1. Use artificial neural network to represent the following Boolean function: .

Solution： Mapping relationships：(0, 0)🡪0, (0, 1)🡪0, (1, 0)🡪1, (1, 1)🡪0, Two-layer perceptrons (with threshold activation function) can implement the function:

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*A*

*B*

*w1=1*

*w2=-2*

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1. How to recognize the handwritten digits by using BP network?

Solution: refer to the corresponding example in the course PPT describing neural network.

3. How to solve the color clustering problem shown in the lecture “artificial neural network” by using SOFM network?

Solution：

1. set the input level for the color vectors and two-dimensional output layer neuronsarranged in size according to the color quantization settings.

2. random sets the input layer to output layer weights.

3. random sampling to obtain current color data from the input sample collection.

4. connection weights according to the input vector and the Euclidean distancemeasure each neuron input color similarity of winning determines the input neurons.

5. the winning neuron and the neighboring neuron weights according to adjust tomake it closer to the input vector.

6. updating the neighborhood size.

7. repeat 2-6 until no significant weight changes of neurons.

8. the neighboring neurons represent each other in SOFM clustering together colors

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