

$$P = \frac{1}{N} \sum_{i=1}^N \mathbf{x}_i \mathbf{x}_i^T$$

$$P = \frac{1}{N} \sum_{i=1}^N \begin{pmatrix} x_{i1} \\ x_{i2} \end{pmatrix} \begin{pmatrix} x_{i1} & x_{i2} \end{pmatrix}$$

$$P = \frac{1}{N} \begin{pmatrix} \sum x_{i1}^2 & \sum x_{i1} x_{i2} \\ \sum x_{i1} x_{i2} & \sum x_{i2}^2 \end{pmatrix}$$

$$P = \frac{1}{N} \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

$$N = \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$$

$$M = \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$$

$$M = N \cdot E$$

$$M_{ij} = E(T_{ij})$$

$$M_{ij} = 1 + \sum_{k \neq j} p_{ik} M_{kj}$$

$$P = \begin{pmatrix} 0.7 & 0.3 \\ 0.4 & 0.6 \end{pmatrix}$$

$$M_{00} = 1 + p_{01} M_{10} = 1 + 0.3 M_{10}$$

$$M_{10} = 1 + M_{10} p_{11} = 1 + 0.6 M_{10}$$

$$M_{01} = 1 + p_{00} M_{01} = 1 + 0.7 M_{01}$$

$$M_{11} = 1 + M_{01} p_{10} = 1 + 0.4 M_{01}$$

$$\Rightarrow 0.4 M_{10} = 1 \Rightarrow M_{10} = 2.5$$

$$M_{00} = 1 + 0.3 \cdot 2.5 = 1.75$$