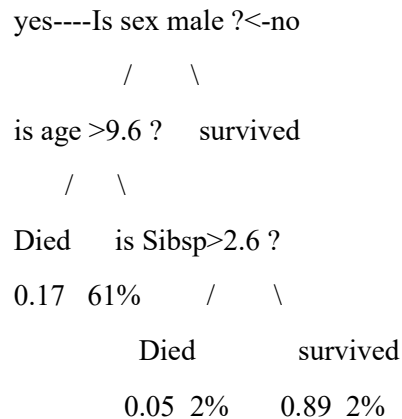
```
        yes----Is sex male ?<-no
                 /      \
is age >9.6 ?      survived
        /     \
Died      is Sibsp>2.6 ?
0.17  61%      /      \
           Died         survived
          0.05  2%     0.89  2%
```

Figure 1. Decision tree

However many learning methods are described by the use of decision trees .objective function have the values in the form of discrete output . Decision tree learning have so many practical problems like it can be used in diagnosis of diseases , in delayed payback of loan risk , detection of experiment failure etc, all are due to Artificial intelligence.

5. Conclusion

Artificial intelligence will continuously play ancrucial role in day to day life. Artificial intelligence is used everywhere as in business, medical sciences, robots, engineering etc. So, the technology raises as artificial intelligence grews up. This paper is related to the concepts of Artificial intelligence and describes the techniques like features of computer games and explains PSS (power system stabilizer) etc. Electricity is one of the basic need of everyone, in every society. Artificial intelligence is the crucial part of it.

Who may know that the model you are creating gives perfect outcome in the future, it is because of artificial intelligence. This paper also describes the machine learning algorithms, which is the combination of two stages i.e, construction and optimization of parameters. So, we further conclude the paper by promising in a profitable result which is obtained from these techniques.

Acknowledgments

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