

Channel Matrix

A channel is completely specified by the complete set of transition probabilities. Accordingly, the channel from the previous slide is specified by the matrix of transition probabilities $[P(Y|X)]$, given by

$$P(Y|X) = \begin{bmatrix} P(y_1|x_1) & P(y_2|x_1) & \dots & P(y_n|x_1) \\ P(y_1|x_2) & P(y_2|x_2) & \dots & P(y_n|x_2) \\ \dots & \dots & \dots & \dots \\ P(y_1|x_m) & P(y_2|x_m) & \dots & P(y_n|x_n) \end{bmatrix} \quad (1)$$