데이터 사이언스와 인공지능

제주대학교 변 영 철


나, 연서


앙,슬끼
추억의 뽑기
보롬왓 상회


Plant Bank


메리골드

나만의 메리골드

날짜	길이 (전체)	너비	길이 (잎따리)
2019.06.16	0	0	0
2019.06.20	1.6cm	0.28cm	0.9cm
06.22	2.6cm	3.8cm	1.4cm
6.25	~~3.0~~ 3cm	4.6cm	1.6cm
2019.6.29	4.4	~~2.8cm~~	2cm
	~~5.0~~	0.5cm	
	5.0	0.6	2.2

① 화분

날짜	키	너비	길이
2019.06.16	0	0	0
2019.06.20	1.6cm	0.28cm	0.9cm
2019.06.22	3.3cm	4.5cm	1.5cm
6.25	3.5cm	5cm	1.8cm
6.29	5cm	0.55cm ~~5.5cm~~	2.5cm

② 들판

날짜	키	너비	길이
6.22	12mm	2.9mm	8mm
25	25mm	4.5mm	13mm
6.29	31mm	5.5mm	15mm
	45.5mm	60mm	19mm

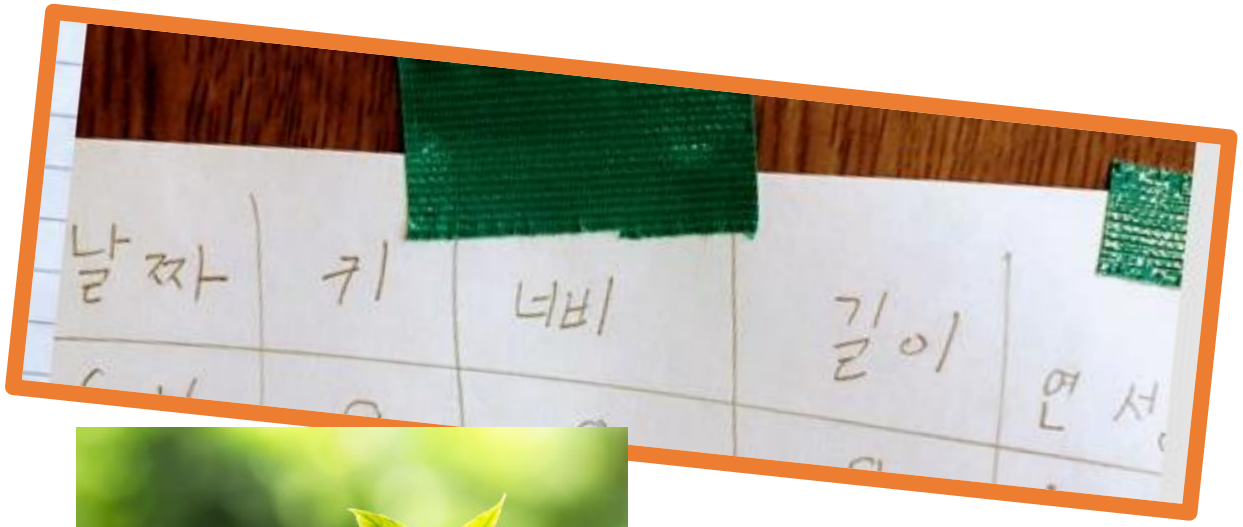
③ 세자매

plant_diary.txt - 메모장

파일(F) 편집(E) 서식(O) 보기(V) 도움말(H)

지난날짜, 키, 잎 너비, 잎 길이, 주인

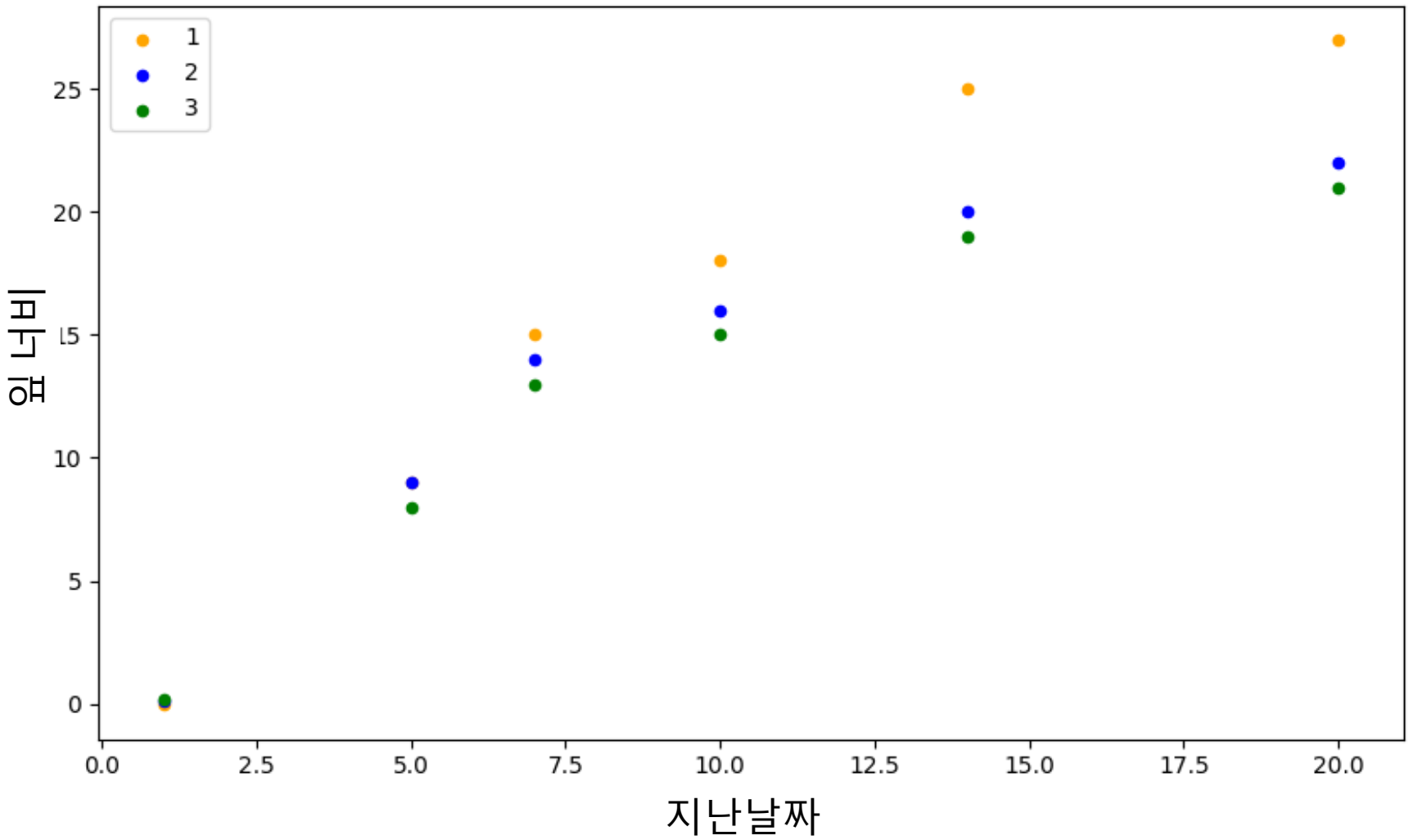
1, 0, 0, 0, 1
1, 0, 0, 0, 2
1, 0, 0, 0, 3
5, 16, 28, 9, 1
5, 16, 2.8, 9, 2
5, 12, 2.9, 8, 3
7, 33, 4.5, 15, 1
7, 26, 3.8, 14, 2
7, 25, 4.5, 13, 3
10, 35, 5, 18, 1
10, 30, 4.6, 16, 2
10, 31, 5.5, 15, 3
14, 50, 6.5, 25, 1
14, 44, 5.8, 20, 2
14, 45.5, 6, 19, 3
20, 56, 6,8, 27, 1
20, 50, 6, 22, 2
20, 51, 6.5, 21, 3

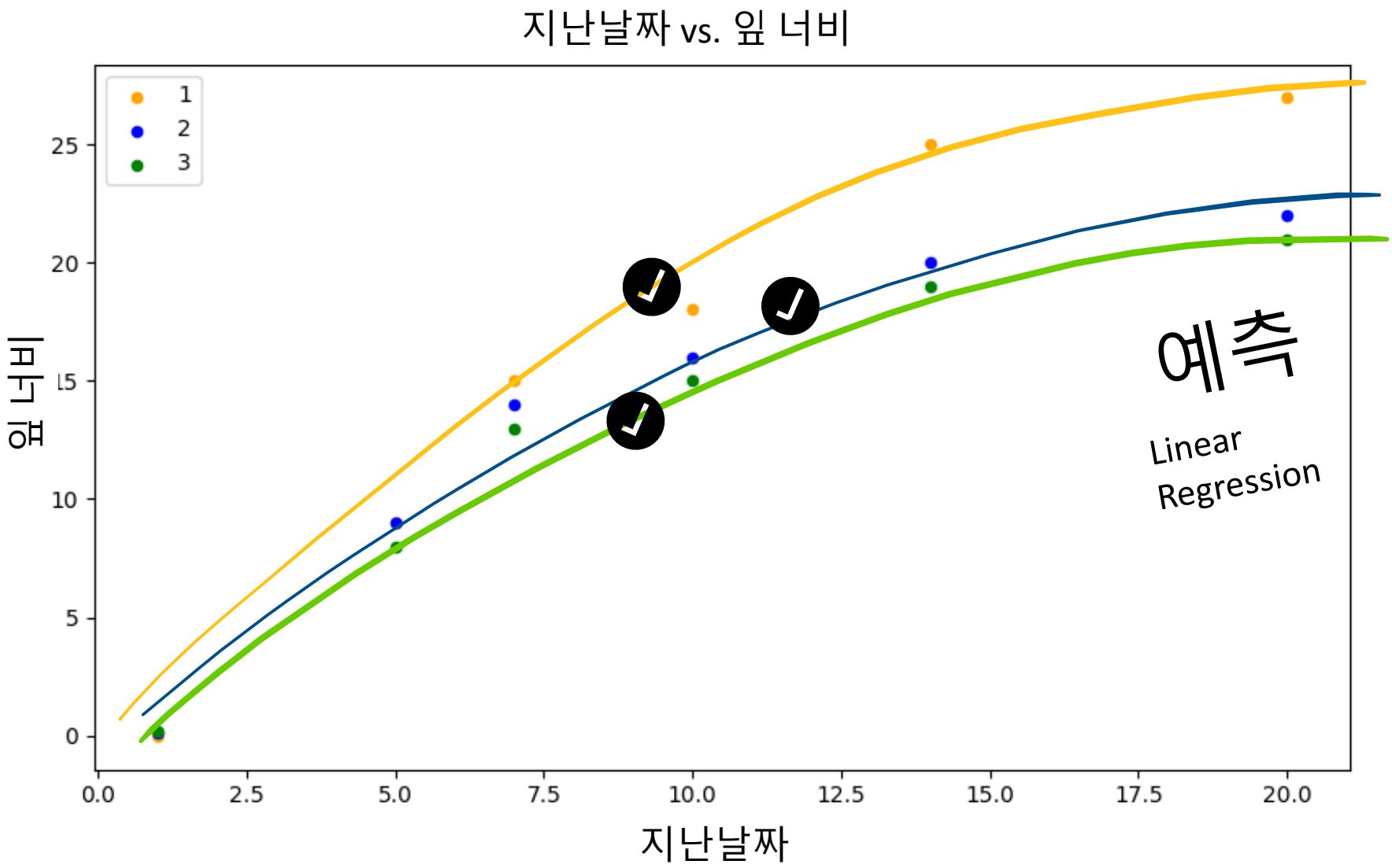


'날짜'가 지남에 따라
'잎 너비'는 얼마나 자랐을까?
점으로 찍어봐라(plot)!
(주인에 따라 다른 색으로 표시)

plot(df, '날짜', '잎 너비', '주인')

첫째 아이, 둘째
셋째


1
2
3
25
20
15
10
5
0
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
지난날짜


지난날짜 vs. 잎 너비
1
2
3
25
20
15
10
5
0
잎 너비
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
지난날짜
예측
Linear
Regression

예측 알고리즘

Machine Learning

- KNeighborsRegressor (K-근접)
- DecisionTreeRegressor (결정 트리)
- RandomForestRegressor (랜덤 포레스트)
- GradientBoostingRegressor (부스팅)
- XGBRegressor (부스팅)
- CatBoostRegressor (부스팅)

Deep Learning

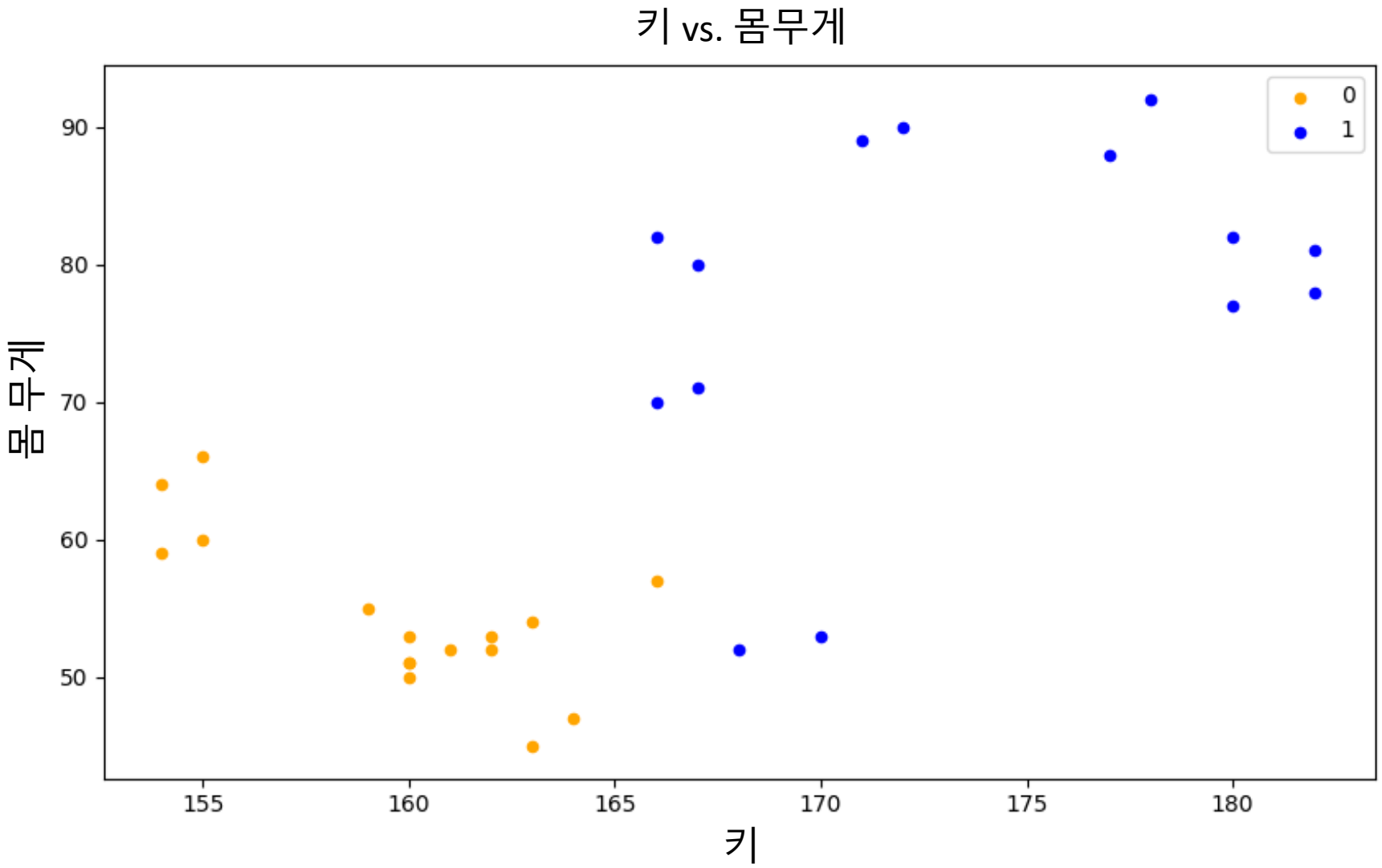
- LinearRegression (선형 회귀)
- MLPRegressor
- RNN/LSTM/GRU

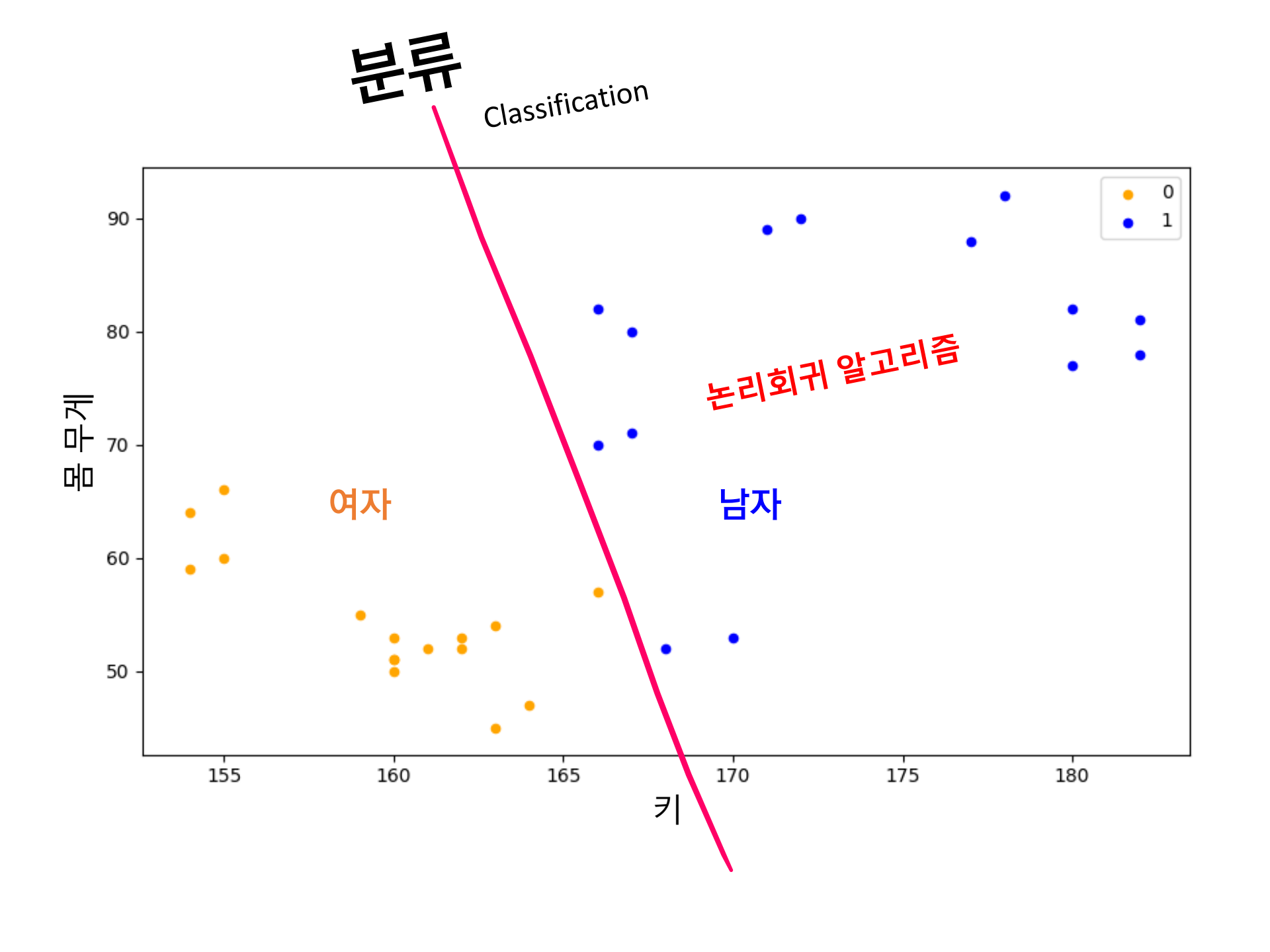
키
몸무게
발 크기
학년
성별

번호, 키, 몸무게, 발 크기, 학년, 성별
1,166,57,240,1,0
2,178,92,265,1,1
3,167,80,270,1,1
4,168,52,245,2,1
5,155,60,235,2,0
6,163,45,230,2,0
7,160,53,235,3,0
8,180,77,260,4,1
9,167,71,260,2,1
10,160,51,245,2,0
11,162,53,240,2,0
12,180,82,280,6,1
13,172,90,255,6,1
14,160,51,245,5,0
15,155,66,245,5,0
16,163,54,242,5,0
17,177,88,263,5,1
18,166,82,268,6,1
19,170,53,247,6,1
20,154,59,234,1,0
21,164,47,232,1,0

키에 따라
몸무게는 어떻게 변할까?
(성별에 따라 다른 색으로 표시)

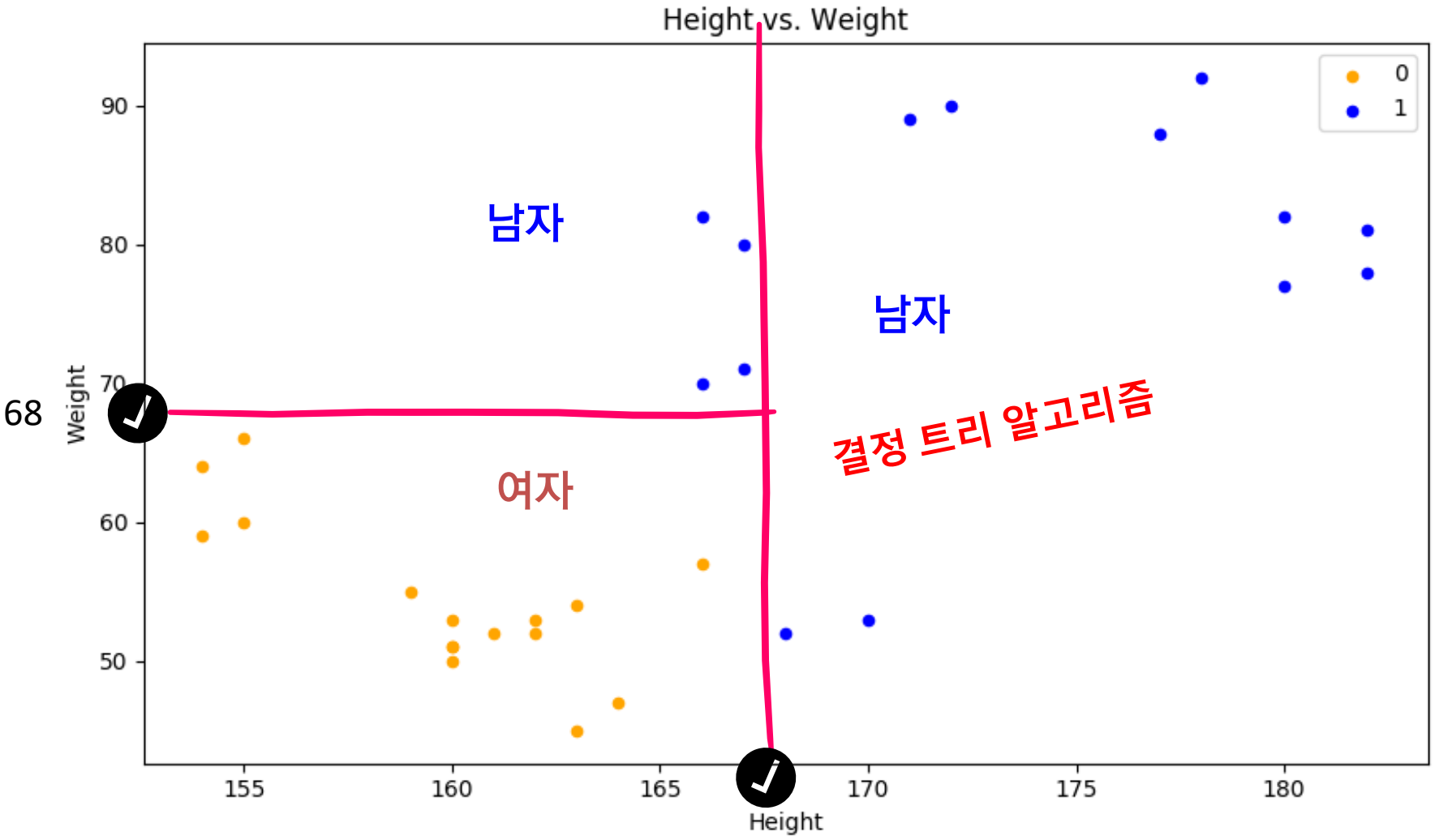
plot(df, '키', '몸무게', '성별')


키 vs. 몸무게
0
1
90
80
70
60
50
몸무게
155
160
165
170
175
180
키


분류
Classification
0
1
90
80
70
60
50
155
160
165
170
175
180
몸무게
키
논리회귀 알고리즘
여자
남자

분류

Classification

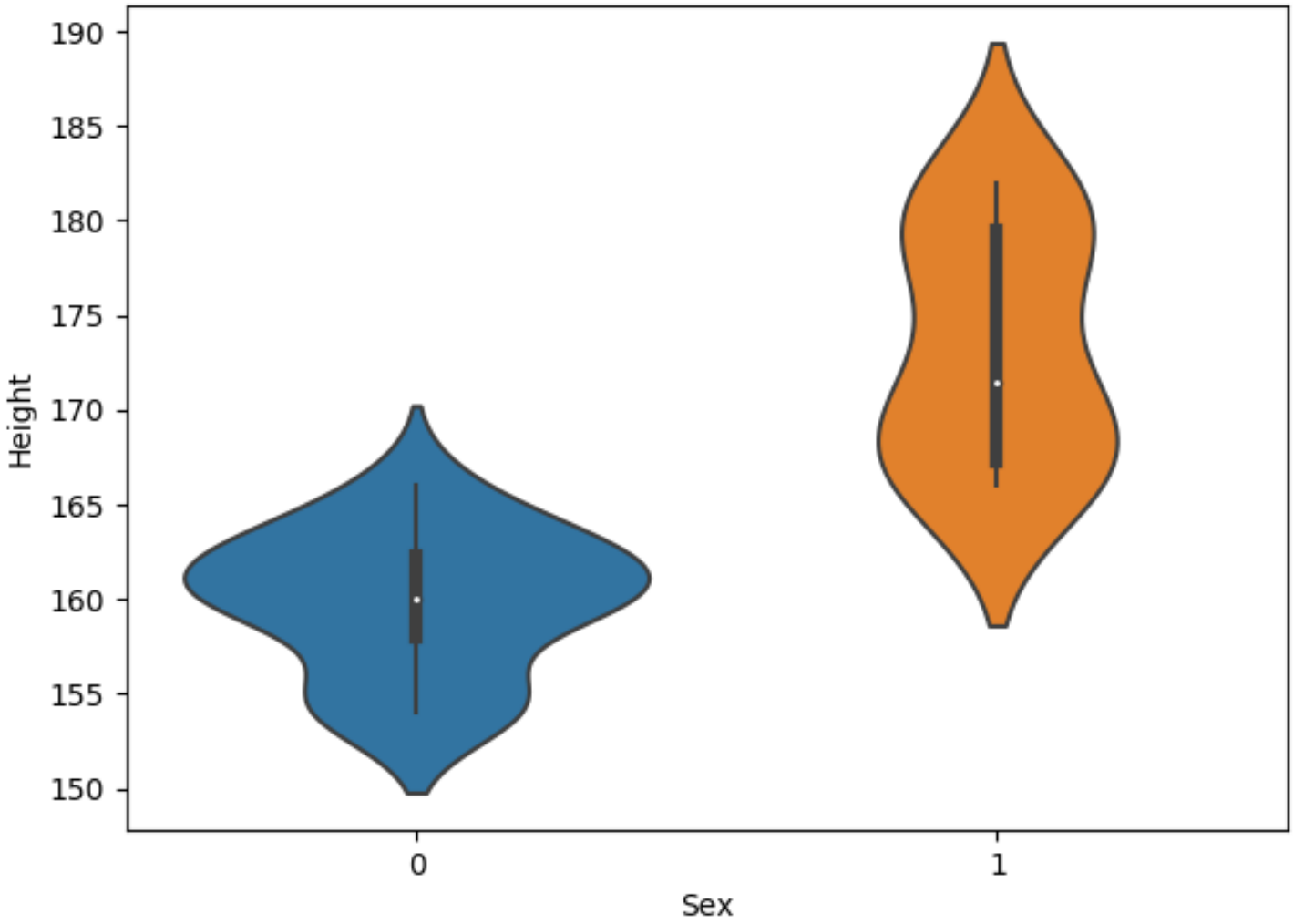


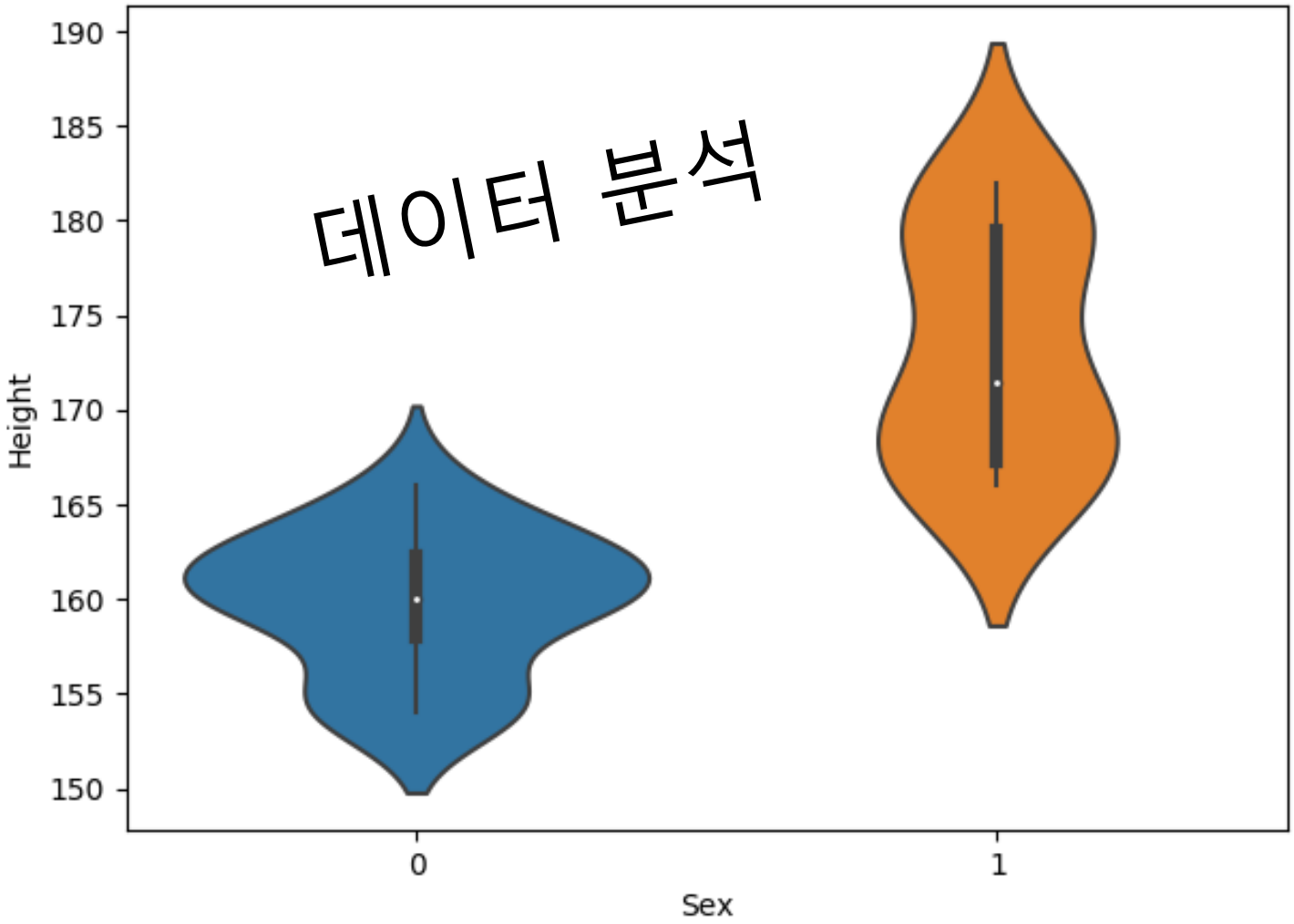
68

167

violinplot(df, '성별', '키')

성별에 따라 키가 어떻게 변하는지
바이올린 모양으로 표시해보라!


190
185
180
175
170
165
160
155
150
Height
0
1
Sex


데이터 분석
190
185
180
175
170
165
160
155
150
Height
0
1
Sex


키, 몸무게, 발 크기, 학년, 성별
166,57,240,1, 0
178,92,265,1, 1
167,80,270,1, 1
168,52,245,2, 1
155,60,235,2, 0
163,45,230,2, 0
160,53,235,3, 0
180,77,260,4, 1
167,71,260,2, 1
160,51,245,2, 0
162,53,240,2, 0
180,82,280,6, 1
172,90,255,6, 1
160,51,245,5, 0
155,66,245,5, 0
163,54,242,5, 0
177,88,263,5, 1
166,82,268,6, 1
170,53,247,6, 1
154,59,234,1, 0
164,47,232,1, 0
학습용 문제
정답
테스트용 문제
정답


```
youngJa = svm.SVC()
youngJa.fit('학습용문제', '정답')
prediction=youngJa.predict('테스트용 문제')
```

분류 알고리즘

Machine Learning

- SVC (서포트벡터머신)
- DecisionTreeClassifier (결정트리)
- RandomForestClassifier (랜덤포레스트)
- XGBClassifier (XGBoost, eXtreme Gradient Boosting, Boosting or Additive Training) (부스팅)

Deep Learning

- LogisticRegression (논리회귀)
- Multilayer Neural Networks
- CNN/RCNN/GCNN

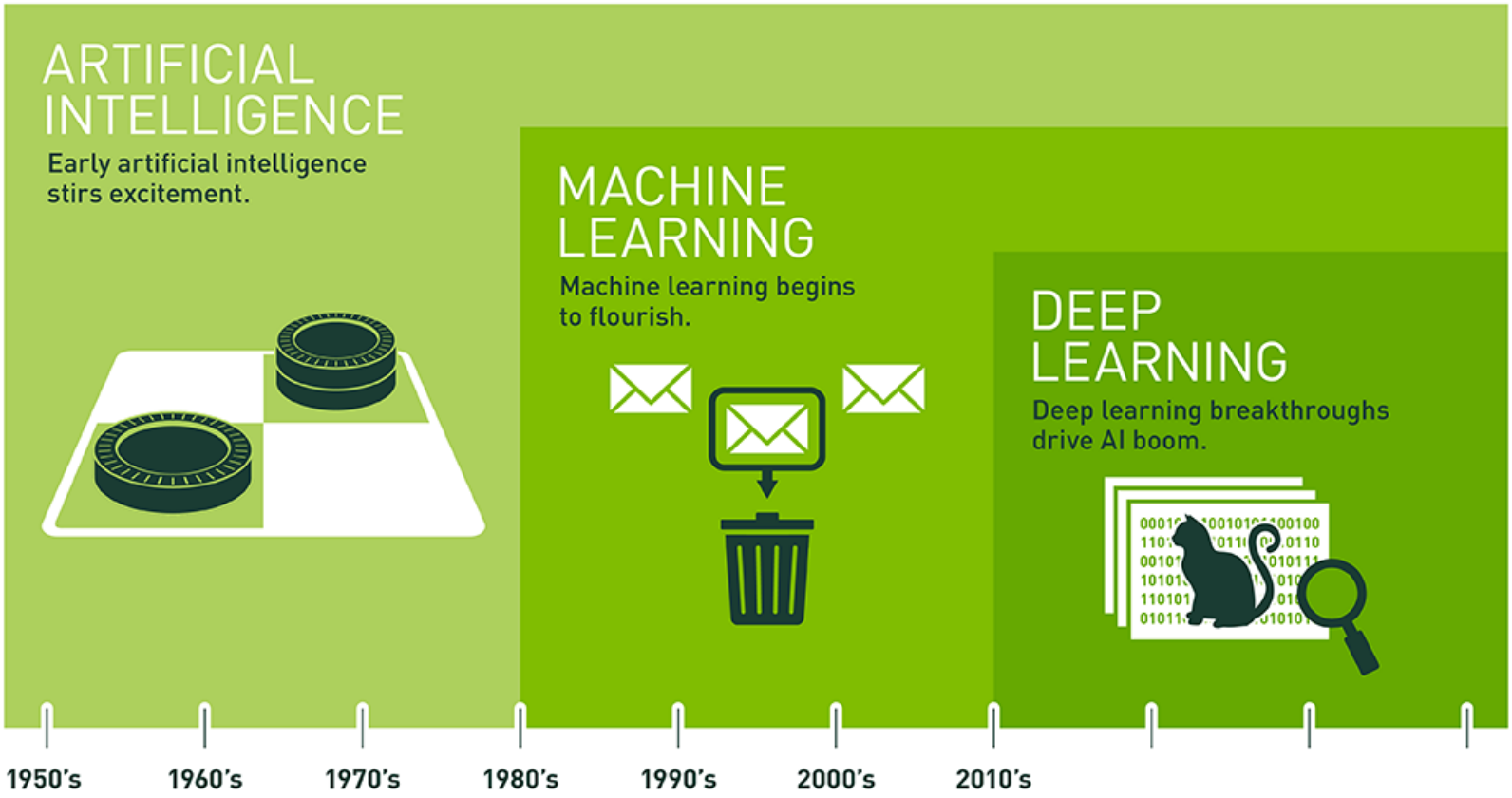
머신러닝
인공지능

지능이란?

(지능, intelligence , 知能)
새로운 사물 현상에 부딪쳐 그 의미를 이해하고 처리 방법을 알아내는 지적 활동 능력

인공지능

AI (Artificial Intelligence),
사람의 지능을 컴퓨터에
구현한 지능



Since an early flush of optimism in the 1950s, smaller subsets of artificial intelligence – first machine learning, then deep learning, a subset of machine learning – have created ever larger disruptions.


My New Zealand
Colours
My New Zealand Colours Book
My New Zealand ABC Book
My New Zealand
123 Book
Learn counting with art and
objects from Te Papa

개

토끼

돼지

오리

지도학습

Supervised Learning

Machine Learning Techniques