

1.Uloha

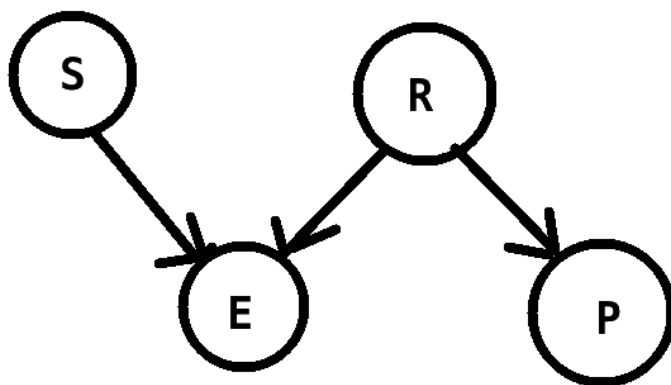
odpoved je D.) a A.)

2.Uloha

Odpoved je C.)

3.Uloha

a.)



B.)

$P(+S) = 0.25$
 $P(+R) = 0.02$
 $P(-S) = 0.75$
 $P(-R) = 0.98$
 $P(+E|-S,-R) = 0.01$
 $P(+E|+S,-R) = 0.80$
 $P(+E|-S,+R) = 0.50$
 $P(+E|+S,+R) = 0.90$

$P(-E|-S,-R) = 0.99$
 $P(-E|+S,-R) = 0.20$
 $P(-E|-S,+R) = 0.50$
 $P(-E|+S,+R) = 0.10$

$P(+P|+R) = 0.70$
 $P(+P|-R) = 0.01$

$P(-P|+R) = 0.30$
 $P(-P|-R) = 0.99$

Konkrétne hodnoty

$$\begin{aligned}
 P(+S,+R,+E,+P) &= P(+S).P(+R).P(+E|+S,+R).P(+P|R+) = 0.25*0.02*0.90*0.70 = 0.00315 \\
 P(+S,-R,+E,+P) &= P(+S).P(-R).P(+E|+S,-R).P(+P|R-) = 0.25*0.98*0.80*0.01 = 0.00196 \\
 P(-S,+R,+E,+P) &= P(-S).P(+R).P(+E|-S,+R).P(+P|R+) = 0.75*0.02*0.50*0.70 = 0.00525 \\
 P(-S,-R,+E,+P) &= P(-S).P(-R).P(+E|-S,-R).P(+P|R-) = 0.75*0.98*0.01*0.01 = 0.0000735
 \end{aligned}$$

$$\begin{aligned}
 P(+S,+R,+E,-P) &= P(+S).P(+R).P(+E|+S,+R).P(-P|R+) = 0.25*0.02*0.90*0.30 = 0.00135 \\
 P(+S,-R,+E,-P) &= P(+S).P(-R).P(+E|+S,-R).P(-P|R-) = 0.25*0.98*0.80*0.99 = 0.19404 \\
 P(-S,+R,+E,-P) &= P(-S).P(+R).P(+E|-S,+R).P(-P|R+) = 0.75*0.02*0.50*0.30 = 0.00225 \\
 P(-S,-R,+E,-P) &= P(-S).P(-R).P(+E|-S,-R).P(-P|R-) = 0.75*0.98*0.01*0.99 = 0.0072765
 \end{aligned}$$

$$\begin{aligned}
 P(+S,+R,-E,+P) &= P(+S).P(+R).P(-E|+S,+R).P(+P|R+) = 0.25*0.02*0.10*0.70 = 0.00035 \\
 P(+S,-R,-E,+P) &= P(+S).P(-R).P(-E|+S,-R).P(+P|R-) = 0.25*0.98*0.20*0.01 = 0.00049 \\
 P(-S,+R,-E,+P) &= P(-S).P(+R).P(-E|-S,+R).P(+P|R+) = 0.75*0.02*0.50*0.70 = 0.00525 \\
 P(-S,-R,-E,+P) &= P(-S).P(-R).P(-E|-S,-R).P(+P|R-) = 0.75*0.98*0.99*0.01 = 0.0072765
 \end{aligned}$$

$$\begin{aligned}
 P(+S,+R,-E,-P) &= P(+S).P(+R).P(-E|+S,+R).P(-P|R+) = 0.25*0.02*0.10*0.30 = 0.00015 \\
 P(+S,-R,-E,-P) &= P(+S).P(-R).P(-E|+S,-R).P(-P|R-) = 0.25*0.98*0.20*0.99 = 0.04851 \\
 P(-S,+R,-E,-P) &= P(-S).P(+R).P(-E|-S,+R).P(-P|R+) = 0.75*0.02*0.50*0.30 = 0.00225 \\
 P(-S,-R,-E,-P) &= P(-S).P(-R).P(-E|-S,-R).P(-P|R-) = 0.75*0.98*0.99*0.99 = 0.7203735
 \end{aligned}$$

Výsledná tabuľka

		+shop		-shop	
		+rob	-rob	+rob	-rob
+enter-store	+point-gun	0.00315	0.00196	0.00525	0.0000735
	-point-gun	0.00135	0.19404	0.00225	0.0072765
-enter-store	+point-gun	0.00035	0.00049	0.00525	0.0072765
	-point-gun	0.00015	0.04851	0.00225	0.7203735

C.)

$P(+E)$ = scítam všetky z tabuľky, ktoré majú +enter-store, nebudem to rozpisovať, lebo je to dlhé...

teda výsledok je **$P(+E) = 0.21535$**

$$P(+R|+E) = P(+E|+R).P(+R) / P(+E)$$

Z tohoto potrebujeme zistiť

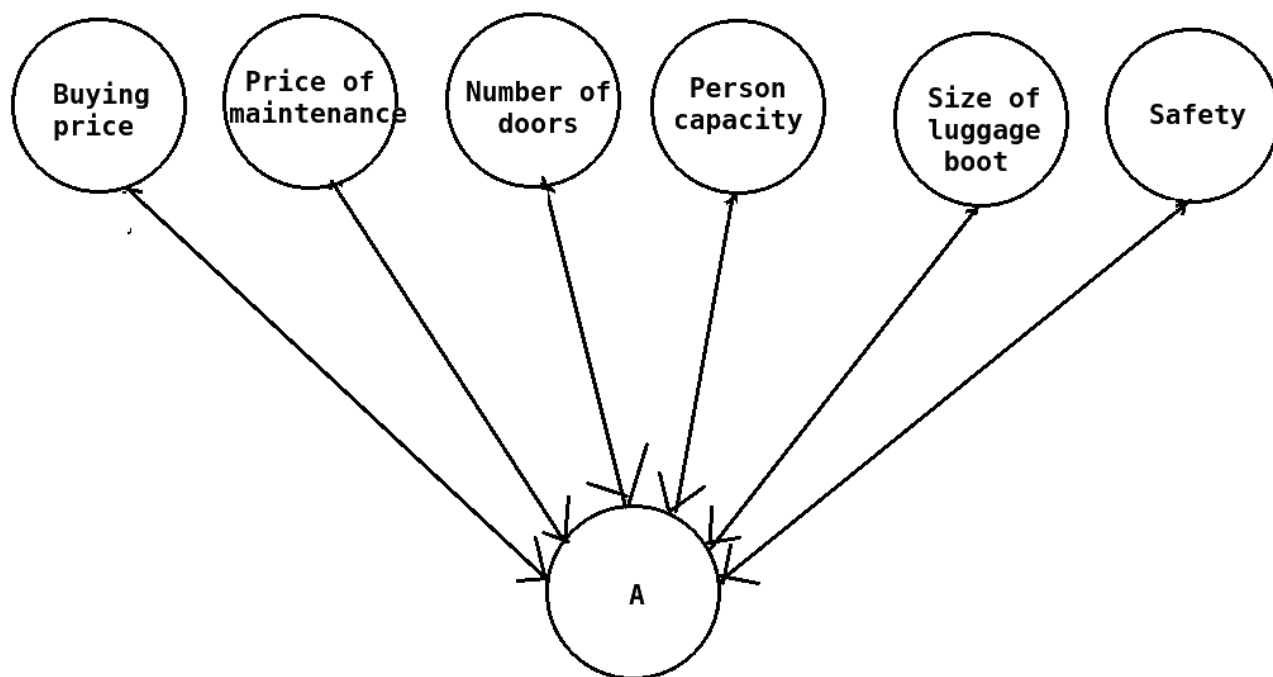
$$P(+E|+R) = P(+S,+R,+E,+P) + P(+S,+R,+E,-P) + P(-S,+R,+E,+P) + P(-S,+R,+E,-P) = 0.00315 + 0.00135 + 0.00525 + 0.00225 = 0.012000$$

A teda

$$P(+R|+E) = P(+E|+R).P(+R) / P(+E) = (0.012000*0.02) / 0.21535 = \mathbf{0.0011145}$$

4.) Uloha

Pouzijem naivny klasifikator



b.) Accuracy = 0.87384

c.) Confusion_matrix =

1161	47	2	0
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85	289	10	0
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0	46	21	2
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0	26	0	39
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