MECENG 276

Quiz 3

Q1

Accuracy, Correlation coefficient

Q2

Num of executions of train algo in a single 5-fold cross validation.

Train $K+1$ times : $k=5 \rightarrow$ train: 6

Q3

$R^2 = -0.5 \rightarrow$ a) Worse than t.m.

$R^2 = 0.5 \rightarrow$ c) Better than t.m.

$R^2 = 1.4 \rightarrow$ d) Not possible

Q4

1. Ordinal regression
2. Regression
3. Regression
4. Classification

Q5

data :

x	0.1	0.5	0.7	0.9
y	5	0.7	0.8	0.9

$h_1(x) = 4.8 - 5.3x$ (Lin. reg.)

$h_2(x) = 0.5 + 0.4x$

1)

$$MSE: \frac{1}{N}\sum^{N}(y_i - \hat{y}_i)^2$$

$$MAPE: \frac{1}{N}\sum^{N}\left|\frac{y_i - \hat{y}_i}{y_i}\right|$$

$h_1(x)$:

$$MSE: \frac{1}{4}(0.5329 + 2.1025 + 0.0841 + 0.7569)$$

$$= 0.8691 \approx 0.87$$

$$MAPE: \frac{1}{4}(0.146 + 2.071 + 0.3625 + 0.9667)$$

$$= 0.88655 \approx 0.89$$

$h_2(x)$:

$$MSE: \frac{1}{4}(19.8916 + 0 + 0 + 0) = 4.973$$

$$MAPE: \frac{1}{4}(0.908 + 0 + 0.025 + 0.044)$$

$$= 0.244$$

2) $h_1(x)$

3) $h_2(x)$

$$\frac{1}{2} \cdot 0.4 \cdot 8.33 =$$

$$kg\ m/s^2$$

$$E_{kinetisk} + E_{pot} = E_{mek}$$

$$E_h = 6.67 + \frac{1}{2} 0.4$$

$$mgh + \frac{1}{2} \cdot 0.4 \cdot 8.33^2 = kgm^2/s^2$$

$$145 + \frac{1}{2} m v^2$$