

Department of Computer Engineering

Artificial Intelligence

Mini Project 3 Theory Questions

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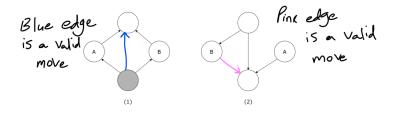


Figure 1: Valid Moves

1

1.1

We decide if a move violates game rules or not by using d-separation algorithm to find out if A and B are still independent. A valid move for each of the graphs is illustrated in figure 1.

1.2

2

base factor headers are:

```
A: \begin{bmatrix} A & C & D & P(A|C,D) \end{bmatrix} \\ B: \begin{bmatrix} B & D & E & G & P(B|D,E,G) \end{bmatrix} \\ C: \begin{bmatrix} C & F & I & P(C|F,I) \end{bmatrix} \\ D: \begin{bmatrix} D & G & H & P(D|G,H) \end{bmatrix} \\ F: \begin{bmatrix} E & P(E) \end{bmatrix} \\ F: \begin{bmatrix} F & H & P(F|H) \end{bmatrix} \\ G: \begin{bmatrix} G & H & P(G|H) \end{bmatrix} \\ H: \begin{bmatrix} H & I & P(H|I) \end{bmatrix} \\ I: \begin{bmatrix} I & P(I) \end{bmatrix}
```

2.1 B, E, D, C, H, I

$$\begin{split} \operatorname{Join}(B,D,E,G) \to \operatorname{Eliminate}(B) : \begin{bmatrix} D & E & G & P(D,E,G) \end{bmatrix} \\ \operatorname{Join}(\operatorname{Current},E) & \to \operatorname{Eliminate}(E) : \begin{bmatrix} D & G & P(D,G) \end{bmatrix} \\ \operatorname{Join}() & \to \operatorname{Eliminate}D : \begin{bmatrix} G & P(G) \end{bmatrix} \end{split}$$

2.2 I, H, C, D, E, B