***Case Study on Artificial Neural Networks***

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1. **Introduction**

An artificial intelligence technique known as a neural network teaches computers to process data in a manner like how the human brain does. Deep learning is a particular kind of machine learning technique that makes use of interconnected neurons or nodes in a layered structure to mimic the human brain.

**There could be three layers in an Artificial neural network:**

**Input layer:** The raw information that can feed into the network is represented by the activity of the input units.

**Hidden layer:** To ascertain each hidden unit's activity. the activities of the input units and the weights on the links between the input and the hidden units. There could be one or many hidden layers.

**Output layer:** The activity of the hidden units and their weights relative to the output units determine how the output units behave.

1. **Different types of Artificial Neural Networks**
2. **Recurrent Neural Network:** A typical type of artificial neural network used in speech recognition and natural language processing is the recurrent neural network. Recurrent neural networks identify patterns in data and utilize them to anticipate the following most likely scenario.
3. **Convolutional Neural Network:** A deep learning network architecture that learns directly from data is a convolutional neural network. CNNs are very helpful for recognizing objects, classes, and categories in photos by looking for patterns in the images. They can be quite useful for categorizing signal, time-series, and audio data.
4. **Kohonen Self Organizing Neural Network:** Kohonen proposed the idea of a self-organizing map (SOM) in the first place. Since it is an unsupervised neural network that is trained using unsupervised learning methods to create a low-dimensional, discretized representation from the input.
5. **Applications of Neural Networks:**
6. Facial recognition on mobile devices. Now a days mobile smartphones recognize the age of the person using neural networks.
7. Neural networks are trained to understand the patterns and detect the possibility of rainfall using Forecasting.
8. Used in music composition by understanding the patterns of music.
9. **Conclusion:**

To digitally imitate the human brain, artificial neural networks are developed. These networks can be utilized to create the next generation of computers and are now used for complicated studies in a variety of sectors, from engineering to medical. Already, artificial neural networks play a significant role in the gaming sector.

1. **References**

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