a) Causal Bayesian network (independent trial data)

$P(X_1 = 1) = w_B$

w_B w_B

$X_1 \xrightarrow{w_S} X_2$

$P(X_2 = 1 | X_1 = 0) = w_B$
$P(X_2 = 1 | X_1 = 1) = 1 - (1 - w_B)(1 - w_S)$

w_S

$P(X_4 = 1) = w_B$ X_4 X_3

$P(X_3 = 1 | X_2 = 0) = w_B$
$P(X_3 = 1 | X_2 = 1) = 1 - (1 - w_B)(1 - w_S)$

w_B w_B
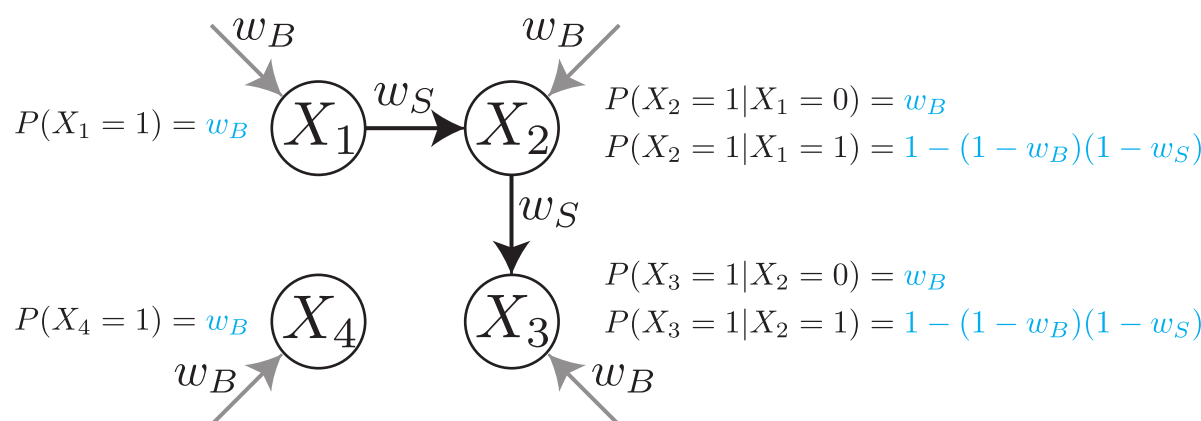
b) Delay network (event series data)
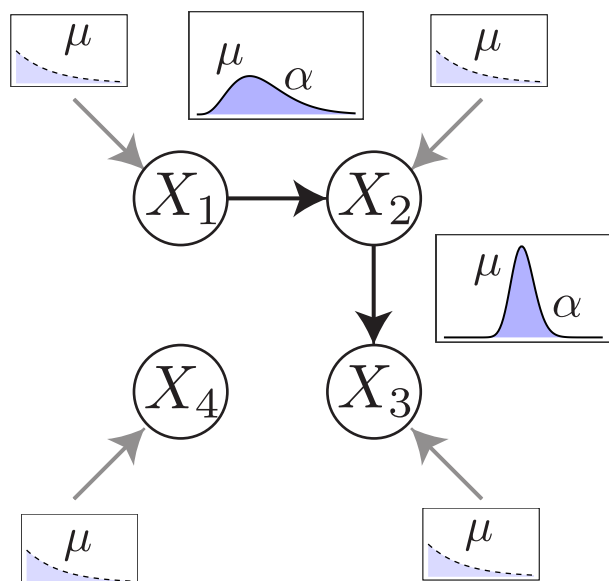
b) OU-network (time series data)

$p(X_1^{t'})$ $p(X_2^{t'} | X_1^t)$

X_1^t X_2^t $f(X_1^t)$

$p(X_4^{t'})$ X_4 X_3 $p(X_3^{t'} | X_2^t)$

X_4^t X_1^t $f(X_2^t)$