**ARTIFICIAL NEURAL NETWORK TO IMPLEMENT AN OR GATE.**

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This is an implementation of an artificial neural network to implement an OR GATE using two inputs X1 and X2, having different combinations of 0’s and 1’s. The perceptron uses two layers with two hidden nodes Xh1 and Xh2. The random starting weights W1 = -0.1 and W2 = 0.1; for the input nodes and Wh1 = -0.5 and Wh2 = 0.2.

The network uses the backpropagation algorithm with the sigmoid activation function to produce an output of either 0 or 1, depending on the combination of inputs and the datadset values.

The learning rate is 0.1 with 10,000 iterations during training involved. The code is implemented in Python 3.6, importing, string, math and random libraries. The dataset is as follows with the expected output:

|  |  |  |
| --- | --- | --- |
| X1 | X2 | Expected Output |
| 0 | 0 | 0 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 1 |

THE ARTIFICIAL NEURAL NETWORK CONFIGURATION IS AS SHOWN BELOW:

X1 Xh1 sigmoid fn net = 1/1+ X2 Xh2

y

THE OUTPUT OF THE ABOVE NEURAL NETWORK IS AS SHOWN BELOW THE CODE SNIPPET