EE-626 (Biomedical Signal Processing)

Assignment-6

1. Generate a random sequence of states and observations of length, L=100 using Python for HMM model. The state transition matrix, the observation matrix and the initial state probability vector for this model are given as

$$A = \begin{pmatrix} 0.75 & 0.25 \\ 0.20 & 0.80 \end{pmatrix}$$

$$B = \begin{pmatrix} \frac{1}{6} & \frac{1}{6} & \frac{1}{6} & \frac{1}{6} & \frac{1}{6} & \frac{1}{6} \\ \\ \frac{5}{12} & \frac{2}{12} & \frac{1}{12} & \frac{1}{12} & \frac{2}{12} & \frac{1}{12} \end{pmatrix}$$

$$pi = \begin{bmatrix} 0.45 & 0.55 \end{bmatrix}$$

Implement Viterbi algorithm to compute the most likely state sequence for the random observation sequence.