UCS1603 - INL

Date:

CAT2 - Answer Key.

(5) quadratic = [9 * 4 * 0 * 1 * 9] = 0.

(6) E(S) = 1

Gain (S, F) = 1 - 0.5 - 0.5 = 0

(7) $\frac{\partial L}{\partial w} = w + 3\alpha_1 + 7\alpha_2 - 12\alpha_3$

$\frac{\partial L}{\partial b} = \alpha_1 + \alpha_2 - \alpha_3$

$\frac{\partial L}{\partial \alpha_1} = 3w + b + 1$

$\frac{\partial L}{\partial \alpha_2} = 7w + b + 1$

$\frac{\partial L}{\partial \alpha_3} = -12w - b + 1$

solving 4 & 5 $x = 9.5$

$w = 2/5$, $b = -19/5$

solving 3 & 5

$w = 2/9$, $b = -5/3$; $x = 7.5$

(8)

x	y	$x - \bar{x}$	$y - \bar{y}$	$(x-\bar{x})^2$	$(y-\bar{y})^2$	$(x-\bar{x})(y-\bar{y})$
1	1	-2	-1.8	4	3.24	3.6
2	3	-1	0.2	1	0.04	-0.2
3	2	0	-0.8	0	0.64	0
4	3	1	0.2	1	0.04	0.2
5	5	2	2.2	4	4.84	4.4
				10	8.8	8

$\bar{x} = 3$ $\bar{y} = 2.8$

$\eta = 0.85$; $s_y = 1.48$; $s_x = 1.58$

$b = 0.79$; $a = 0.43$.

$$y = 0.43 + 0.79x$$

y	y'	$y - y'$	$(y-\bar{y})^2$
1	1.229	-0.22	0.05
3	2.01	0.99	0.98
2	2.8	-0.8	0.64
3	3.59	-0.59	0.35
5	4.38	0.62	0.38

Sum of Square Error $\Sigma = 2.41$

Date: __-__-____

(12) $E(S) = 0.94$

$G(S, \text{Outlook}) = 0.05$

$G(S, \text{Temp}) = 0.029$

$G(S, \text{Humidity}) = \boxed{0.152}$

$G(S, \text{Wind}) = 0.0481.$

Humidity is chosen as the root node.

Humidity

(13) Past Trend

$G(+ve) = 0.45$; $G(-ve) = 0$; $GI = 0.27.$

Open Interest

$G(\text{Low}) = 0.45$; $G(\text{High}) = 0.5$; $GI = 0.47.$

Trading Volume

$G(\text{High}) = 0.49$; $G(\text{Low}) = 0$; $GI = 0.343.$

Past Trend is choosen as root since it is least value.
Consider two samples of Past Trend.

Open Interest

$G(\text{High}) = 0$; $G(\text{low}) = 0.5$; $GI = 0.33$

Trading Volume

$G(\text{High}) = 0$; $G(\text{Low}) = 0$; $GI = 0.$