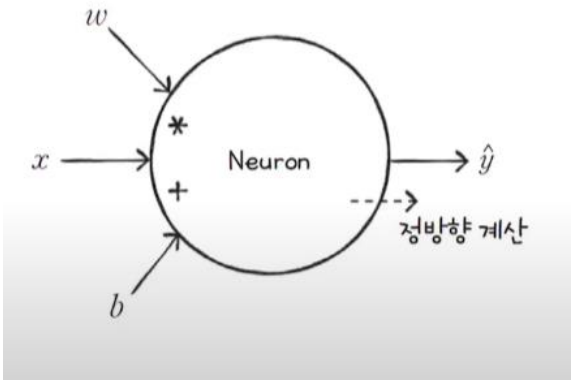
디지털 영상처리 연구실 연구보고서

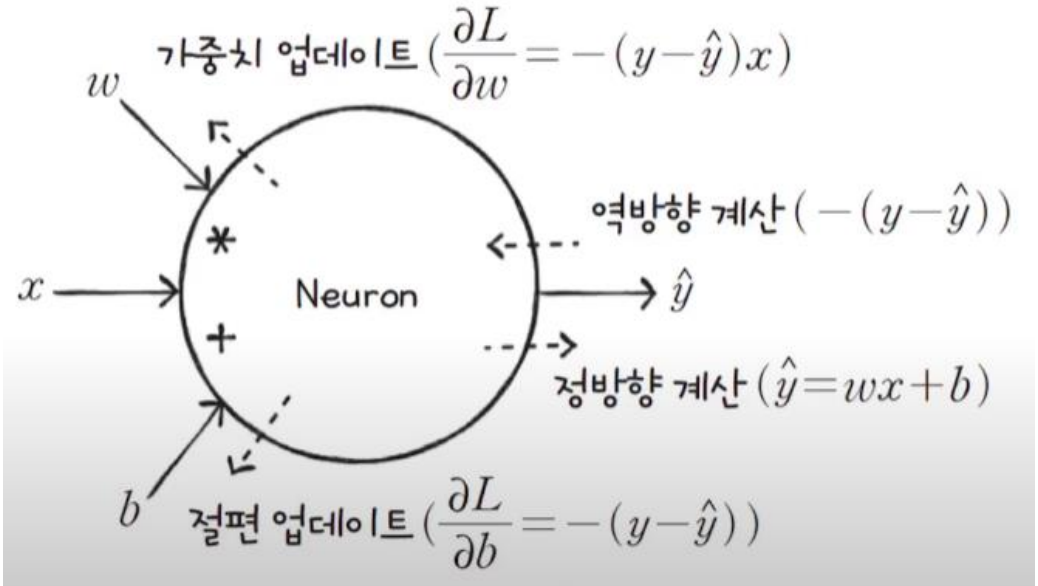
김우헌

#뉴런으로 도식화



$$\hat{y}=w\times x+b$$

#역방향 계산



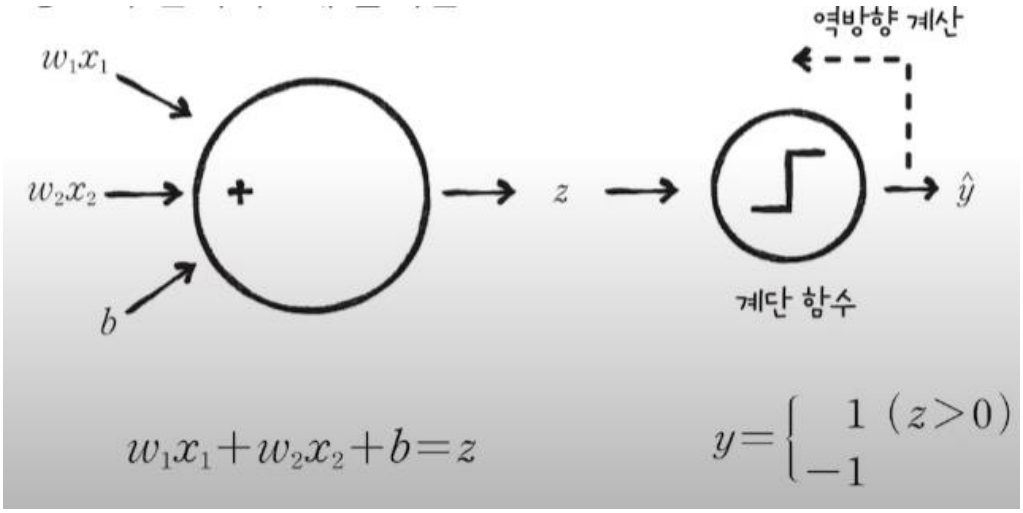
-> w_new=w+w_rate*err

b_new=b+1*err

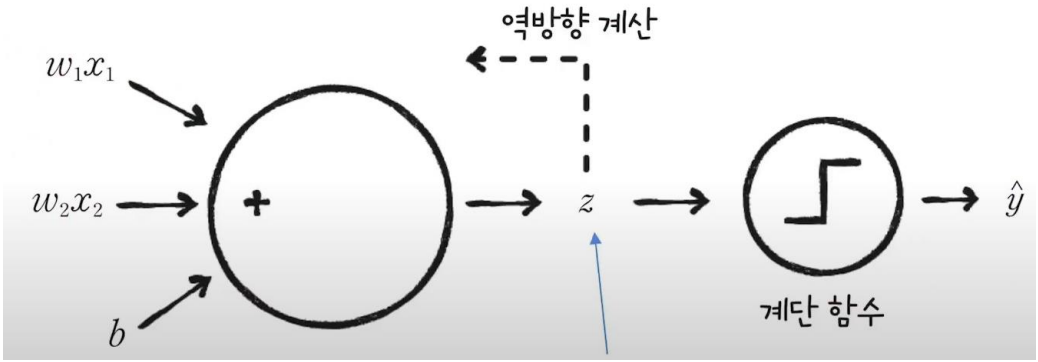
##로지스틱 회귀

#퍼셉트론

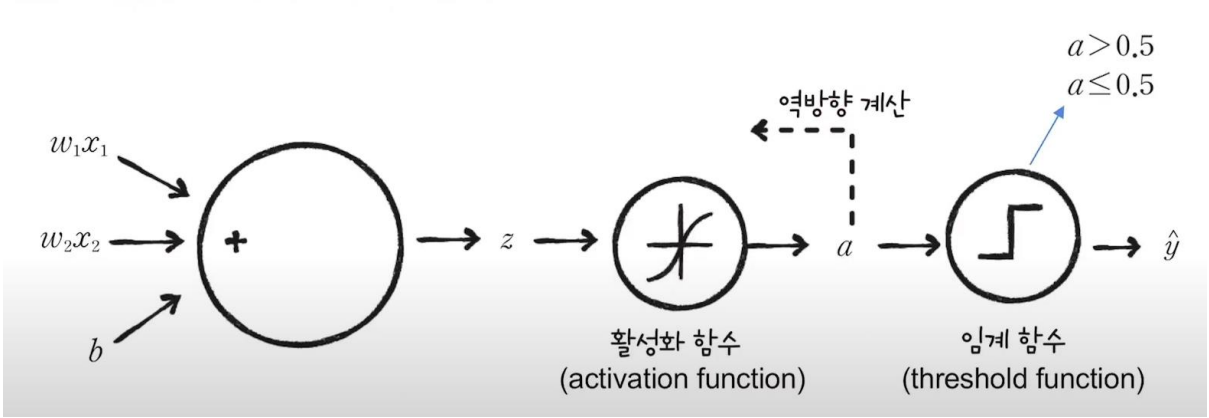
->이진분류를 위한 알고리즘



#아달린

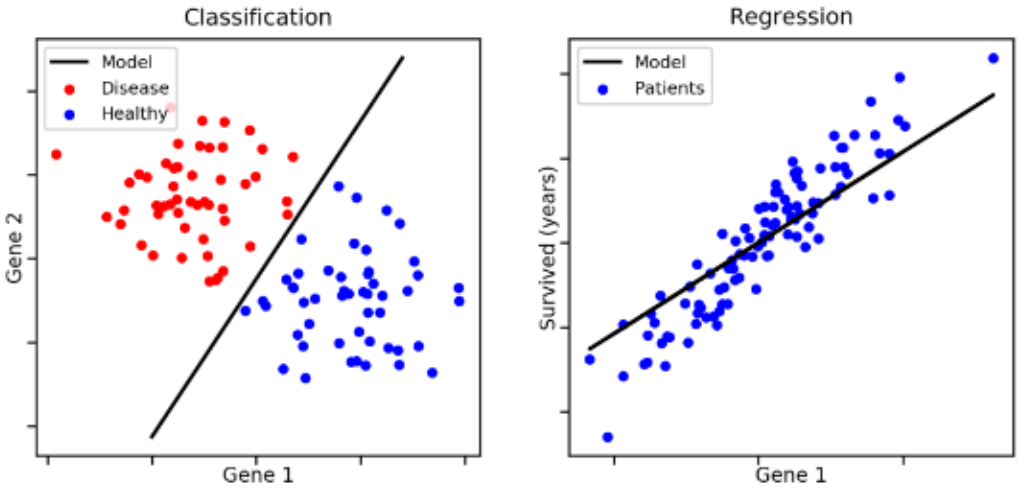


#로지스틱 회귀



->활성화 함수는 비선형 함수사용(시그모이드함수)

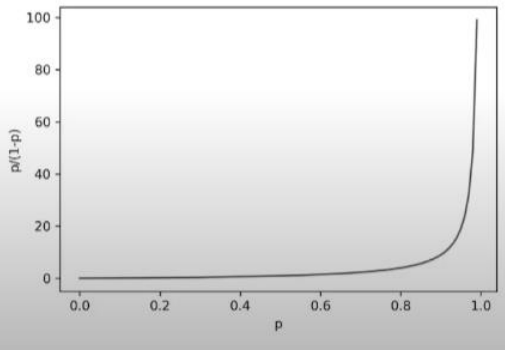
회귀와 분류



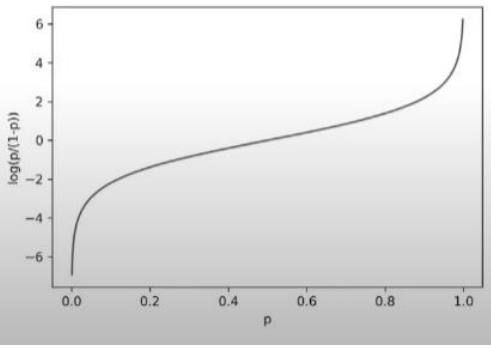
#시그모이드 함수

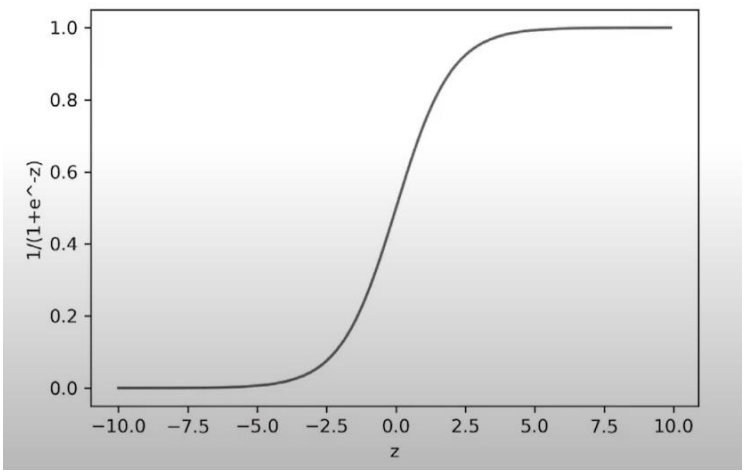
오즈 비(odds ratio) --> 로짓 함수(logit funtion) --> 시모드이드 함수

$$OR(odds\ ratio)=\frac{p}{1-p}(p=\text{성공 확률})$$

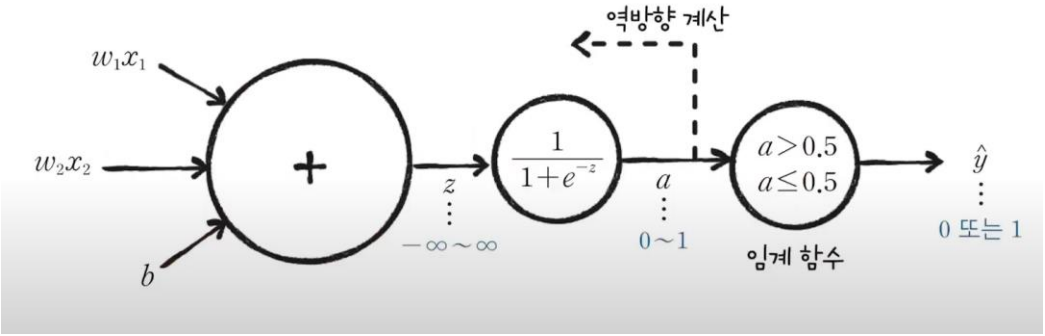


$$logit(p)=log(\frac{p}{1-p})$$





$$=\frac{1}{1+e^{-z}}$$



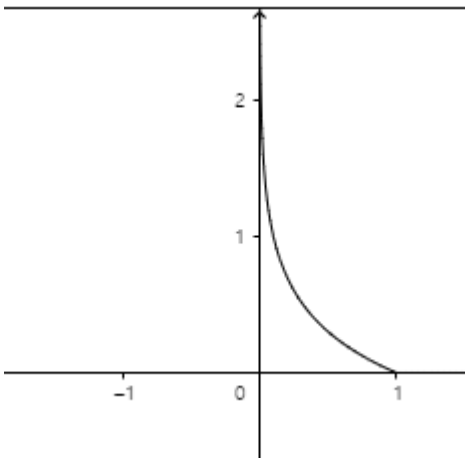
#로지스틱 손실함수

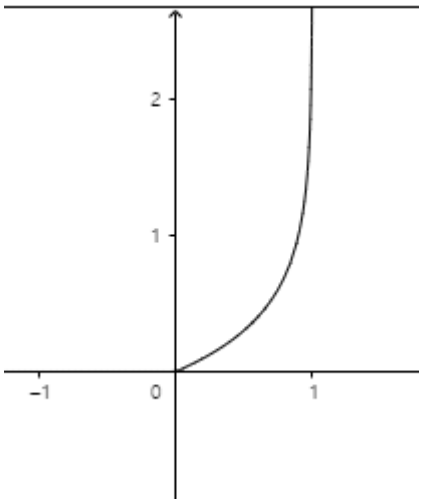
->경사 하강법을 이용하기 위하여 미분가능한 로지스틱 손실함수 사용

$$L = -(ylog(a) + (1-y)log(1-a))$$

로지스틱 손실함수

	L
$y=1$(양성클래스)	$-log(a)$
$y=0$(음성클래스)	$-log(1-a)$





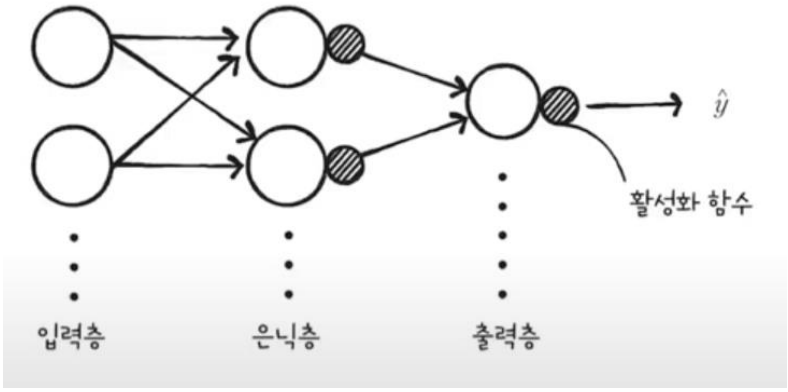
#제곱오차의 미분과 로지스틱 손실함수의 미분

	제곱 오차의 미분	로지스틱 손실 함수의 미분
가중치에 대한 미분	$\frac{\partial SE}{\partial w} = -(y-\hat{y})x$	$\frac{\partial L}{\partial w} = -(y-a)x$
절편에 대한 미분	$\frac{\partial SE}{\partial b} = -(y-\hat{y})1$	$\frac{\partial L}{\partial b} = -(y-a)1$

#가중치 업데이트

$$w_i = w_i - \frac{\partial L}{\partial w_i} = w_i + (y - a)x_i$$

#인공 신경망(딥러닝,심층 신경망)



#단일층 신경망