

# Chapter 6. ML model practice

# ML 모델 돌려보기 - 준비

#기본 라이브러리 로드하기

```
import pandas as pd  
import numpy as np
```

```
from sklearn.model_selection import train_test_split  
from sklearn.preprocessing import StandardScaler  
from sklearn.metrics import accuracy_score
```

#예제용 파일 다운로드하기

```
!wget https://raw.githubusercontent.com/shryu8902/KIRD\_AUTOML/main/Iris.csv
```

# ML 모델 돌려보기 - 데이터 분할

```
# 데이터 로드
df = pd.read_csv('Iris.csv')
X = df.drop(['Id', 'Species'], axis=1)
y = df['Species']

# 훈련/테스트 분리
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.5, random_state=42)

# 스케일링
scaler = StandardScaler()
X_train_scaled = scaler.fit_transform(X_train)
X_test_scaled = scaler.transform(X_test)
```

# ML 모델 돌려보기 - kNN

```
from sklearn.neighbors import KNeighborsClassifier  
  
model = KNeighborsClassifier()  
  
model.fit(X_train_scaled, y_train)  
  
y_pred = model.predict(X_test_scaled)  
  
print(f"KNN Accuracy: {accuracy_score(y_test, y_pred):.4f}")
```

# ML 모델 돌려보기 - Logistic regression

```
from sklearn.linear_model import LogisticRegression
model = LogisticRegression(max_iter=1000)
model.fit(X_train_scaled, y_train)
y_pred = model.predict(X_test_scaled)
print(f"Logistic Regression Accuracy: {accuracy_score(y_test, y_pred):.4f}")
```

# ML 모델 돌려보기 - SVM

```
from sklearn.svm import SVC  
  
model = SVC()  
  
model.fit(X_train_scaled, y_train)  
  
y_pred = model.predict(X_test_scaled)  
  
print(f"SVM Accuracy: {accuracy_score(y_test, y_pred):.4f}")
```

# ML 모델 돌려보기 - Decision Tree

```
from sklearn.tree import DecisionTreeClassifier  
  
model = DecisionTreeClassifier()  
  
model.fit(X_train, y_train)  
  
y_pred = model.predict(X_test)  
  
print(f"Decision Tree Accuracy: {accuracy_score(y_test, y_pred):.4f}")
```

# ML 모델 돌려보기 - Random Forest

```
from sklearn.ensemble import RandomForestClassifier  
  
model = DecisionTreeClassifier()  
  
model.fit(X_train, y_train)  
  
y_pred = model.predict(X_test)  
  
print(f"Decision Tree Accuracy: {accuracy_score(y_test, y_pred):.4f}")
```



# ML 모델 돌려보기 - XGBoost

```
from xgboost import XGBClassifier
from sklearn.preprocessing import LabelEncoder

le = LabelEncoder()

y_train_le = le.fit_transform(y_train)
y_test_le = le.transform(y_test)

model = XGBClassifier(eval_metric='mlogloss')

model.fit(X_train, y_train_le)

y_pred = model.predict(X_test)

print(f"XGBoost Accuracy: {accuracy_score(y_test_le, y_pred):.4f}")
```

# ML 모델 돌려보기 - LGBM

```
from lightgbm import LGBMClassifier  
  
model = LGBMClassifier()  
  
model.fit(X_train, y_train)  
  
y_pred = model.predict(X_test)  
  
print(f"LightGBM Accuracy: {accuracy_score(y_test, y_pred):.4f}")
```