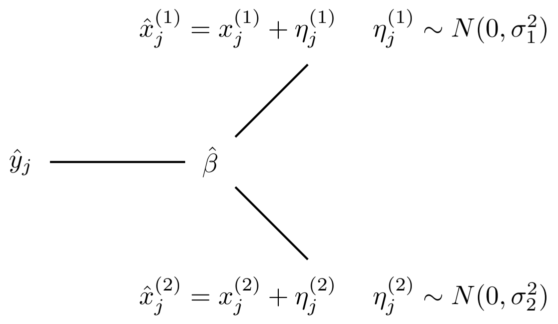
$\hat{x}_j^{(1)} = x_j^{(1)} + \eta_j^{(1)} \qquad \eta_j^{(1)} \sim N(0, \sigma_1^2)$
$\hat{y}_j$
$\hat{\beta}$
$\hat{x}_j^{(2)} = x_j^{(2)} + \eta_j^{(2)} \qquad \eta_j^{(2)} \sim N(0, \sigma_2^2)$