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TUTORIAL 3

d) Consider the following rules and facts in the database and use forward chaining to find out the position of the player based on facts given. Facts: dribble skill is good, shoot skill is good, speed is good, preferred foot is right, preferred foot is left, passing skill is good. Find certainty factor of passing train for position Left winger and Right winger

Rule 1 : IF dribble skill is good cf 0.7
THEN player type is Outfielder cf 0.8

Rule 2 : IF dribble skill is poor
THEN player type is Goalkeeper

Rule 3 : IF playertype is Outfielder
AND shoot skill is good cf, 0.8
THEN playersubtype is Forward cf, 0.9

Rule 4 : IF playertype is Outfielder
AND shoot skill is poor
THEN playersubtype is Back

Rule 5 : IF playersubtype is Back
AND speed is poor
THEN position is Centre Back

Rule 6: IF playersubtype is Back
AND speed is good
THEN pre-position is Full Back

Rule 7 : IF pre-position is Full Back cf 0.7
AND preferred foot is right cf 0.65
THEN position is Right Winger cf 0.8

Rule 8 : IF pre-position is Full Back cf 0.7
AND preferred foot is left cf 0.7
THEN position is Left Winger cf 0.85

Rule 9 : IF playersubtype is Back
AND speed is poor
AND passing skill is good
THEN position is Midfielder

Rule 10 : IF playersubtype is Forward
AND speed is poor cf 0.5
AND passing skill is poor cf 0.58
THEN position is Striker cf 0.6

Rule 11 : IF playersubtype is Forward
AND speed is good cf, 0.9
AND passing skill is good cf, 0.85
THEN pre-position is Winger cf, 0.75

Rule 12 : IF pre-position is Winger
AND preferred foot is right cf, 0.95
THEN position is Right Winger cf, 0.95

Rule 13 : IF pre-position is Winger
AND preferred foot is left cf, 0.8
THEN position is Left Winger cf 0.76

Answer:

Cycle	rules	CF	facts
1			F1: dribble skill is good, F2: shoot skill is good, F3: speed is good, F4: preferred foot is right, F5: preferred foot is left, F6: passing skill is good
	R1	$0.7 \times 0.8 = 0.56$	
	R3	$0.56 \times 0.9 = 0.504$	
	R7	$0.8 \times 0.65 = 0.52$	RIGHT WINGER
	R8	$0.7 \times 0.85 = 0.595$	LEFT WINGER
	R10	$0.5 \times 0.6 = 0.3$	
	R11	$0.85 \times 0.75 = 0.64$	
	R12	$0.95 \times 0.95 = 0.9$	RIGHT WINGER
	R13	$0.8 \times 0.76 = 0.608$	LEFT WINGER

R7 (0.52) & R12 (0.9) DIFFERENT RULES BUT SAME HYPOTHESIS

CF of RIGHT WINGER = $0.52 + 0.9 \times (1 - 0.52)$

= 0.95

=PLAYER ALMOST CERTAINLY IS A RIGHT WINGER

R8 (0.595) AND R13 (0.608) HAS DIFFERENT RULES SAME HYPOTHESIS

CF OF LEFT WINGER= $0.595 + 0.608 \times (1 - 0.595)$

=0.84

= PLAYER IS ALMOST CERTAINLY LEFT WINGER