SC201 Lecture 7

Classification Problem

< Logistic Loss >

L = _____

where y == -1 or y ==1

h = _____

W • ϕ(X) == 2 < y == 1 >

W • ϕ(X) == 1 < y == 1 >

W • ϕ(X) == 0 < y == 1 >

W • ϕ(X) == -1 < y == 1 >

W • ϕ(X) == -2 < y == 0 >

W • ϕ(X) == -1 < y == 0 >

W • ϕ(X) == 0 < y == 0 >

W • ϕ(X) == 1 < y == 0 >

< Hinge Loss >

L = _____

where y == -1 or y ==1

h = _____

W • ϕ(X) == 2 < y == 1 >

W • ϕ(X) == 1 < y == 1 >

W • ϕ(X) == 0 < y == 1 >

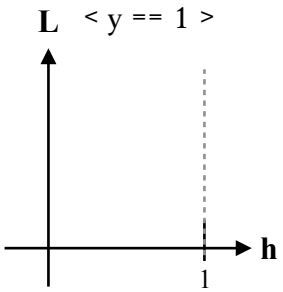
W • ϕ(X) == -1 < y == 1 >

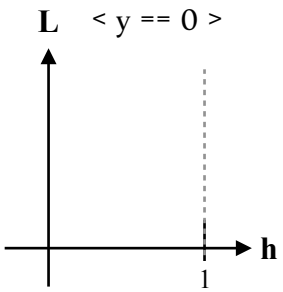
W • ϕ(X) == -2 < y == -1 >

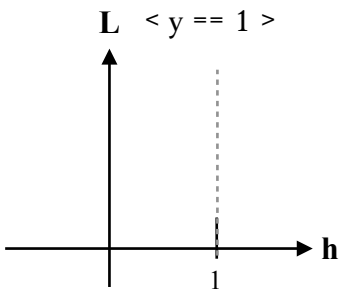
W • ϕ(X) == -1 < y == -1 >

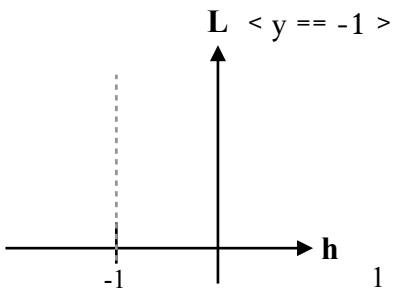
W • ϕ(X) == 0 < y == -1 >

W • ϕ(X) == 1 < y == -1 >









$$W = W - \alpha \frac{dL}{dW}$$

< Logistic >

$\frac{dL}{dW}$ = _____

< Hinge >

$\frac{dL}{dW}$ = _____

= _____

= { _____ if _____ ; _____ }

SC201 Assignment 2

Err(train) = _____

Err(val) = _____

Err(train) = _____

Err(val) = _____

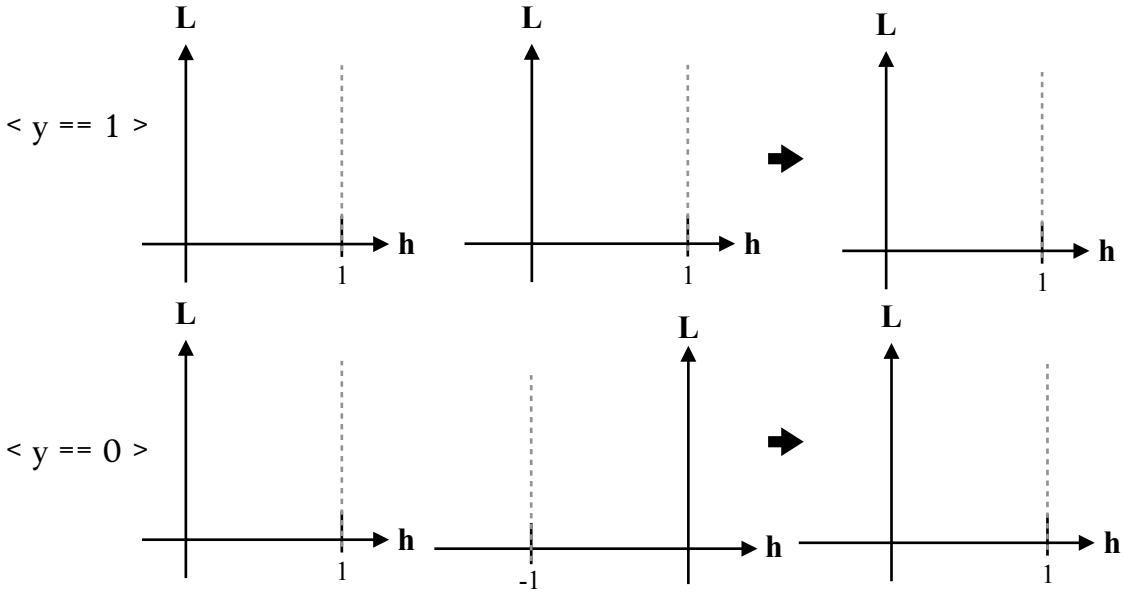
Logistic Loss v.s. Hinge Loss

Logistic Loss

- _____ Model
- Better _____
- Also Known as _____

Hinge Loss

- _____ Model
- Better _____
- Also Known as _____

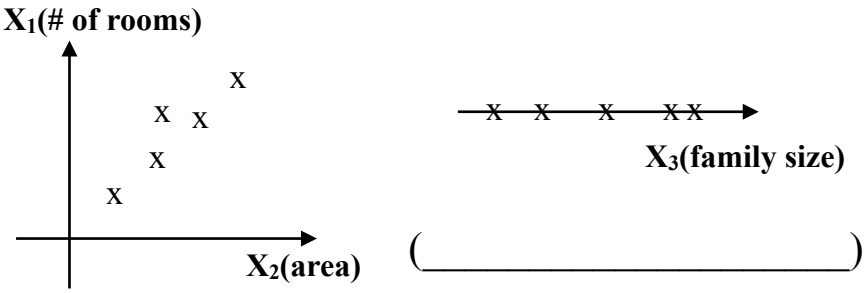


- **Logistic Loss**: 當模型學得愈來愈 ____，更新愈來愈 _____
- **Hinge Loss**: 不論模型好壞，更新都 _____

- Speed up training algorithm → _____

PCA - Principle Component Analysis

2D **1D**



(_____)

How to find the best line?

➡ _____

< Data Preprocessing for PCA >

① Must do _____ !

② Map original k-dimensionnal data to _____ space

⬆ (_____)

_____

③

from sklearn import decomposition

_____

_____

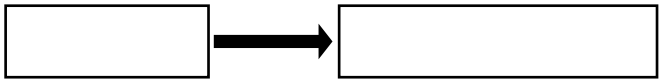
_____

1) titanic_pandas_pca_degree1

2) titanic_pandas_pca_degree2

X_1, X_2, X_3

⬇



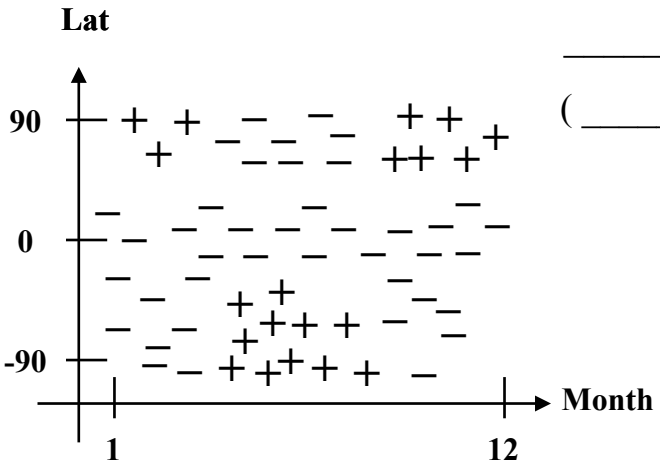
< Advantages of PCA >

- _____ to secure data
- _____ learning algorithm
- _____ your data by reducing to _____

< Disadvantages of PCA >

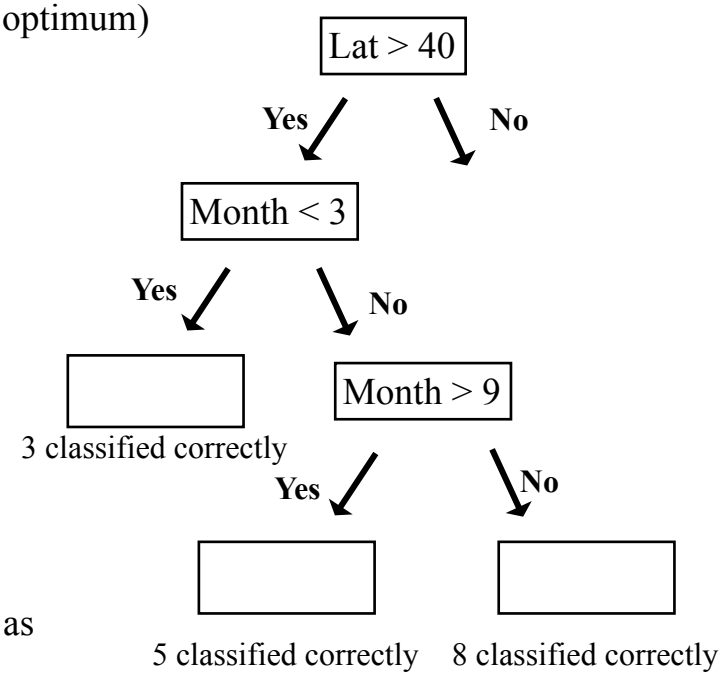
- Cannot _____ for you
- _____ the information we get
- _____

How can we see the top-most important features?



_____, _____, _____

(_____ optimum)



- How to choose splits?

_____

(_____ are regarded as

_____)

< Advantages >

- No need to _____
- _____
- _____

from sklearn import tree

_____

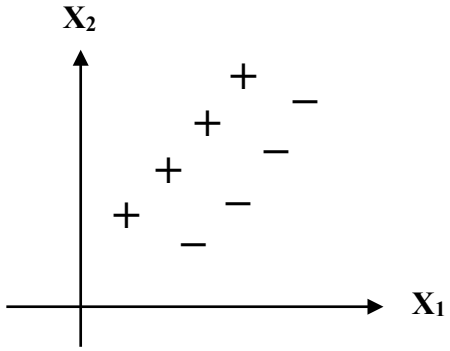
_____

_____

_____

< Disadvantages >

- _____
- _____
- _____



(_____)