Department of Computer Engineering

Artificial Intelligence

Mini Project 3 Theory Questions

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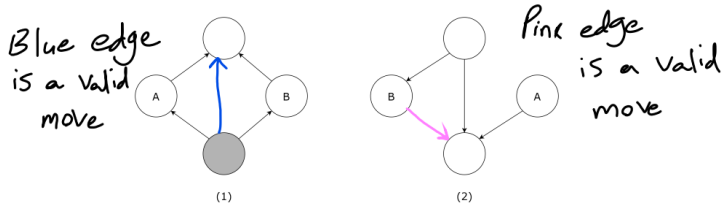

Figure 1: Valid Moves

1

1.1

We decide if a move violates game rules or not by using d-separation algroithm 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:

$$\begin{aligned} A &: [A \quad C \quad D \quad P(A|C,D)] \\ B &: [B \quad D \quad E \quad G \quad P(B|D,E,G)] \\ C &: [C \quad F \quad I \quad P(C|F,I)] \\ D &: [D \quad G \quad H \quad P(D|G,H)] \\ E &: [E \quad P(E)] \\ F &: [F \quad H \quad P(F|H)] \\ G &: [G \quad H \quad P(G|H)] \\ H &: [H \quad I \quad P(H|I)] \\ I &: [I \quad P(I)] \end{aligned}$$

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

$$\begin{aligned} \text{Join}(B,D,E,G) \rightarrow \text{Eliminate}(B) &: [D \quad E \quad G \quad P(D,E,G)] \\ \text{Join}(\text{Current},E) \rightarrow \text{Eliminate}(E) &: [D \quad G \quad P(D,G)] \\ \text{Join}() \rightarrow \text{Eliminate}D &: [G \quad P(G)] \end{aligned}$$

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