

디지털 영상처리 연구실 연구보고서

김우현

##이진 분류의 혼동 행렬(Confusion matrix)

->성능평가 지표로 이용

		예측	
		Positive	Negative
실제	Positive	TP (True Positive)	FN (False Negative)
	Negative	FP (False Positive)	TN (True Negative)

#정확도(accuracy)

분류		분자	
분모	TP (True Positive)	FN (False Negative)	TP (True Positive)
	FP (False Positive)	TN (True Negative)	FP (False Positive)

#recall(재현율)

TP (True Positive)	FN (False Negative)
FP (False Positive)	TN (True Negative)

분모

TP (True Positive)	FN (False Negative)
FP (False Positive)	TN (True Negative)

분자

-> 암환자 판별

#precision(정밀도)

TP (True Positive)	FN (False Negative)
FP (False Positive)	TN (True Negative)

분모

TP (True Positive)	FN (False Negative)
FP (False Positive)	TN (True Negative)

분자

-> 스팸 메일

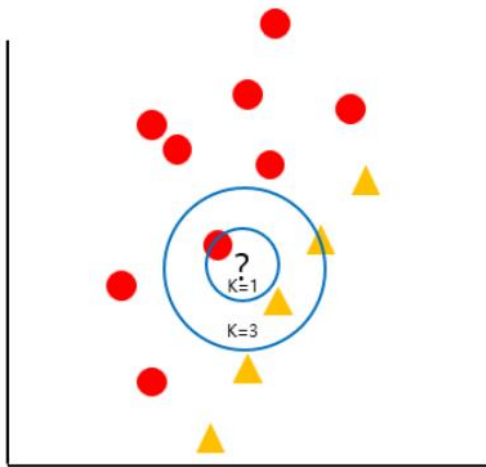
#F1-score

$$F_1 = 2 \cdot \frac{\text{precision} \cdot \text{recall}}{\text{precision} + \text{recall}} = \frac{2 \cdot \text{TP}}{2 \cdot \text{TP} + \text{FP} + \text{FN}}$$

-> 0~1 사이의 값을 가지며 높을수록 f1-score가 높을수록 분류기의 성능 좋다

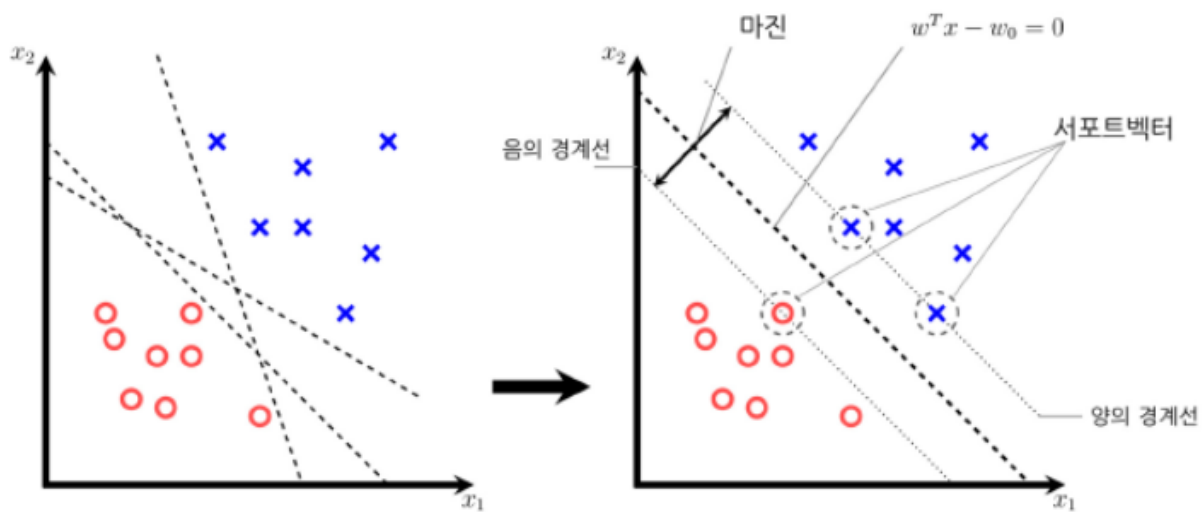
##머신러닝 알고리즘

#k-최근접 이웃



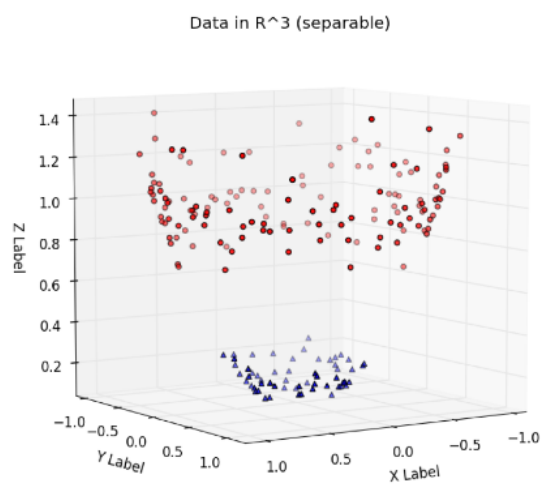
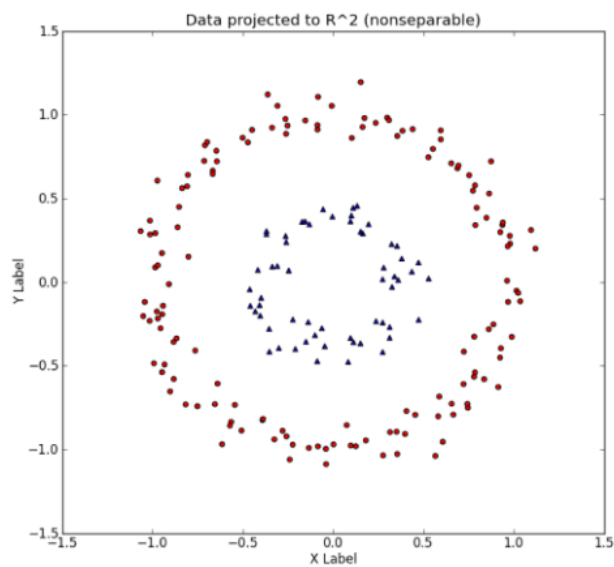
->주어진 데이터에 대한 분류

#SVM(서포트 벡터 머신)

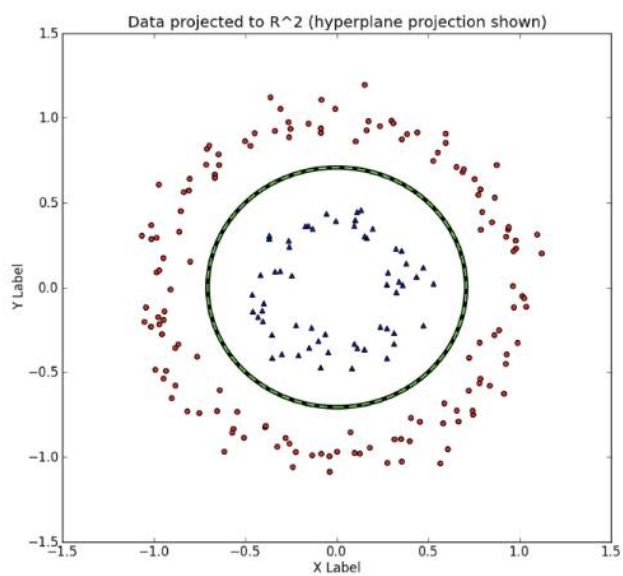
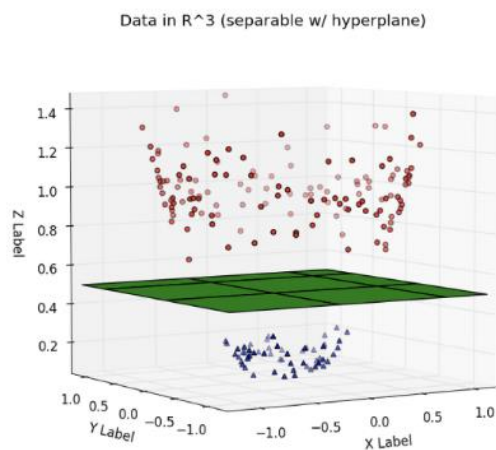


->초평면? 공간 내에서 특징에 따라 분류를 시키는 것 (2차원일경우 1차원, 3차원일경우 2차원)

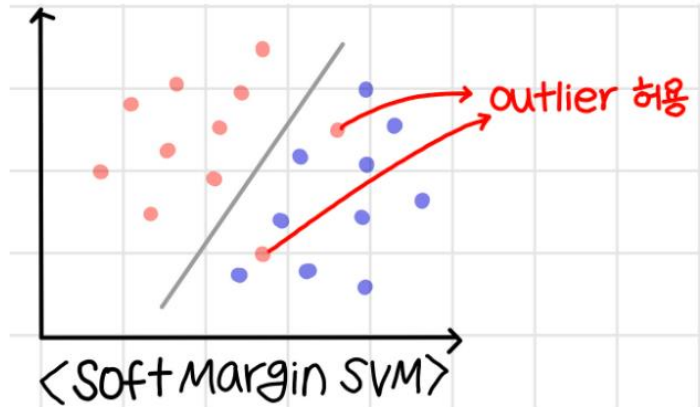
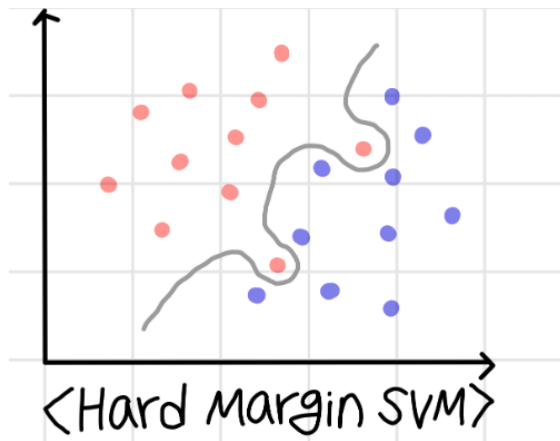
#비선형 SVM



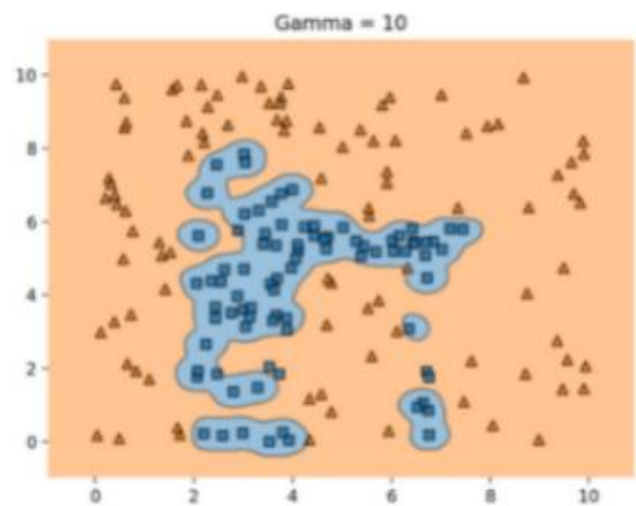
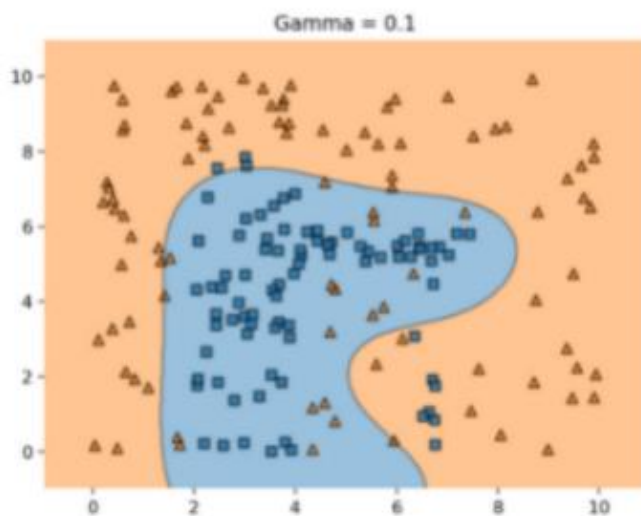
->비선형 문제일 경우 저차원 데이터를 고차원 데이터로 바꿔서 해결!(커널함수사용)



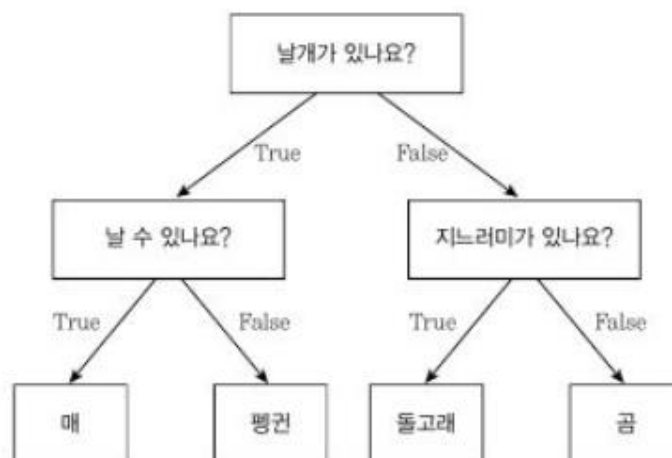
#하드마진,소프트 마진



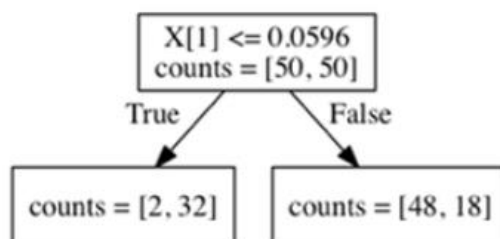
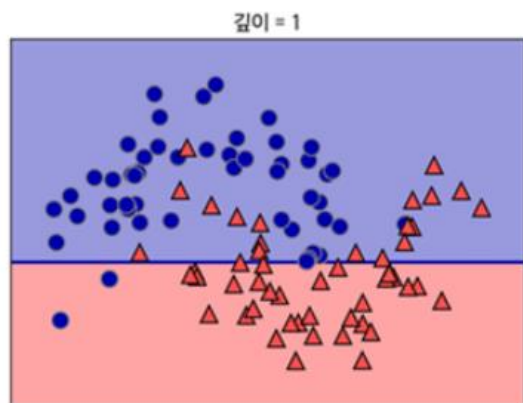
#파라미터 gamma



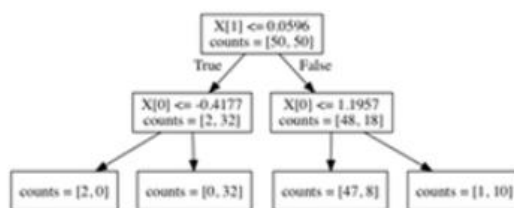
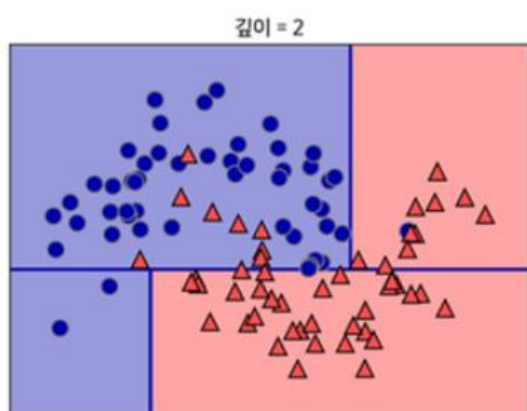
#결정 트리



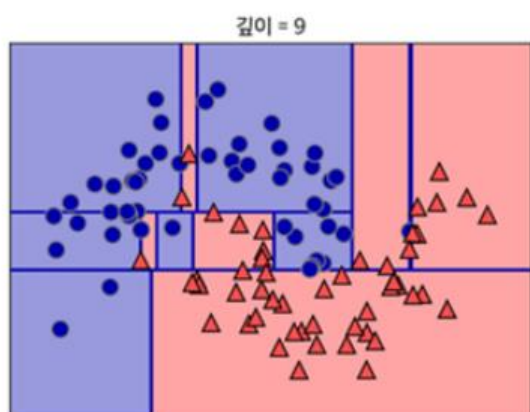
->불순도를 0에 가깝게 만드는 방향으로 학습진행!



결정 트리 깊이 = 1



결정 트리 깊이 = 2



결정 트리 깊이 = 9