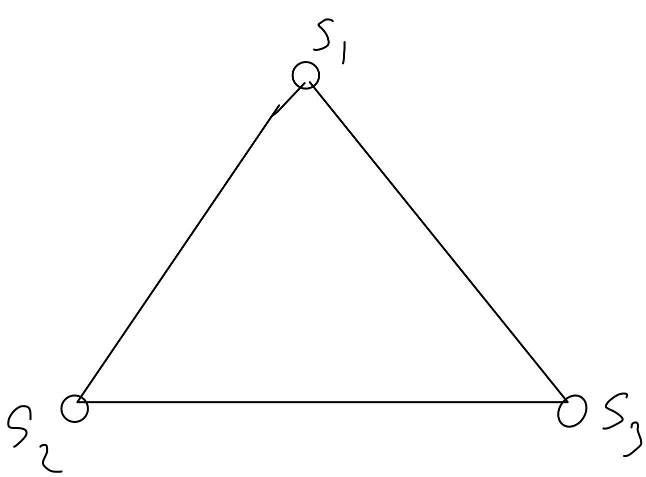
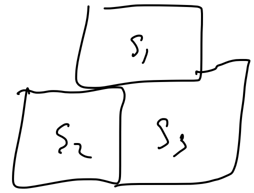
Lec 19




$$A = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{bmatrix} \qquad W = \begin{bmatrix} 0 & 1/2 & 1/2 \\ 1/2 & 0 & 1/2 \\ 1/2 & 1/2 & 0 \end{bmatrix}$$

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$$\underline{y} = \phi \underline{W} \underline{y} + \underline{\varepsilon}$$

$$\underline{y} - \phi \underline{W} \underline{y} = \underline{\varepsilon}$$

$$(\underline{I} - \phi \underline{W}) \underline{y} = \underline{\varepsilon}$$

$$\underline{y} = (\underline{I} - \phi \underline{W})^{-1} \underline{\varepsilon}$$

$$E(\underline{y}) = \underline{0} \qquad Var(\underline{y}) = (\underline{I} - \phi \underline{W})^{-1} \left( (\underline{I} - \phi \underline{W})^{-1} \right)^{t}$$

$$\underline{y} \sim N\left( \underline{0},\ (\underline{I} - \phi \underline{W})^{-1} \left( (\underline{I} - \phi \underline{W})^{-1} \right)^{t} \right)$$

$$\underline{Y} = \underline{X}\,\underline{\beta} + \phi\,\underline{D}^{-1}\underline{A}\,(\underline{Y} - \underline{X}\,\underline{\beta}) + \underline{\varepsilon}$$

$$(\underline{Y} - \underline{X}\,\underline{\beta}) = \phi\,\underline{D}^{-1}\underline{A}\,(\underline{Y} - \underline{X}\,\underline{\beta}) + \varepsilon$$

$$(\underline{\underline{I}} - \phi\,\underline{D}^{-1}\underline{A})\,(\underline{Y} - \underline{X}\,\underline{\beta}) = \underline{\varepsilon}$$

$$\underline{Y} - \underline{X}\,\underline{\beta} = (\underline{I} - \phi\,\underline{D}^{-1}\underline{A})^{-1}\,\underline{\varepsilon}$$

$$\underline{Y} = \underline{X}\,\underline{\beta} + (\underline{\underline{I}} - \phi\,\underline{D}^{-1}\underline{A})^{-1}\,\underline{\varepsilon}$$

$$E(\underline{Y}) = \underline{X}\,\underline{\beta}$$

$$Var(\underline{Y}) = (\underline{\underline{I}} - \phi\,\underline{D}^{-1}\underline{A})^{-1}\,\sigma^2 D^{-1}\left((\underline{\underline{I}} - \phi\,\underline{D}^{-1}\underline{A})^{-1}\right)^t$$