Elijah Andrushenko

CPTS 440

Artificial Intelligence

10-17-2019

Homework #7

1.

(:action suction

:precondition(and(room A)(dirty A))

:effect(and(clean A)(not(dirty A)))

:(precondition(and(room B)(dirty B))

:effect(and(clean B)(not(dirty B))

)

2.

A) P(Weather=clear, Costume=yes, Party=yes) = **0.084**

B) P(Weather=cloudy, Party=no) = 0.12 + 0.14 = **0.26**

C) P((Costume=yes) ^ (Party=no)) = 0.036 + 0.12 + 0.09 = **0.246**

D) P((Costume=yes) v (Party=no))

P(Costume=yes) = 0.6

P(Party=no) = 0.53

P((Costume=yes) ^ (Party=no)) = 0.246

0.6 + 0.53 – 0.246 = **0.884**

E) P(Party=yes | Weather=rain, Costume=no)

P(Party=yes ^ Weather=rain ^ Costume=no) = 0.024

P(Weather=rain ^ Costume=no) = 0.024 + 0.096 = 0.12

0.024 / 0.12 = **0.2**

F) P(Party=yes | Costume=yes)

P(Party=yes ^ Costume=yes) = 0.084 + 0.18 + 0.09 = 0.354

P(Costume=yes) = 0.6

0.354 / 0.6 = **0.59**

3.

A = 0.7

P(LikeCoding=true | LearnAI=true) = 0.8

P(LikeCoding=true | LearnAI=false) = 0.6

P(LearnAI=true) = 0.5

P(LearnAI | LikeCoding=true) = P(LearnAI ^ LikeCoding=true) / P(LikeCoding=true)

P(LikeCoding=true | LearnAI=true) = P(LikeCoding=true ^ LearnAI=true) / P(LearnAI=true)

= P(LikeCoding=true ^ LearnAI=true) / 0.5 = 0.8

= P(LikeCoding=true ^ LearnAI=true) = 0.4

1 – P(LearnAI=true) = P(LearnAI=false) = 1 – 0.5 = 0.5

P(LikeCoding=true | LearnAI=false) = P(LikeCoding=true ^ LearnAI=false) / P(LearnAI=false)

= P(LikeCoding=true ^ LearnAI=false) / 0.5 = 0.6

= P(LikeCoding=true ^ LearnAI=false) = 0.3

0.4 + 0.3 = 0.7

P(LikeCoding=true) = 0.7

P(LikeCoding=false) = 0.3

P(LearnAI=true ^ LikeCoding=true) / P(LikeCoding=true) = (LearnAI=true ^ LikeCoding=true) / 0.7

= 0.4 / 0.7 = 4 / 7

P(LearnAI=false ^ LikeCoding=true) / P(LikeCoding=true) = (LearnAI=false ^ LikeCoding=true) / 0.7

= 0.3 / 0.7 = 3 / 7

a = 0.7