

15.11.2020. 20.10.2021.

Modeliranje neizvesnosti

11.)
$$\mu_N = \begin{cases} 1, & x \in [0, 5] \\ 0, & x \in [9, +\infty) \end{cases}$$

$x \in (5, 9)$ linearno pada

$$\mu_S = \begin{cases} 1, & x \in [12, +\infty) \\ 0, & x \in [0, 6] \end{cases}$$

$x \in (6, 12)$ linearno raste

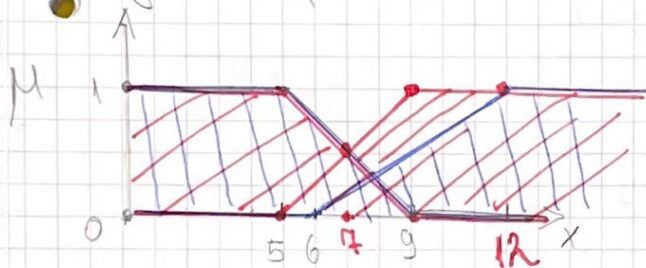
x_1 = mlad ili star konarinar

x_2 = mlad ili ne mlad konarinar

$x_1 = \max(\mu_N, \mu_S)$

$x_2 = \max(\mu_N, 1 - \mu_N)$

grafčki prikaz!!



- x_1 NE POKLAPAJU SE NA INTERVALU $x \in [7, 12]$

- x_2

12.)
$$P(N) = \frac{3}{195}$$

$$P(N|U) = \frac{0.00769}{0.10615} = 0.07246$$

$P(S|N) = 0.8$

$$P(N|U, S) = \frac{P(U|N) \cdot P(S|N) \cdot P(N)}{P(U, S)} = 0.56899$$

$P(S|N) = 0.002$

$P(U|N) = 0.5$

$P(U|N) = 0.1$

$$P(U, S) = P(U|N) \cdot P(S|N) \cdot P(N) + P(U|N) \cdot P(S|N) \cdot P(N) = 0.00635$$

$P(N|U) = ?$

$P(N|U, S) = ?$

$$P(N|U) = \frac{P(U|N) \cdot P(N)}{P(U)}$$

PORAST $P(N|U, S) - P(N|U)$

$P(U)$

$$P(U) = P(U|N) \cdot P(N) + P(U|N) \cdot P(N)$$

$$= 0.89653$$

$P(U) = 0.10615$

strojno učenje i u.n.mreže

13. D

$$H. E = -\frac{1}{4} \log_2 \frac{1}{4} - \frac{3}{4} \log_2 \frac{3}{4} \\ = 0.88523$$

I razina

Evaluacija (1,2) (3,1)

$$IG = E - \frac{2}{4} \cdot 0.91829 - \frac{1}{4} \cdot 0.81128$$

$$IG = 0.11809$$

Izvođenje (2,2) (2,1)

$$IG = E - \frac{1}{4} - \frac{3}{4} \cdot 0.91829$$

$$IG = 0.02025$$

Paradigma (2,1) (1,0) (1,2)

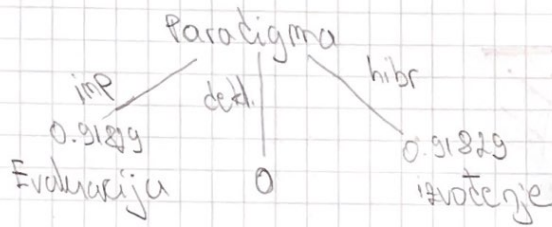
$$IG = E - 2 \cdot \frac{2}{4} \cdot 0.91829$$

$$IG = 0.12812$$

tipovi (2,1) (2,2)

$$IG = E - \frac{2}{4} \cdot 0.91829 - \frac{1}{4}$$

$$IG = 0.02025$$



II razina - imper.

Evaluacija (2,0) (0,1)

$$IG = E$$

Izvođenje (2,0) (0,1)

$$IG = E$$

Tipovi (1,1) (1,0) X

$$IG = E$$

15. potpuno povezana slojevita u.n.mreža

$$3 \times 40 \times 10 \times 5 \times 2$$

svaki neuron sa svim neuronima sledećeg sloja + bias

$$3 \times 40 + 40$$

$$40 \times 10 + 10$$

$$10 \times 5 + 5$$

$$5 \times 2 + 2$$

697 težina

$$697 \times 8 \text{ okteta} = \boxed{5596 \text{ okteta}}$$

16.

skup za proučavanje - određivanje optimalnog modela

skup za ispitivanje - određivanje tačnosti modela

17.

$\eta=1$	x_2	x_1	x_0	$+$	w_2	w_1	w_0	ret	0	$\eta(t-0)$
	3	2	1	1	7	3	-12	>0	1	X
	1	1	1	-1				<0	-1	X
	2	1	1	-1				>0	1	-2 KOREKCIJA
	3	1	1	1	3	1	-14	<0	-1	2 KOREKCIJA
	1	2	1	-1	9	9	-12	>0	1	-2 KOREKCIJA
	3	2	1	1	7	-1	-14	>0	1	X
	1	1	1	-1				<0	-1	X
	2	1	1	-1				<0	-1	X
	3	1	1	1				>0	1	X
	1	2	1	-1				<0	-1	X

3 puta [7, -1, -14]

P.T. OPT. ALGORITHM

18. $f(x, y) = 15 - (x-1)^2 - (y-4)^2$, $x \in [-1, 6]$, $y \in [0, 7]$

$J_1: 000110 = (-1, 6) \quad f(-1, 6) = 7$

$J_2: 011001 = (2, 1) \quad f(2, 1) = 5$ selekcija J_2 & J_3

$J_3: 100111 = (3, 7) \quad f(3, 7) = 2$

odabiru se najmanje vjerovatni!

$J_4: 001110 = (1, 6) \quad f(1, 6) = 11$

propor. selekcija; najmanju vjerovatnost odabiru

011001

KRIŽANJE

101001

MUTACIJA

101010

$D_1 = f(4, 2) = 2$

100111

010111

010100

$D_2 = f(1, 4) = 15$

19. $\tau_0 = 100, d=2, \beta=3, s=0.1, n=100$

$$\tau_1 = \tau_0(1-s)$$

$$\tau_2 = \tau_1(1-s) = \tau_0(1-s)^2$$

$$\tau_n = \tau_{n-1}(1-s) = \tau_0(1-s)^n$$

$$1 > \tau_0(1-s)^k$$

$$\frac{1}{\tau_0} > (1-s)^k$$

$$\log_{1-s} \frac{1}{\tau_0} > k$$

$$43.71 > k$$

$$k = 44$$

$$\Rightarrow \tau_{44} = \tau_0(1-s)^{44} = 0.9657$$

20.

selekcija omogica
konvergiranje