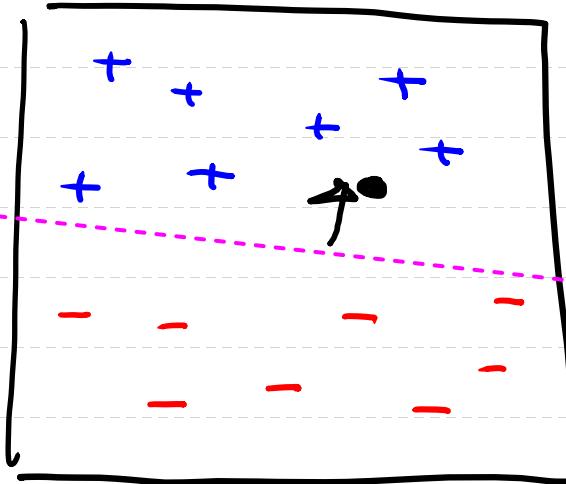
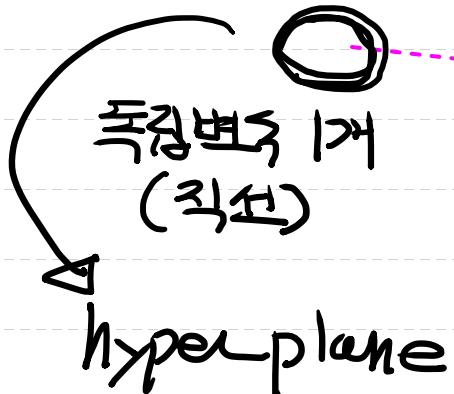
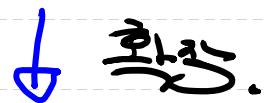


12/06

Logistic Regression



binary classification
(이진분류)



Multinomial classification

 (다중분류)

→ 예를 들어 보아요 !!

Logistic Regression으로 구현

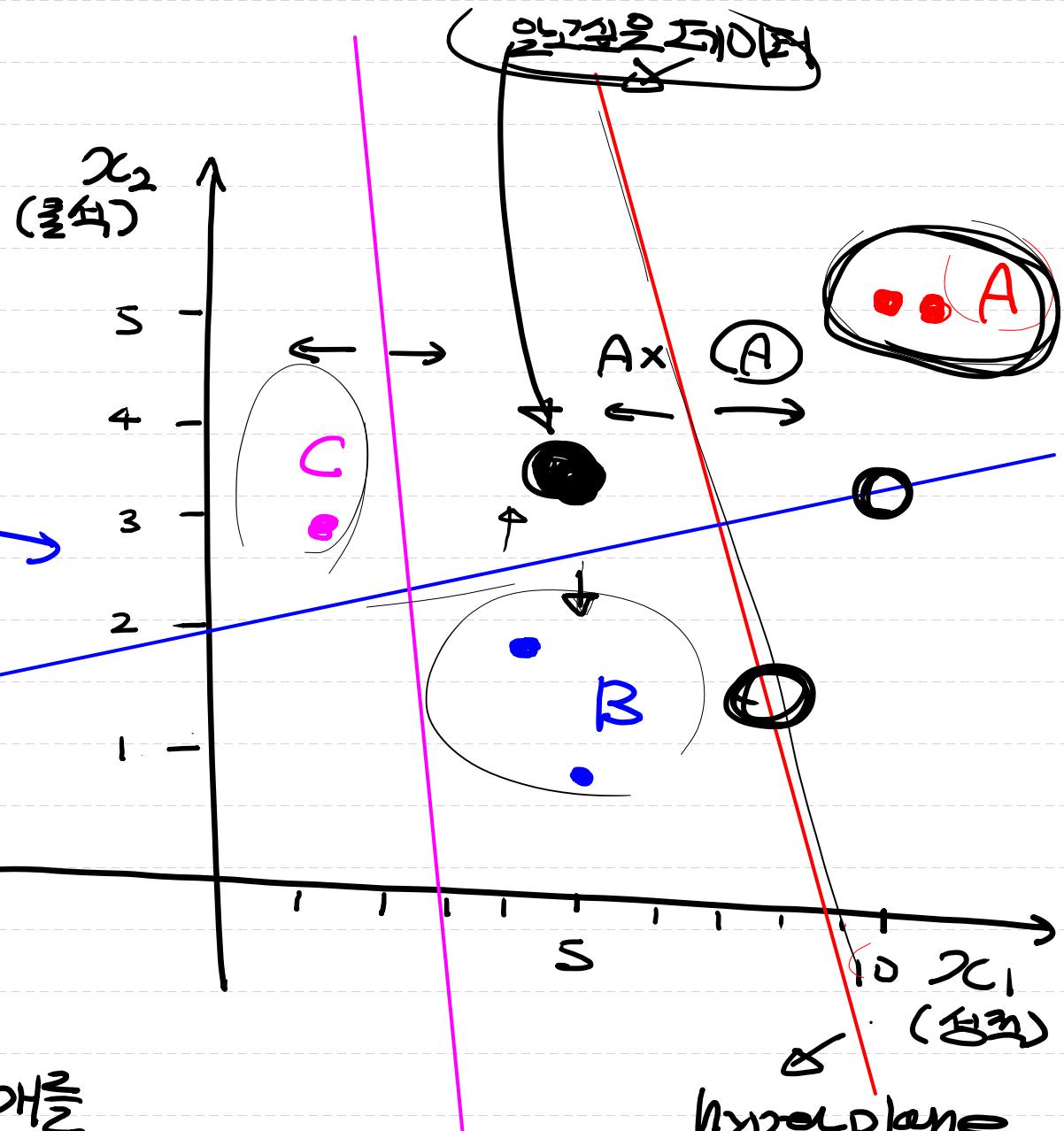
드로이트

A, B, C
3종의 IDH

(성적)	(총성)	(총점)
x_1	x_2	大
10	5	A
9	5	A
5	1	B
4	2	B
1	3	C

보통의 종류
Class

그림프!!



logistic regression 예제를

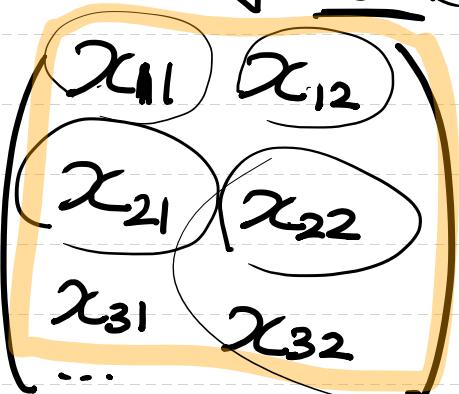
이용하면

$$\begin{pmatrix} A & 0 & 0 \\ B & 0 & 0 \\ C & 0 & 0 \end{pmatrix}$$

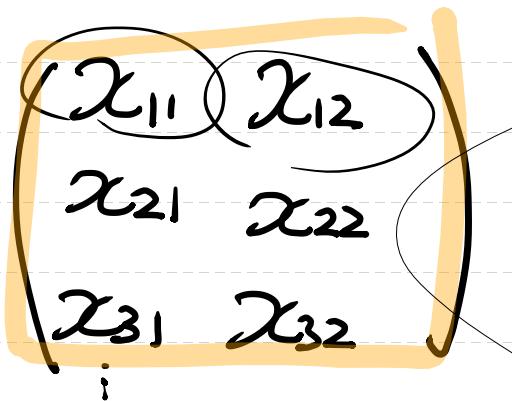
hyperplane

logistic regression

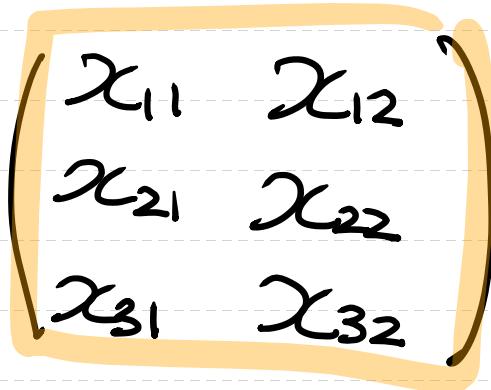
$$y = \underline{w_1}x_1 + \underline{w_2}x_2 + b$$



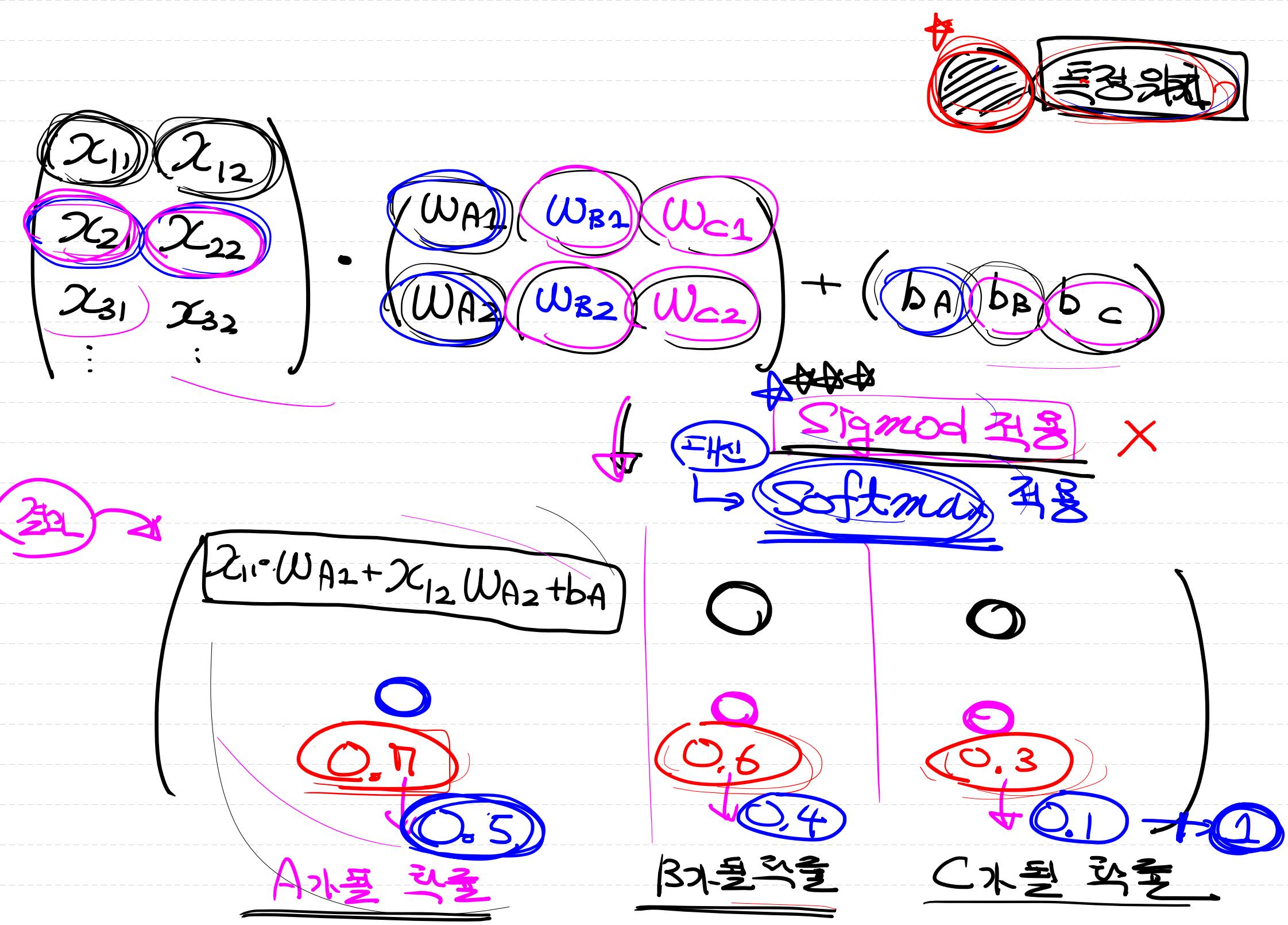
$$\cdot \begin{pmatrix} w_{A1} \\ w_{A2} \end{pmatrix} + b_A = \begin{pmatrix} x_{11} \cdot w_{A1} + x_{12} \cdot w_{A2} + b_A \\ x_{21} \cdot w_{A1} + x_{22} \cdot w_{A2} + b_A \\ \vdots \end{pmatrix}$$



$$\cdot \begin{pmatrix} w_{B1} \\ w_{B2} \end{pmatrix} + b_B = \begin{pmatrix} x_{11} \cdot w_{B1} + x_{12} \cdot w_{B2} + b_B \\ x_{21} \cdot w_{B1} + x_{22} \cdot w_{B2} + b_B \\ \vdots \end{pmatrix}$$



$$\cdot \begin{pmatrix} w_{C1} \\ w_{C2} \end{pmatrix} + b_C = \begin{pmatrix} \dots \\ \dots \end{pmatrix}$$



* Multinomial classification (다중분류)



binary classification (이진분류)를 여러개 모아놓은 것

↳ logistic Regression 여러개를 모아놓은 것

↳ 확률을 구하기 위한 Sigmoid 활성 쪽용

logistic regression

Model →



linear regression

Model → Sigmoid

Softmax를 이용해서

여러분류 중 해당 분류의 확률을 계산

linear → logistic
Model 뺏기

↳ loss 뺏기

(다중분류는 model 뺏해요)

↳ linear regression 여러개 → softmax

↳ loss 뺏해요

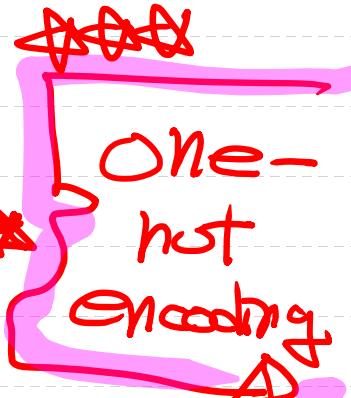


Multinomial classification의 loss는?

loss는?



Cross Entropy

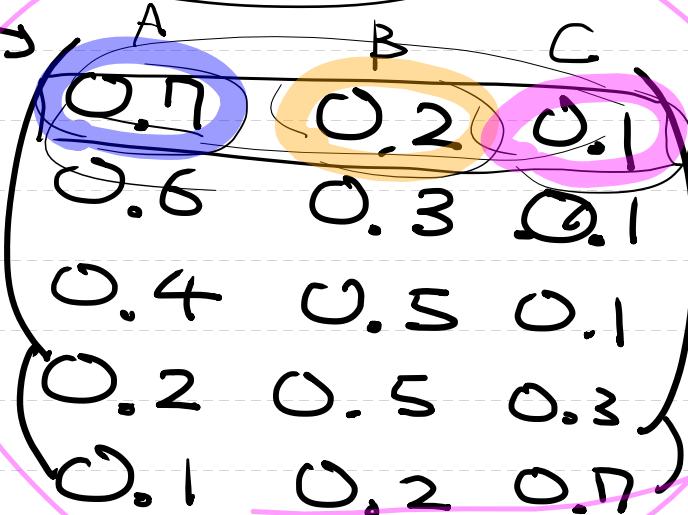


(성적)	(총점)	(학점)
x_1	x_2	t
10	5	A
9	5	A
5	1	B
4	2	B
1	3	C

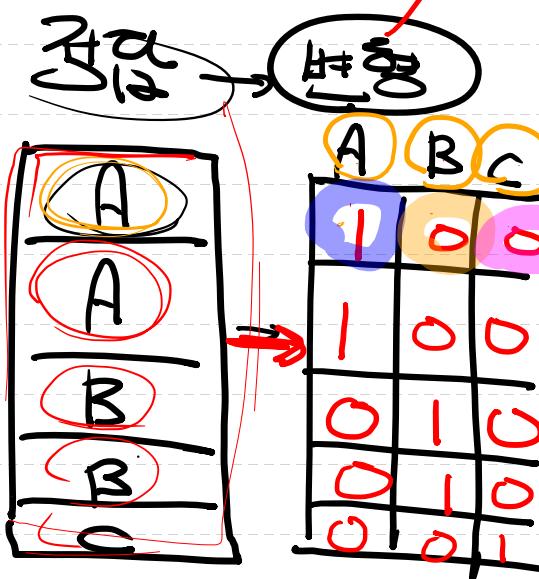
다른 예
Class가 3이면
학점값을 몇개 계산?
3개 계산

Model

학점 예측



(Cross Entropy)
loss 계산



Tensorflow keras

Sigmoid(X)

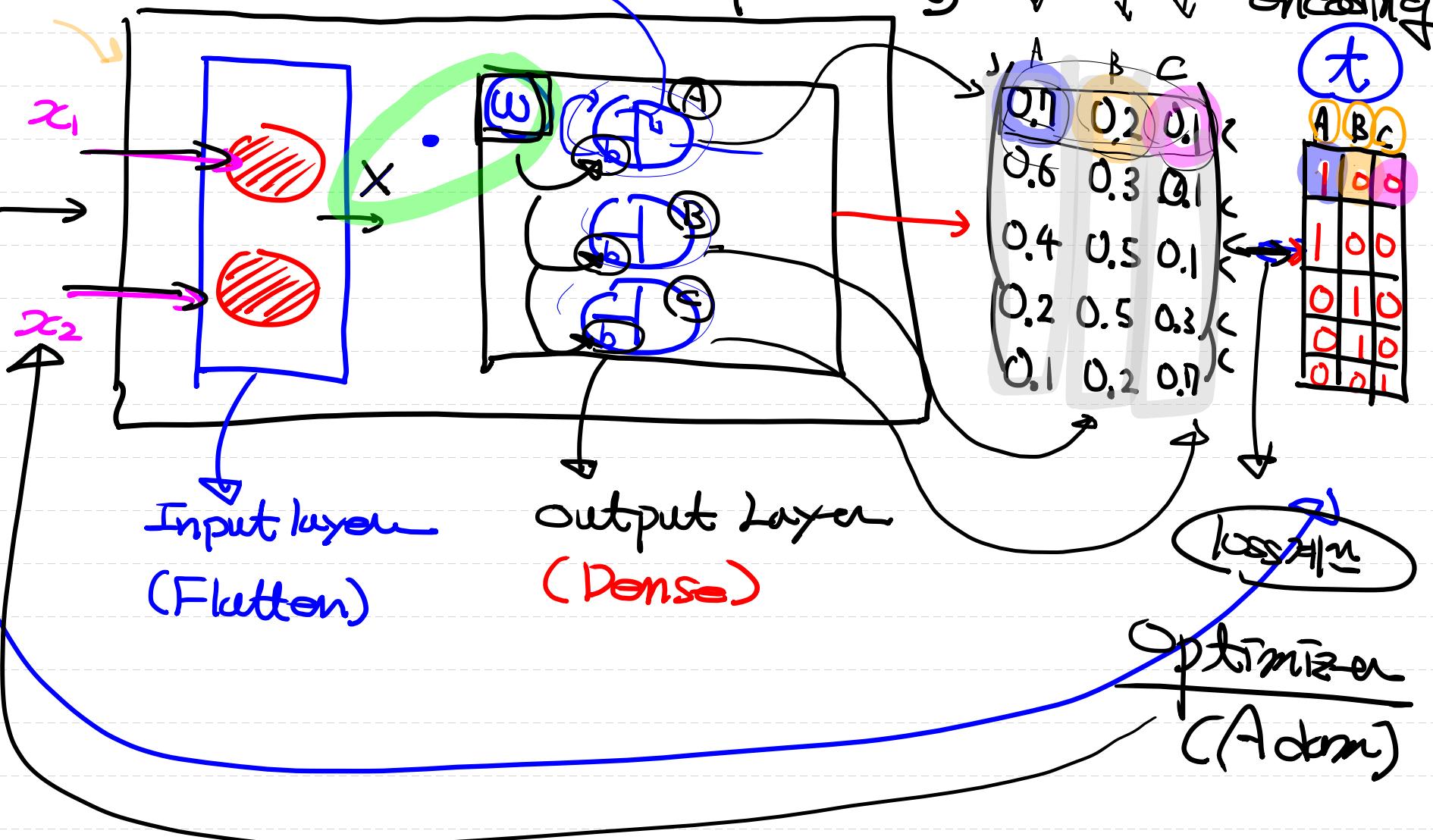
Activation \rightarrow softmax(O)

feature target

特征
特徴

	x_1	x_2	t
:	x_1	x_2	A
:	x_1	x_2	B
:	x_1	x_2	C
	x_1	x_2	A

training
Data
Set



구현을 해 보아요!!

BMI 지수에 따른 예제 구현

→ 체중지수

(기 (cm) → 187

몸무게 (kg) → 80

계산을 이용하지 않고

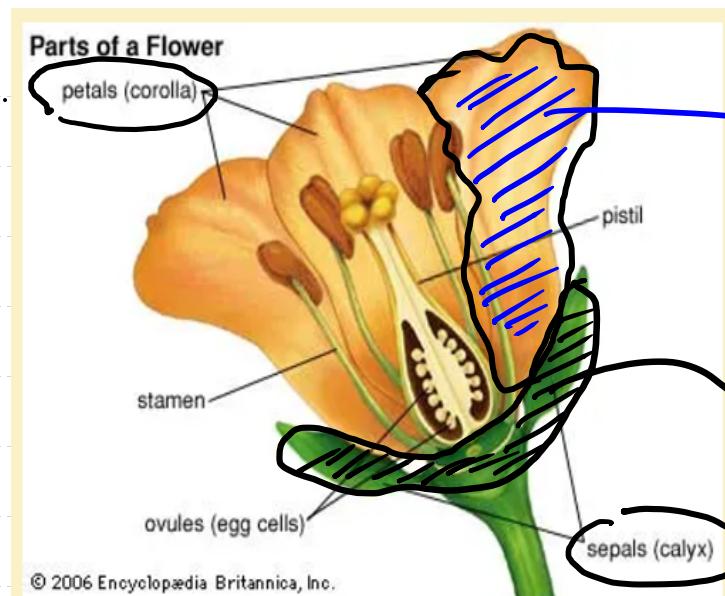
마신러닝으로

학습하기

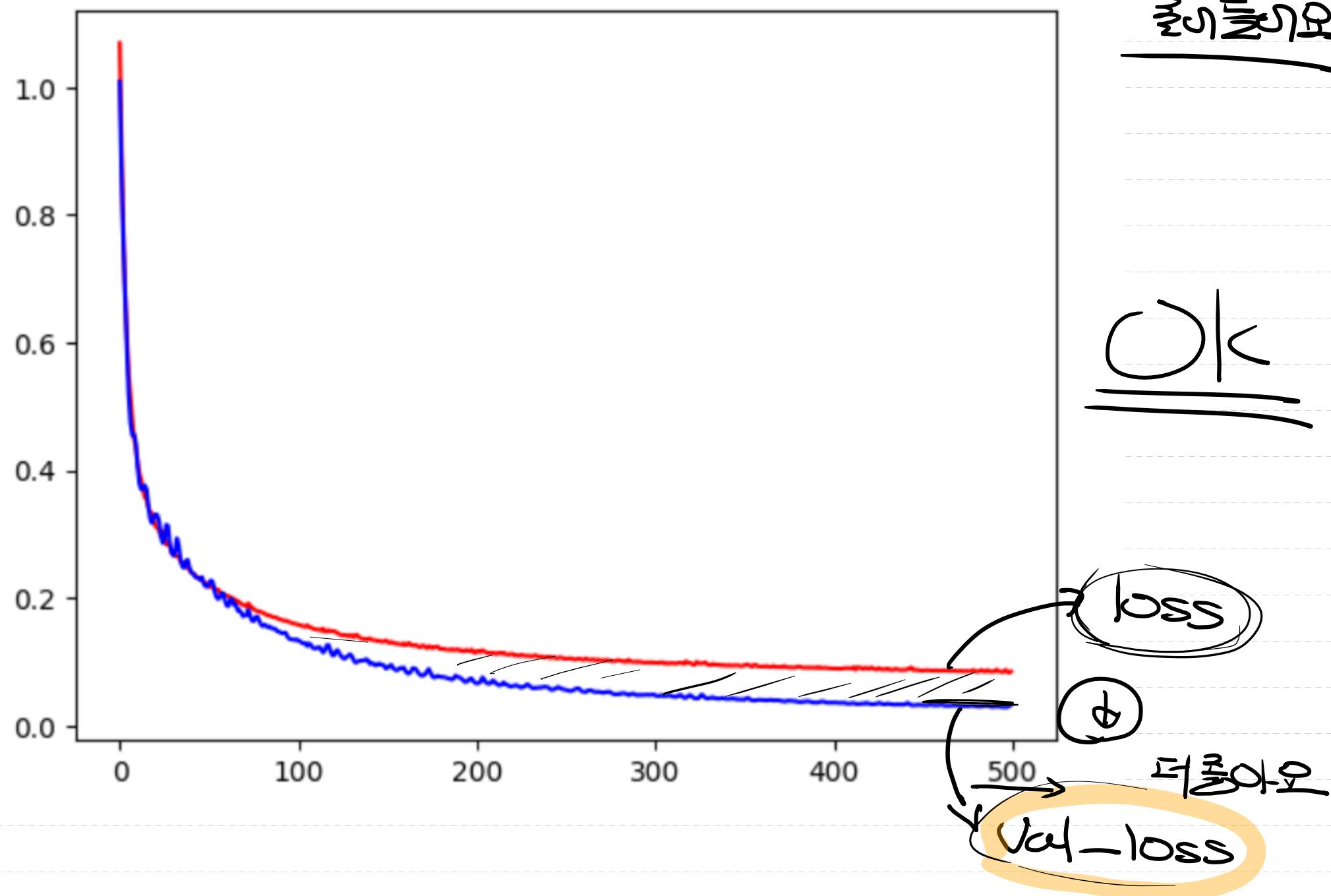
Prediction



Iris



→ loss는 epoch이 증가함에 따라 줄어들어요



Linear Regression

Logistic Regression

"Regression"

[binary classification (이진분류)]

multinomial

classification (다중분류)

마지막 예제 → 2개가지로 사용하는 dataset → 전형 Data



그럼 Numerical Data라는 말은 어떻게 해나요??



이미지를 헤아리고

이미지를 분석하면?



→ 이미지, 소리, 음악, 동영상, 텍스트, 이미지, ...

Vision (sequential data)

NLP

gogo!

(시각도 오래걸리고
구조도 복잡)

] 학습이 잘 안되요 !!
Deep Learning