

BCM SCHOOL, BASANT AVENUE, DUGRI ROAD, LUDHIANA
ASSIGNMENT SOLUTIONS
ARTIFICIAL INTELLIGENCE (417)
NEURAL NETWORKS

Q1:-What are the Applications of neural networks?

Some of the applications of neural networks are :

- Speech recognition
- Character recognition
- Spell checking

Speech recognition

Speech recognition has many applications such as virtual assistance , hands-free computing and video games ,etc neural networks is used widely in this areas .

Character recognition

In this Application of AI is also a use of neural networks in character recognition, where this technology is used to recognize a character with the help of this application of AI.

Spell Checking

Personalized Spell Checking using Neural Networks a new system for detecting misspelled words was proposed. this system corrects the mistakes made by typist.

Q2:-How Neural Networks(NN) learn ?

There are three ways neural networks work.

1. **Supervised Learning** is where a computer algorithm is trained on input data that has been labeled for a particular output .
2. **Unsupervised Learning** is in which a system learn through data-sets created by its own. In unsupervised is not labeled.
3. **Reinforcement Learning** Learning through feed-back or trial and error method is called Reinforcement learning.

Q3:- What is the difference between Neural networks and Human Nervous system?

- As we know that computers have a **complex structure** and they also can complete any complex tasks in a **short time**.
- Humans cant do any complex tasks like computers or AI .

- Computers are very fast and intelligent than humans but there are some easy tasks that computers cannot do it. **Example:** computers cannot babysit a child.

Q4:- State True and False for the statements

1. The neuron is the basic working unit of the brain. [True]

2. A “neuron” in an artificial neural network is a mathematical function that collects and classifies information according to a specific architecture. [True]

3. A perceptron is a single-layer neural network. It consists of main parts, including input values, weights and bias, net sum, and an activation function. [True]

4. In the artificial neural network, two propagation functions work in a Neural Network: forward propagation that delivers the “error value” and backward propagation that delivers the “predicted” value.” [False]

5. In a human neuron, the axon is a long, cable-like projection of the cell carries the electrochemical message (nerve impulse) along the length of the cell. [True]

6. In a human neuron, dendrites sums all the incoming signals to generate input. [False]

7. In a human neuron, somas are small, branchlike projections of the cell make connections to other cells. [False]

8. In Supervised learning, you train the machine using data which is well “labelled.” [True]

9. Unsupervised learning takes place when a machine can analyse data patterns previously unspecified by humans. [True]

10. Reinforcement learning is an approach that helps a machine learn by rewarding desirable actions and penalising undesirable ones. [True]

1. _____ Networks are loosely modelled after how neurons in the human brain behave. [**Neural**]

2. A Neural Network is divided into multiple _____. [**layers**]

3. In a neural network each layer is further divided into several blocks called _____ [**nodes**]

4. The first layer of a Neural Network is known as the _____ layer. [**input**]

5. _____ layers are the layers in which the whole processing occurs. [**Hidden**]

6. Single-layer Neural Network is called a _____. [**Perceptron**]

7. _____ function decides, whether a neuron should be activated or not by calculating weighted sum and further adding bias to it. [**Activation**]

8. Neural networks which consist of more than three layers of neurons (including the input and output layer) are called _____ Networks. [**Deep**]

9. _____ propagation that delivers the “predicted value”. [**Forward**]

10. Deep learning uses _____ with multiple cores rather than central processing units (CPUs). **[GPUs]**