

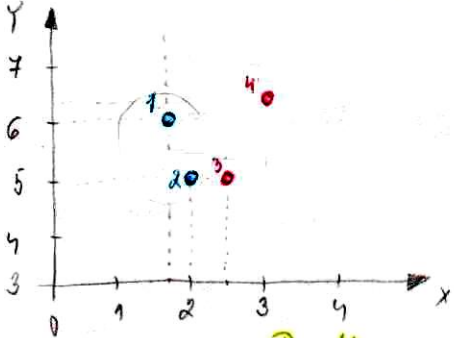
# IWP - Hierarchia válorá per turbácia

→ generuje deliace hranice

$$U_{ij} = \sum_{i=1}^n w_i x_{ij} / x_{ij}$$

$$V_j = \sum_{i=1}^n w_i x_{ij}$$

PR ISET = { (1.75; 6); (2, 5); (2.5, 5); (3, 6.25) }



$$\text{SCORE (LTU)} = \frac{P_c + N_c}{P + N}$$

A - pleácia: smerica pomu a prikladu

$$H: \begin{cases} -0.5x_1 + 1x_2 \geq 6 \\ -0.5x_1 \geq 6 \end{cases} \dots \text{LTU}$$

LTU<sub>0</sub> - v definuje miesto pokitinych prikladov

$$\text{SCORE (H)} = \frac{0 + 2}{4} = 0.5$$

BEST = H

BD - Pleácia:

w<sub>0</sub> - xemeny → k-D, j-dy priklad; i-ta váha v priklade

j	x <sub>1j</sub>	x <sub>2j</sub>	x <sub>0j</sub>	U <sub>0j</sub>	U <sub>0j</sub>
1	1.75	6	-1	-5.125	-5.125
2	2	5	-1	-4	-4.75
3	2.5	5	-1	-3.75	-4
4	3	6.25	-1	-4.75	-3.75
	-0.5	1	6		
	w <sub>1</sub>	w <sub>2</sub>	w <sub>0</sub>		

$$(w_1 x_{1j} + w_2 x_{2j}) / -1 = U_{0j}$$

→ hodnoty podkladuju LTU medziakapice jednolitujnu bodnu

LTU	w <sub>0</sub>	V <sub>1</sub> ⊕	V <sub>2</sub> ⊕	V <sub>3</sub> ⊕	V <sub>4</sub> ⊕	Score
1	4.9375	0.125 +	-0.9375 -	-	-	$\frac{1+2}{4} = 0.75$
2	4.375	0.75 +	-0.375 -	-	+	$\frac{1+1}{4} = 0.5$
3	3.875	1.25 +	0.125 +	-	+	$\frac{2+1}{4} = 0.75$

→ selekcia

$$V_j = w_1 x_{1j} + w_2 x_{2j} + w_0 x_{0j}$$

w<sub>0</sub> = D zapovná priemerná hodnota párov U<sub>0j</sub>

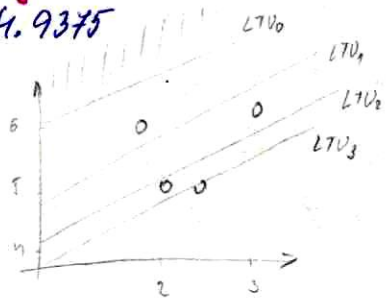
$$w_0 = \frac{(-5.125) + (-4.75)}{2} = -4.9375$$

→ abs. hodnota

H = LTU 3

$$H = \{ -0.5x_1 + 1x_2 \geq 3.875 \}$$

TP, pre kt. V<sub>j</sub> > 0 budú klasifikované ako pozitívne



B1 - iterácia:  $w_1$  - remedy  $L=1$

j	$x_{1j}$	$x_{2j}$	$x_{0j}$	$U_{1j}$	$U'_{1j}$
1	1.75	6	-1	1.214	1.214
2	2	5	-1	0.5625	0.792
3	2.5	5	-1	0.45	0.5625
4	3	6.25	-1	0.792	0.45
	-0.5	1	3.875		
	$w_1$	$w_2$	$w_0$		

} usporiadanie hodnôt  $U_{ij}$

$$L_D W_{ij} = (w_2 x_{2j} + w_0 x_{0j}) / x_{1j}$$

LTV	$w_1'$	$V_1$	$V_2$	$V_3$	$V_4$	SCORE
1	-1.003	+	-	-	-	$\frac{1+2}{4} = 0.75$
2	-0.677	+	-	-	+	$\frac{1+1}{4} = 0.5$
3	-0.506	+	+	-	+	$\frac{2+1}{4} = 0.75$

selektia

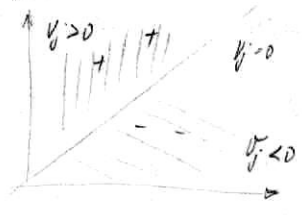
$$V_j = w_1' x_{1j} + w_2 x_{2j} + w_0 x_{0j}$$

$U_{ij} * x_{ij}$

$$H = LTV1$$

$$H = \{-1.003x_1 + 1x_2 \geq 3.875\}$$

B2 - iterácia, ako  $w_2$  je lineárnou kombináciou  $w_0$  a  $w_1$



C0 - iterácia:  $w_0$  - remedy  $L=0$

j	$x_{1j}$	$x_{2j}$	$x_{0j}$	$U_{0j}$	$U'_{0j}$
1	1.75	6	-1	-4.245	-4.245
2	2	5	-1	-2.994	-3.241
3	2.5	5	-1	-2.493	-2.994
4	3	6.25	-1	-3.241	-2.493
	-1.003	1	3.875		
	$w_1$	$w_2$	$w_0$		

$$U_{0j} = (w_1 x_{1j} + w_2 x_{2j}) / x_{0j}$$

LTV	$w_0'$	$V_1$	$V_2$	$V_3$	$V_4$	SCORE
1	3.743	+	-	-	-	$\frac{1+2}{4} = 0.75$
2	3.118	+	-	-	+	$\frac{1+1}{4} = 0.5$
3	2.744	+	+	-	+	$\frac{2+1}{4} = 0.75$

selektia

$$H = LTV3$$

$$H = \{-1.003x_1 + 1x_2 \geq 2.744\}$$

C1-iterácia:  $w_1$  - zmeny  $k=1$

j	$x_{1j}$	$x_{2j}$	$x_{0j}$	$V_{1j}$	$V'_{1j}$
1	1.75	6	-1	1.86	1.86
2	2	5	-1	1.128	1.169
3	2.5	5	-1	0.902	1.128
4	3	6.25	-1	1.169	0.902
	-1.003	1	2.744		
	$w_1$	$w_2$	$w_0$		

$$U_{1j} = (w_2 x_{2j} + w_0 x_{0j}) / x_{1j}$$

LTV	$w_1'$	$V_1$	$V_2$	$V_3$	$V_4$	SCORE
1	-1.515	+	-	-	-	$\frac{1+2}{4} = 0.75$
2	-1.149	+	-	-	+	$\frac{1+1}{4} = 0.5$
3	-1.015	+	+	-	+	$\frac{2+1}{4} = 0.75$

sklebic

$$V_j = w_1' x_{1j} + w_2 x_{2j} + w_0 x_{0j}$$

$$H = LTV1 = \{ -1.515 x_1 + 1 x_2 \geq 2.744 \} \text{ - BEST}$$

D0-iterácia:  $w_0$  - zmeny  $k=0$

j	$x_{1j}$	$x_{2j}$	$x_{0j}$	$V_{0j}$	$V'_{0j}$
1	1.75	6	-1	-3.349	-3.349
2	2	5	-1	-1.97	-1.97
3	2.5	5	-1	-1.213	-1.705
4	3	6.25	-1	-1.705	-1.213
	-1.515	1	2.744		
	$w_1$	$w_2$	$w_0$		

$$U_{0j} = (w_1 x_{1j} + w_2 x_{2j}) / x_{0j}$$

LTV	$w_0'$	$V_1$	$V_2$	$V_3$	$V_4$	SCORE
1	2.66	+	-	-	-	$\frac{1+2}{4} = 0.75$
2	1.838	+	+	-	-	$\frac{2+2}{4} = 1$
3	1.459	+	+	-	+	$\frac{2+1}{4} = 0.75$

$$V_j = w_1 x_{1j} + w_2 x_{2j} + w_0' x_{0j}$$

$$H = LTV2 = \{ -1.515 x_1 + 1 x_2 \geq 1.838 \}$$



D1 - iteração :  $w_1$  - xmeny  $k=1$

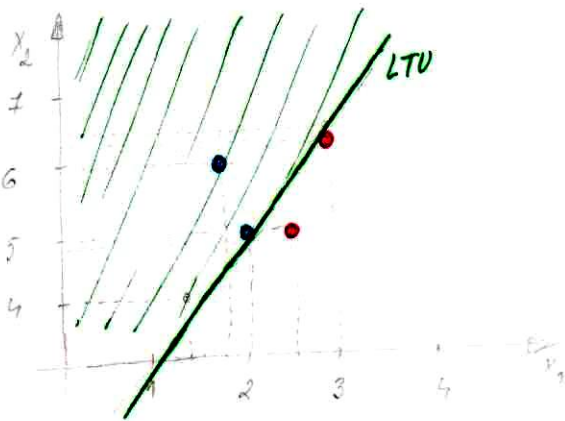
j	$x_{1j}$	$x_{2j}$	$x_{0j}$	$V_{0j}$	$V'_{1j}$
1	1.75	6	-1	2.378	2.378
2	2	5	-1	1.581	1.581
3	2.5	5	-1	1.265	1.47
4	3	6.25	-1	1.47	1.265
	-1.515	1	1.838		
	$w_1$	$w_2$	$w_0$		

$$U_{1j} = (w_2 x_{2j} + w_0 x_{0j}) / x_{1j}$$

LTV	$w_1'$	$V_1$	$V_2$	$V_3$	$V_4$	SCORE
1	-1.98	+	-	-	-	$\frac{1+2}{4} = 0.75$
2	1.523	+	+	-	-	$\frac{2+2}{4} = 1$
3	-1.368	+	+	-	+	$\frac{2+1}{4} = 0.75$

$$V_j = (w_1' x_{1j} + w_2 x_{2j} + w_0 x_{0j})$$

$$H = LTV_2 = \{ -1.523 x_1 + 1 x_2 \geq 1.838 \} = \text{BEST}$$



$$x_1 = 2 \Rightarrow x_2 = 1.838 + 1.523 \cdot 2 = 4.884$$

$$x_1 = 3 \Rightarrow x_2 = 1.838 + 1.523 \cdot 3 = 6.407$$

$$x_2 = 4 \Rightarrow x_1 = \frac{1.838 - 4}{-1.523} = 1.4$$