EXP NO : 04
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# BACKPROPAGATION ALGORITHM

**Aim:**

To build an artificial neural network by implementing the backpropagation algorithm and test the same using appropriate datasets

**Algorithm:**

1. Initialize the no. of input neurons, hidden-neurons and output neurons.
2. Initialize the weights and biases associated with an artificial neuron randomly using np.random.uniform()
3. Calculate the net input of every neuron

   Net input = sum of the product of each weight value & corresponding input value + bias.
4. Calculate the net output of every hidden neuron using sigmoid function

   $$\text{sigmoid}(x) = \frac{1}{1+e^{-x}}$$
5. Calculate errors -

   $$Error_x = \frac{1}{2}(\text{target o/p}_x - \text{generated o/p}_x)^2$$

   and calculate total error

   $$Error(total) = E_1 + E_2 + \dots E_n$$
6. If $\Delta$ error is high, traverse back the network and update the weight values.
7. Repeat steps 1-6 after updating the weights till the error difference is minimum.