

$$(iii) (A \cup C) - (A \cap B)$$

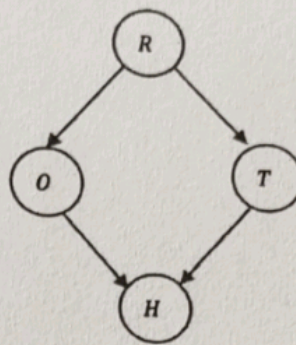
$$(iv) (A - C) \cap (B - C')$$

4. Consider following fuzzy sets: $FA: \{ 'a': 0.2, 'b': 0.3, 'c': 0.6, 'd': 0.6 \}$, $FB: \{ 'a': 0.9, 'b': 0.9, 'c': 0.4, 'd': 0.5 \}$

(a) Compute 0.5-cut of $A \cup B$? [3]

(b) Compute 0.5-cut of $A \cap B$? [3]

5. How big is a joint distribution over N variables where each variable can take one of three values $\{0,1,2\}$? [2]



6. In the above figure, R =Rain, T =Traffic, O = Lawn Overflow, H = Stuck at Home. Determine whether conditional dependency holds for the following cases with reasons? \perp represents independence symbol. [3x3=9]

a. $T \perp O$

b. $T \perp O \mid R$

c. $T \perp O \mid R, H$

7. Suppose we have 3 cards identical in form except that both sides of the first card are colored red, both sides of the second card are colored black, and one side of the third card is colored red and the other side is colored black.
- The 3 cards are mixed up in a hat, and 1 card is randomly selected and put down on the ground. If the upper side of the chosen card is colored red, what is the probability that the other side is colored black? [5]

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