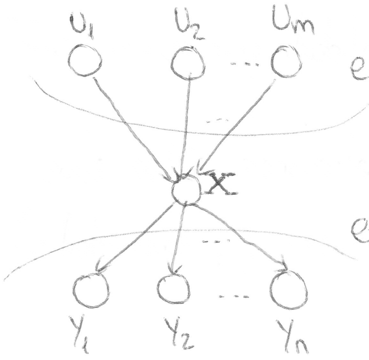


$e_x^+$ (evidencia sobre causas)

$e_x^-$ (evidencia sobre efectos)

Tma Bayes: $P(A/B) = \frac{P(B/A) \cdot P(A)}{P(B)}$

separab. direccional $P(e_x^-/x, e_x^+) = P(e_x^-/x)$

$$G(x) = P(X=x/E=e) = P(x/e_x^+, e_x^-) \overset{\text{Tma Bayes}}{=} \frac{P(e_x^-/x, e_x^+) \cdot P(x/e_x^+)}{P(e_x^-/e_x^+)} \overset{\text{separab. direccional}}{=} \frac{1}{P(e_x^-/e_x^+)} \cdot P(e_x^-/x) \cdot P(x/e_x^+) =$$

$$= \alpha \cdot \lambda(x) \cdot \pi(x)$$

$$\lambda(x) = P(e_x^-/x) = P(e_{Y_1X}^-, e_{Y_2X}^-, \ldots/x) \overset{\text{indep.}}{=} P(e_{Y_1X}^-/x) \cdot P(e_{Y_2X}^-/x) \ldots = \lambda_{Y_1}(x) \cdot \lambda_{Y_2}(x) \ldots = \prod_j \lambda_{Y_j}(x)$$

Tma prob. Total $P(A) = \sum_i P(A/B_i) P(B_i)$

$$\pi(x) = P(x/e_x^+) = P(x/e_{U_1X}^+, e_{U_2X}^+ \ldots) \overset{\text{Tma prob. Total}}{=} \sum_{U_1 \ldots U_m} P(x/U_1 \ldots U_m) \cdot P(U_1/e_{U_1X}^+) \cdot P(U_2/e_{U_2X}^+) \ldots =$$

$$= \sum_{U_1 \ldots U_m} \left[ P(x/U_1 \ldots U_m) \cdot \pi_x(U_1) \cdot \ldots \cdot \pi_x(U_m) \right]$$

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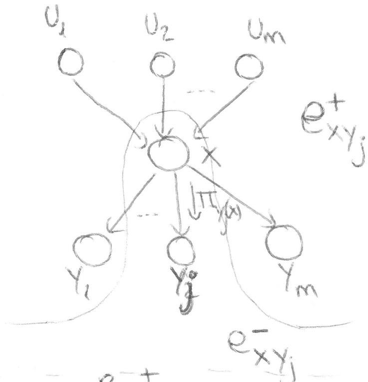


$\pi_{Y_j}(x) \equiv$ influencia de $x$ sobre $Y_j$

$$\pi_{Y_j}(x) = P(x/e_{XY_j}^+) = P(x/e - e_{XY_j}^-) = G_{e - e_{XY_j}^-}(x) =$$

$$= \alpha \cdot \left[ \prod_{k \neq j} \lambda_{Y_k}(x) \right] \cdot \pi(x)$$

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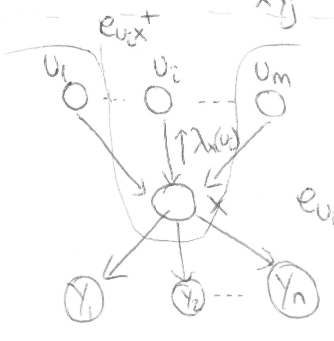


$V = U_1, U_2, \ldots U_{i-1}, U_{i+1}, \ldots, U_m$

$e_{VX}^+ \cup e_x^- \equiv e_{U_iX}^-$

$\lambda_x(U_i) \equiv$ influencia de $U_i$ en $x$

$e_{U_iX}^- \equiv e_{VX}^+ \cup e_X^-$

Tma prob Total con $V, X$

$$\lambda_x(U_i) = P(e_{U_iX}^-/U_i) \overset{e_{U_iX}^- \equiv e_{VX}^+ \cup e_X^-}{=} P(e_{VX}^+, e_X^-/U_i) \overset{\text{Tma prob Total con } V, X}{=}$$

~~separab. direccional~~ prod.: $P(A,B) = P(A/B) \cdot P(B)$

$$= \sum_X \sum_V P(e_{VX}^+, e_X^-/U_i, X, V) \cdot P(X, V/U_i) \overset{\text{prod.}}{=}$$

separab. direc.

$$= \sum_X \sum_V P(e_{VX}^+/e_X^-, U_i, X, V) \cdot P(e_X^-/U_i, X, V) \cdot P(X, V/U_i) \overset{\text{separab. direc.}}{=}$$

$$= \sum_X \sum_V \underbrace{P(e_{VX}^+/V)}_{\text{Tma Bayes}} \cdot P(e_X^-/X) \cdot \underbrace{P(X, V/U_i)}_{\text{Producto}} =$$

$$= \sum_X \sum_V \frac{P(V/e_{VX}^+)}{P(V)} \cdot P(e_{VX}^+) \cdot P(e_X^-/X) \cdot P(X/V, U_i) \cdot P(V/U_i) =$$

$V, U_i$ son indep. $P(V/U_i) = P(V)$

$$= \sum_X \sum_V P(V/e_{VX}^+) \cdot \underbrace{P(e_{VX}^+)}_{\beta} \cdot \lambda(x) \cdot \underbrace{P(X/V, U_i)}_{\text{Tabla probs. conds.}} =$$

(externo red = 1)

$$= \beta \cdot \sum_X \lambda(x) \cdot \sum_{U_k} P(X/U_1, \ldots, U_m) \prod_{k \neq i} \pi_X(U_k)$$