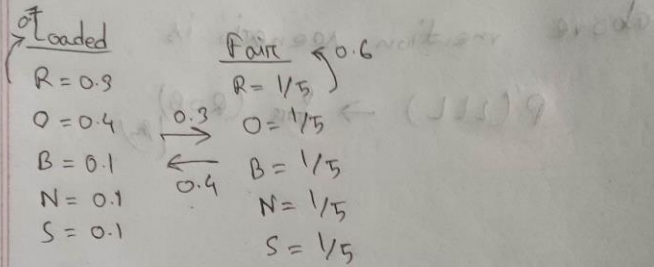


Summer-19

"O" "R" "B" "N" "S" probability



Hidden Markov Model scenario:

a)  $P(LLL) = 0.5 \times 0.3 \times 0.7 \times 0.4 \times 0.7 \times 0.1$

$ROB = 0.00294$

b) Now viterbi Algorithm:

	R	O	B
Fair	$0.5 \times 1/5 = 0.1$	$1/5 \times \max(0.1 \times 0.0, 0.1 \times 0.3) = 0.012$	$1/5 \times \max(0.01 \times 0.65, 0.042 \times 0.3) = 0.00252$
Loaded	$0.5 \times 0.3 = 0.15$	$0.4 \times \max(0.1 \times 0.4, 0.15 \times 0.7) = 0.042$	$0.1 \times \max(0.012 \times 0.4, 0.04 \times 0.7) = 0.00294$

∴ The most likely contribution for the above mentioned scenario is

$$P(LLL) \rightarrow \text{for } (ROB)$$

$$\begin{array}{l}
 2 = 1/2 \\
 N = 1/2 \\
 B = 1/2 \\
 0 = 0
 \end{array}
 \rightarrow
 \begin{array}{l}
 2 = 0.1 \\
 N = 0.1 \\
 B = 0.1 \\
 0 = 0
 \end{array}$$

Hidden Markov Model scenario  
 $P(LLL) = 0.5 \times 0.5 \times 0.5 = 0.125$

$$ROB = 0.0025$$

b) No Viterbi Algorithm

	L	R	
For	$0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$	$0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$	$0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$
Loaded	$0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$	$0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$	$0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$ $0.5 \times 0.5 = 0.25$