

- Each cutset U in G specifies an FCMI on X_1, X_2, \dots, X_n , denoted by $[U]$:
 $[U] : X_{V_1(U)}, \dots, X_{V_{s(U)}(U)}$ are mutually independent conditioning on X_U .

- For a collection of cutsets U_1, U_2, \dots, U_k in G , introduce the notation

$$[U_1, U_2, \dots, U_k] = [U_1] \wedge [U_2] \wedge \dots \wedge [U_k]$$

where ‘ \wedge ’ denotes ‘logical AND.’

- X_1, X_2, \dots, X_n form a Markov graph G if and only if

$$[U \subset V : U \neq V \text{ and } s(U) > 1]$$

holds.

- Therefore, a Markov random field is simply a collection of FCMI’s induced by a graph.