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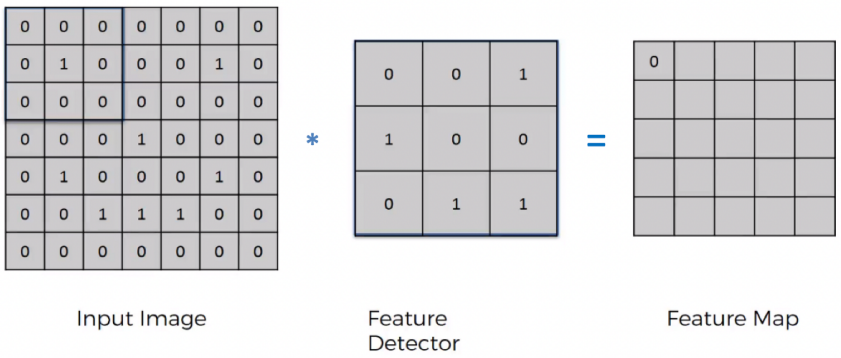
In-Class Problem

1. Assume the inputs to an RBM node are 1, 2, and 3; the weight is 6; and the bias is 3. What is the output of the node?
2. If the SoftMax output of a DBN is: [0.6, 0.2, 0.1, 0.1] and the indices of the array are 0-3, which index is identifying the most likely class of the input to the DBN?
3. Calculate the value for the CNN cell outlined in blue below.
4. If [[2,3],[2,1]] represents a 2 X 2 segment of a CNN feature map.
   a) What is the max pooling value of segment?
   b) What is the average pooling value of the segment?
5. What is the ReLU function of each of the values -3, 0, and 3?



1. What is the output of the node?

   Output = (1+2+3) * 6 + 3 = 39

2. Which index is identifying the most likely class of the input to the DBN?

   0

3. Calculate the value for CNN cell outlined in blue below

0*0 + 0*0 + 1*0 + 1*1 + 0*0 + 0*0 + 0*0 + 1*0 + 1*0 = 1

4. [[2,3], [2, 1]] represents 2 x 2 segment of CNN feature map
    a. What is max pooling value?

        Max ([2, 3, 2, 1]) = 3

    b. What is avg pooling value?

        Avg ([2, 3, 2, 1]) = 8 / 4 = 2

5. What is ReLU function of the value -3, 0, 3?

    F(-3) = max (0, -3) = 0

    F(0) = max (0, 0) = 0

    F(3) = max (0, 3) = 3