· 04/06 (Wisconsin 위스콘신 데이터셋
Titanic → kaggle

Sklearn이 제공하는 linear_model 패키지의
["LogisticRegression"]
↓ 이진분류에 특화된 class

★ Sklearn이 제공하는
분류기 (classifier)
↳ ★★ SGDclassifier
제공
↓
코드로 구현

✓ Gradient Descent (경사하강법)
발전 → ★ SGD, RMSprop, Adam, …
SGD → Stochastic

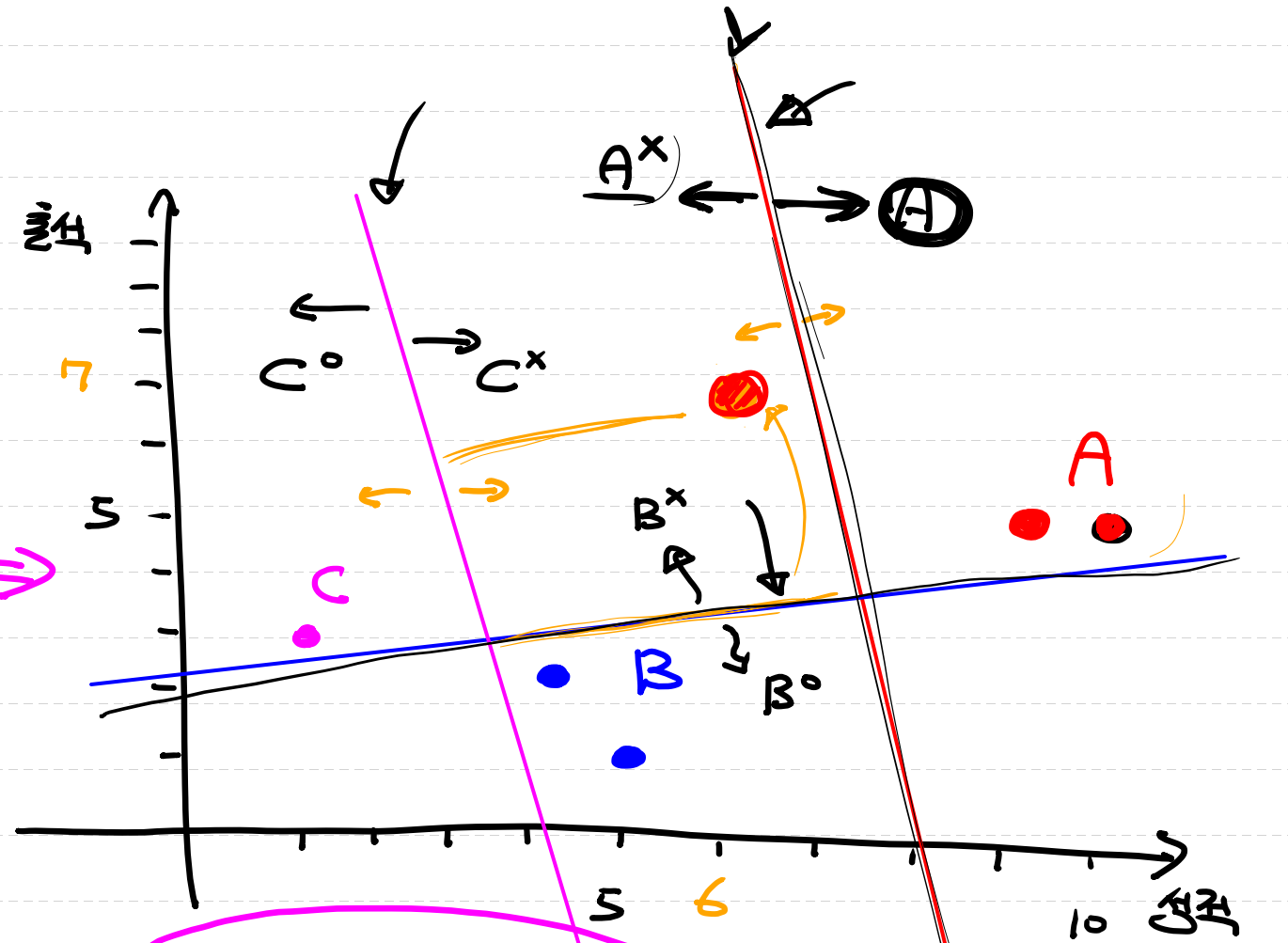
★ Overfitting을 어떻게 판단하나요?
★ model을 평가 → ★ Training Data Set 평가 → ✓★ 100%에 근접
80~90% → ★ Underfitting
★ Validation Data Set 평가 → ✓ 80% → overfitting

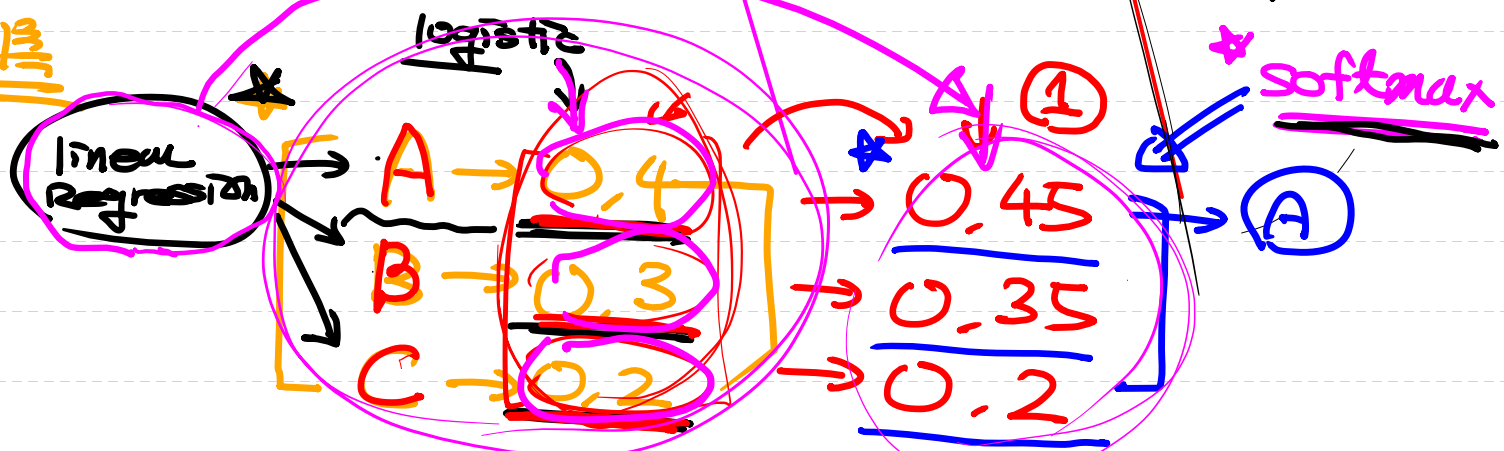
Multinomial Classification (다중분류) class가 여러개 !!

출석(x_1)	성적(x_2)	등급(y)
5 x_{11}	10 x_{12}	A
5 x_{21}	9 x_{22}	A
1 x_{31}	5 x_{32}	B
2	4	B
3	1	C

Label

7 6 ? 예측





Ⓐ

$$\begin{pmatrix} x_{11} & x_{12} \\ x_{21} & x_{22} \\ x_{31} & x_{32} \\ \vdots & \end{pmatrix} \circledcirc \begin{pmatrix} w_{A1} \\ w_{A2} \end{pmatrix} + b_A = \begin{pmatrix} x_{11}w_{A1} + x_{12}w_{A2} + b_A \\ x_{21}w_{A1} + x_{22}w_{A2} + b_A \\ x_{31}w_{A1} + x_{32}w_{A2} + b_A \\ \vdots \end{pmatrix}$$

(5×2) ⊚ (2×1) =

(Linear Regression)

Ⓑ

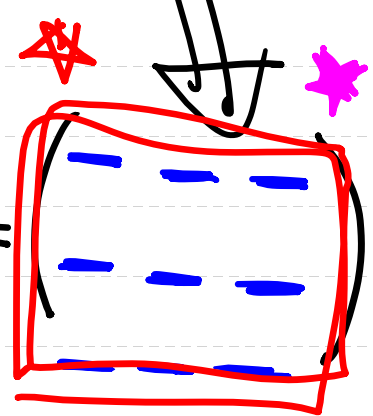
$$\begin{pmatrix} x_{11} & x_{12} \\ x_{21} & x_{22} \\ x_{31} & x_{32} \\ \vdots & \end{pmatrix} \circledcirc \begin{pmatrix} w_{B1} \\ w_{B2} \end{pmatrix} + b_B = \begin{pmatrix} x_{11}w_{B1} + x_{12}w_{B2} + b_B \\ x_{21}w_{B1} + x_{22}w_{B2} + b_B \\ x_{31}w_{B1} + x_{32}w_{B2} + b_B \\ \vdots \end{pmatrix}$$

Ⓒ 는 생략.

$$\circledcirc \begin{pmatrix} w_{C1} \\ w_{C2} \end{pmatrix} + b_C$$

하나의 행렬식으로 표현

$$\begin{pmatrix} x_{11} & x_{12} \\ x_{21} & x_{22} \\ x_{31} & x_{32} \\ \vdots & \end{pmatrix} \circledcirc \begin{pmatrix} w_{A1} & w_{B1} & w_{C1} \\ w_{A2} & w_{B2} & w_{C2} \end{pmatrix} + \begin{pmatrix} b_A & b_B & b_C \end{pmatrix} =$$



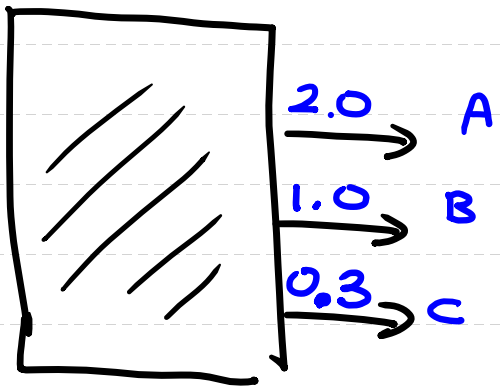
ⓐ Multinomial

↳ Model도 변경 → logistic ⇒ sigmoid 사용
→ multinomial ⇒ softmax사용

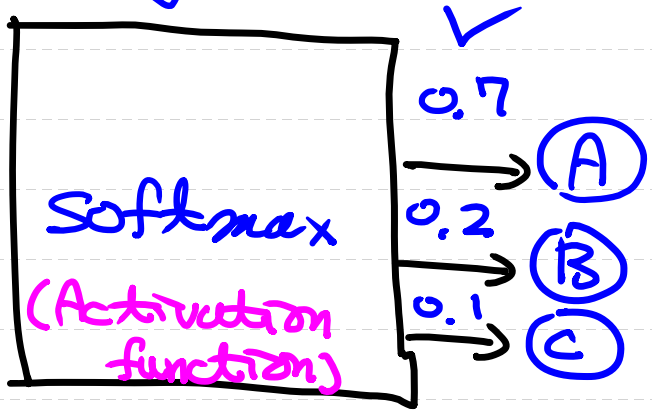
↳ Model의 변경되기때문에 Loss function도 변경

★ ↳ Cross Entropy

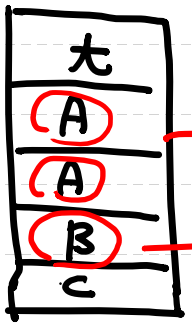
Linear Regression



★



★ Label



One-hot Encoding 변환

→ 아하! 그렇군요!!'
↳ 구현 (BMI재)