more effectively 有效性、← Do right thing

efficiency 高效性 ← Do thing right

① normal to <u>scale the targets</u> to lie
between o and 1

※ 目标值在0与1之间.

② scale the input data
  i) treat each data dimension independently
  ii) | zero mean ← 减去均值

      unit variance ← 除以方差 |

not allow
(outliers)离群值
to dominate

  iii) 或   Maximum = 1
           Minimum = -1

     Normalisation / Standardisation

np. mean( ) / np. variance( )

⎧ axis = 0   columns
⎨
⎩ axis = 1   rows

⌐→ axis = 1 x_1 x_2 x_3

axis=0
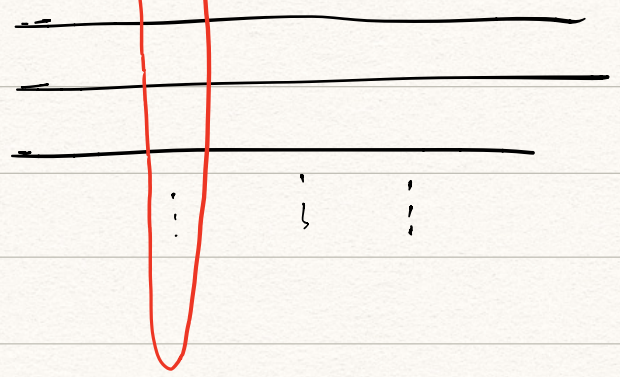
feature selection:

train the classifier with a subset of the inputs by missing out different features

↓ Good result

leave it out and try to leave out others

↓

Simplistic way of testing for correlation between the output and each of the features

x_1 x_2 x_3 ⟶ y

$\begin{cases} x_1 / x_2 / x_3 \text{ 与 } y \text{ 无关} \\ x_1 / x_2 / x_3 \text{ 相关} \end{cases}$

Dimensionality reduce

produce lower dimensionsal representations
of the data still include the relevant
information

Linear Regression

{ indicator variable for classes 指标值
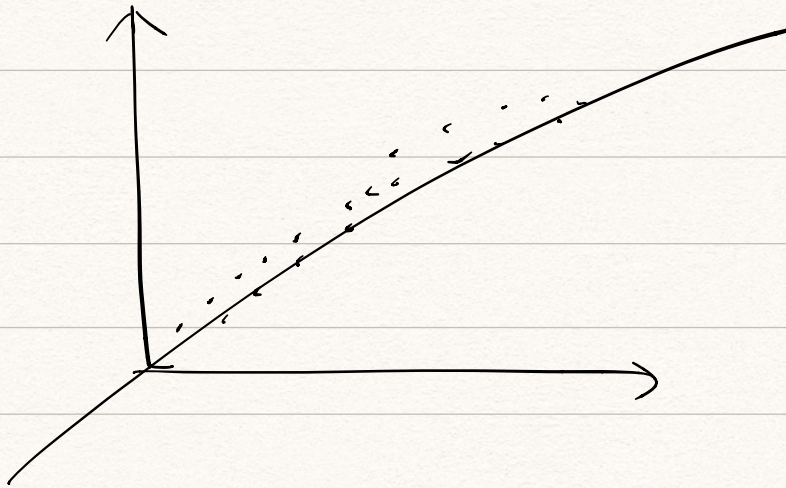{ future value 引插值

interpolation 内插
extrapolation 引.插

constant parameter

$$y = \sum_{i=0}^{M} P_i X_i$$

n个点 x^{n-1} 次方   年轻

Least-squares Optimization

$$\text{Error} = \sum_{j=0}^{N} \left(t_j - \sum_{i=0}^{M} \beta_i X_{ij} \right)^2$$

$$Y = \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n$$

$$X_0^{(0)}, X_1^{(0)}, \cdots, X_n^{(0)}$$
$$X_0^{(1)}, X_1^{(1)}, \cdots, X_n^{(1)}$$
$$\vdots \qquad \vdots \qquad \qquad \vdots$$
$$X_0^{(M)} \quad X_1^{(M)} \cdots \qquad X_n^{(M)}$$

$$\text{Error} = (t - X\beta)^T (t - X\beta)$$

$$\boxed{\text{trace} : 迹 : 对角线之和}$$

1. 实数 迹 为实数本身

2.

$$(t - X\beta)^T (t - X\beta)$$

① compute the smallest value of means

   i) differentiate it wrt column β

   ii) set the derivative to 0

   iii) $X^T(t - X\beta) = 0$

   iv) $\boxed{\beta = (X^T \cdot X)^{-1} \cdot X^T \cdot t}$

           closed form 封闭形式