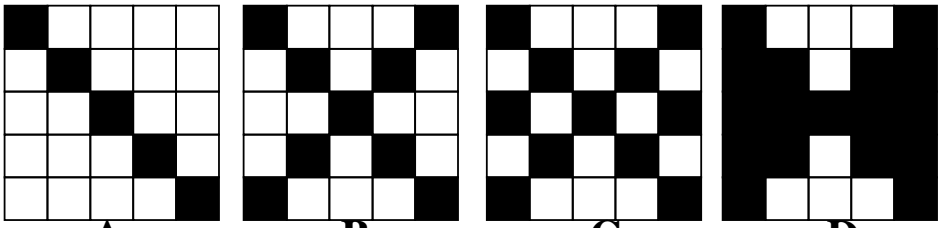
FIT5186 Intelligent Systems

Week 8 Tutorial

Perform the steps of the ART1 algorithm for the following input patterns with a vigilance factor of $\rho = 0.7$. The elements of the training vectors are 1 and 0 for pixels of black and white, respectively.



Recall, the vigilance test is:

$$\frac{1}{||\mathbf{x}||}\sum_{i=1}^{N} v_{ij}x_i > \rho$$

and that the equations for weight adaptations are:

$$w_{ij}(t+1) = \frac{v_{ij}(t)x_i}{0.5 + \sum_{i=1}^{N} v_{ij}(t)x_i}$$

$$v_{ij}(t+1) = v_{ij}(t)x_i$$

How many categories are the patterns classified with $\rho = 0.7$?

How does this change if the vigilance factor is reduced to $\rho = 0.3$?