Variable Elimination in Chains

Elimination in Chains

$$P(E) = \sum_{D} \sum_{E} \sum_{B} \sum_{A} P(A, B, C, D, E)$$

$$= \sum_{D} \sum_{E} \sum_{B} \sum_{A} P(A, B, C, D, E) + \sum_{D} P(B, D) P(B, C) P(B, C) P(C, D) P(D, E)$$

$$= \sum_{D} \sum_{E} \sum_{B} P(B, D) P(C, D) P(B, C) P(C, D) P(D, E) P(C, D)$$

$$= \sum_{D} \sum_{E} \sum_{B} P(B, D) P(C, D) P(D, E) P(D, E) P(D, E)$$

$$= \sum_{D} \sum_{E} \sum_{B} P(B, C) P(C, D) P(D, E) P(D, E) P(D, E)$$

$$= \sum_{D} \sum_{E} \sum_{B} P(B, C) P(C, D) P(D, E) P(D, E) P(D, E)$$

$$= \sum_{D} \sum_{E} \sum_{B} P(B, C) P(C, D) P(C, D) P(D, E) P(D, E)$$

$$= \sum_{D} \sum_{E} \sum_{B} P(B, C) P(C, D) P(C, D) P(D, E)$$

$$= \sum_{D} \sum_{E} \sum_{B} P(B, C) P(C, D) P(C, D) P(D, E)$$

$$= \sum_{D} \sum_{E} P(B, C) P(C, D) P(C, D) P(D, E)$$

$$= \sum_{D} \sum_{E} P(B, C) P(C, D) P(C, D) P(C, D)$$

$$= \sum_{D} \sum_{E} P(B, C) P(E, C) P(E, D) P(E, D)$$

$$= \sum_{D} P(E, D) P(E, D)$$

$$= \sum$$