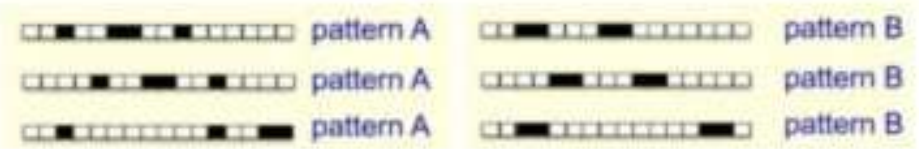
Question 1



Consider the above classification of patterns . The training set consists of patterns A and B in all possible translations. Consider a neural network that consists of a 1D convolution layer with a linear activation function, followed by a linear layer with a logistic output. Can such an architecture perfectly classify all of the training examples? Why or why not?

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Question 2

Write the core difference of RNN ,Peephole-LSTM and GRU? What is the basic difference of LSTM forget gate and GRU's reset gate. Show the matrix workflow of the LSTM.

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Question 3

If you have a 64*64 binary image at input in a CNN network with 7 filters(size of 5*5) stride of 2 and no padding of 0 and apply 3 sets of Conv and max pool(size of 2*2) what will be the number of nodes in the flattening layer? Show each steps after conv and max pool layers happen.

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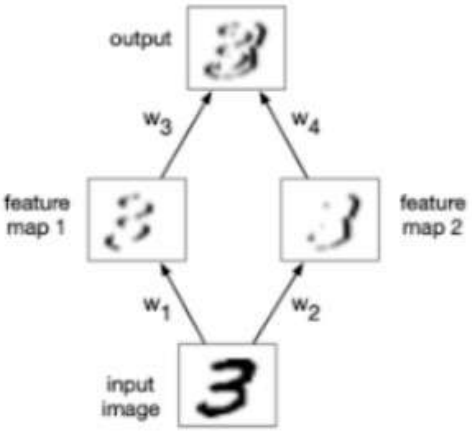
Question 4

Explain the shared concept of CNN? You will design a convolutional network to detect vertical boundaries in an image. The architecture of the network is as shown below.



The ReLU activation function is applied to the first convolution layer. The output layer uses the linear activation function. Design two convolution filters for the rst layer, of size 3 x 3. One of them should detect dark/light boundaries, and the other should detect light/dark boundaries.

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