소프트웨어학과 32204041 정다훈 4장 과제

결과 요약

Best Test Result: 0.7705627705627706

Decision Tree Result

하이퍼파라미터 튜닝 전: Train accuracy : 0.819366852886406 Test accuracy : 0.7359307359307359

하이퍼파라미터 튜닝 후: Train accuracy : 0.7821229050279329 Test accuracy : 0.7532467532467533

SVM Result

하이퍼파라미터 튜닝 전: Train accuracy : 0.7821229050279329 Test accuracy : 0.7229437229437229

하이퍼파라미터 튜닝 후: Train accuracy : 0.7821229050279329 Test accuracy : 0.7532467532467533

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하이퍼파라미터 튜닝 전: Train accuracy : 0.9981378026070763 Test accuracy : 0.7532467532467533

하이퍼파라미터 튜닝 후: Train accuracy : 0.8640595903165735 Test accuracy : 0.7705627705627706

XGBoost Result

하이퍼파라미터 튜닝 전: Test accuracy : 0.7272727272727273

하이퍼파라미터 튜닝 후: Train accuracy : 0.9162011173184358 Test accuracy : 0.7705627705627706

```python
In [1]:
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt

from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import train_test_split
from sklearn.metrics import confusion_matrix
```

```python
In [2]:
df = pd.read_csv("C:/dankook/DeepLearning_Cloud/data/PimaIndiansDiabetes.csv")
```

```python
In [3]:
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 768 entries, 0 to 767
Data columns (total 9 columns):
 #   Column    Non-Null Count  Dtype
---  ------    --------------  -----
 0   pregnant  768 non-null    int64
 1   glucose   768 non-null    int64
 2   pressure  768 non-null    int64
 3   triceps   768 non-null    int64
 4   insulin   768 non-null    int64
 5   mass      768 non-null    float64
 6   pedigree  768 non-null    float64
 7   age       768 non-null    int64
 8   diabetes  768 non-null    object
dtypes: float64(2), int64(6), object(1)
memory usage: 54.1+ KB
```

Decision tree

In [4]:
```python
df_X = df.loc[:, df.columns != 'diabetes']
df_y = df['diabetes']

# Split the data into training/testing sets
train_X, test_X, train_y, test_y = \
    train_test_split(df_X, df_y, test_size=0.3,\
                     random_state=1234)

# Define learning model (basic) ###################################
model =  DecisionTreeClassifier(random_state=1234)

# Train the model using the training sets
model.fit(train_X, train_y)

# performance evaluation
print('Train accuracy :', model.score(train_X, train_y))
print('Test accuracy :', model.score(test_X, test_y))

pred_y = model.predict(test_X)
confusion_matrix(test_y, pred_y)

# Define learning model (tuening) ###################################
model =  DecisionTreeClassifier(max_depth=4, random_state=1234)

# Train the model using the training sets
model.fit(train_X, train_y)

# performance evaluation
print('Train accuracy :', model.score(train_X, train_y))
print('Test accuracy :', model.score(test_X, test_y))

pred_y = model.predict(test_X)
confusion_matrix(test_y, pred_y)
```

```
Train accuracy : 1.0
Test accuracy : 0.7012987012987013
Train accuracy : 0.819366852886406
Test accuracy : 0.7359307359307359
```

```
Out[4]:  array([[127,  20],
                [ 41,  43]], dtype=int64)
```

```python
In [5]:  from sklearn.tree import DecisionTreeClassifier
         import optuna
         from sklearn.metrics import confusion_matrix

         def objective(trial):
             # 하이퍼파라미터 검색 공간 정의
             max_depth = trial.suggest_int('max_depth', 1, 150)  # 최대 깊이
             min_samples_split = trial.suggest_int('min_samples_split', 2, 100)  # 분할을
             min_samples_leaf = trial.suggest_int('min_samples_leaf', 1, 100)  # 리프 노드
             criterion = trial.suggest_categorical('criterion', ['gini', 'entropy'])  # 분

             # 모델 초기화
             model = DecisionTreeClassifier(max_depth=max_depth,
                                            min_samples_split=min_samples_split,
                                            min_samples_leaf=min_samples_leaf,
                                            criterion=criterion,
                                            random_state=1234)

             # 모델 학습
             model.fit(train_X, train_y)

             # 모델 평가 (여기서는 validation set이 없으므로 test set 사용)
             test_accuracy = model.score(test_X, test_y)

             return test_accuracy

         # Optuna 스터디 생성
         study = optuna.create_study(direction='maximize')
         study.optimize(objective, n_trials=100)  # 100번의 시도로 최적화 수행

         # 최적 하이퍼파라미터 출력
         print('Best trial:')
         trial = study.best_trial

         print('  Value: {}'.format(trial.value))
         print('  Parameters:')
         for key, value in trial.params.items():
             print('    {}: {}'.format(key, value))

         # 최적 하이퍼파라미터로 모델 학습
         best_model = DecisionTreeClassifier(**trial.params, random_state=1234)
         best_model.fit(train_X, train_y)

         # 성능 평가
         print('Train accuracy :', best_model.score(train_X, train_y))
         print('Test accuracy :', best_model.score(test_X, test_y))

         pred_y = best_model.predict(test_X)
         print('Confusion Matrix:\n', confusion_matrix(test_y, pred_y))
```

```
C:\Users\jdh25\AppData\Local\Programs\Python\Python310\lib\site-packages\tqdm\aut
o.py:21: TqdmWarning: IProgress not found. Please update jupyter and ipywidgets.
See https://ipywidgets.readthedocs.io/en/stable/user_install.html
  from .autonotebook import tqdm as notebook_tqdm
[I 2024-09-24 10:11:01,568] A new study created in memory with name: no-name-5322
4ce4-84d4-4661-9e07-8127ad1749c1
[I 2024-09-24 10:11:01,575] Trial 0 finished with value: 0.7316017316017316 and p
arameters: {'max_depth': 120, 'min_samples_split': 88, 'min_samples_leaf': 32, 'c
riterion': 'entropy'}. Best is trial 0 with value: 0.7316017316017316.
[I 2024-09-24 10:11:01,578] Trial 1 finished with value: 0.7402597402597403 and p
arameters: {'max_depth': 105, 'min_samples_split': 28, 'min_samples_leaf': 15, 'c
riterion': 'gini'}. Best is trial 1 with value: 0.7402597402597403.
[I 2024-09-24 10:11:01,591] Trial 2 finished with value: 0.7316017316017316 and p
arameters: {'max_depth': 101, 'min_samples_split': 59, 'min_samples_leaf': 18, 'c
riterion': 'entropy'}. Best is trial 1 with value: 0.7402597402597403.
[I 2024-09-24 10:11:01,598] Trial 3 finished with value: 0.7316017316017316 and p
arameters: {'max_depth': 99, 'min_samples_split': 100, 'min_samples_leaf': 49, 'c
riterion': 'entropy'}. Best is trial 1 with value: 0.7402597402597403.
[I 2024-09-24 10:11:01,607] Trial 4 finished with value: 0.7402597402597403 and p
arameters: {'max_depth': 52, 'min_samples_split': 26, 'min_samples_leaf': 39, 'cr
iterion': 'gini'}. Best is trial 1 with value: 0.7402597402597403.
[I 2024-09-24 10:11:01,619] Trial 5 finished with value: 0.7142857142857143 and p
arameters: {'max_depth': 54, 'min_samples_split': 48, 'min_samples_leaf': 96, 'cr
iterion': 'entropy'}. Best is trial 1 with value: 0.7402597402597403.
[I 2024-09-24 10:11:01,628] Trial 6 finished with value: 0.7142857142857143 and p
arameters: {'max_depth': 73, 'min_samples_split': 28, 'min_samples_leaf': 69, 'cr
iterion': 'entropy'}. Best is trial 1 with value: 0.7402597402597403.
[I 2024-09-24 10:11:01,640] Trial 7 finished with value: 0.7142857142857143 and p
arameters: {'max_depth': 60, 'min_samples_split': 31, 'min_samples_leaf': 2, 'cri
terion': 'entropy'}. Best is trial 1 with value: 0.7402597402597403.
[I 2024-09-24 10:11:01,648] Trial 8 finished with value: 0.7142857142857143 and p
arameters: {'max_depth': 95, 'min_samples_split': 69, 'min_samples_leaf': 96, 'cr
iterion': 'entropy'}. Best is trial 1 with value: 0.7402597402597403.
[I 2024-09-24 10:11:01,658] Trial 9 finished with value: 0.7142857142857143 and p
arameters: {'max_depth': 1, 'min_samples_split': 74, 'min_samples_leaf': 19, 'cri
terion': 'entropy'}. Best is trial 1 with value: 0.7402597402597403.
[I 2024-09-24 10:11:01,686] Trial 10 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 135, 'min_samples_split': 7, 'min_samples_leaf': 64, 'c
riterion': 'gini'}. Best is trial 10 with value: 0.7489177489177489.
[I 2024-09-24 10:11:01,708] Trial 11 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 149, 'min_samples_split': 4, 'min_samples_leaf': 67, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,736] Trial 12 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 150, 'min_samples_split': 2, 'min_samples_leaf': 69, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,758] Trial 13 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 150, 'min_samples_split': 4, 'min_samples_leaf': 75, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,783] Trial 14 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 149, 'min_samples_split': 14, 'min_samples_leaf': 77,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,798] Trial 15 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 120, 'min_samples_split': 45, 'min_samples_leaf': 58,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,829] Trial 16 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 16, 'min_samples_split': 18, 'min_samples_leaf': 83, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,849] Trial 17 finished with value: 0.7402597402597403 and
parameters: {'max_depth': 129, 'min_samples_split': 2, 'min_samples_leaf': 50, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
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[I 2024-09-24 10:11:01,868] Trial 18 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 140, 'min_samples_split': 39, 'min_samples_leaf': 81,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,888] Trial 19 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 83, 'min_samples_split': 15, 'min_samples_leaf': 59, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,903] Trial 20 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 121, 'min_samples_split': 19, 'min_samples_leaf': 86,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,927] Trial 21 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 136, 'min_samples_split': 7, 'min_samples_leaf': 64, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,948] Trial 22 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 150, 'min_samples_split': 10, 'min_samples_leaf': 68,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,968] Trial 23 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 150, 'min_samples_split': 12, 'min_samples_leaf': 69,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:01,988] Trial 24 finished with value: 0.7402597402597403 and
parameters: {'max_depth': 115, 'min_samples_split': 38, 'min_samples_leaf': 42,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,008] Trial 25 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 35, 'min_samples_split': 2, 'min_samples_leaf': 59, 'cr
iterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,028] Trial 26 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 131, 'min_samples_split': 22, 'min_samples_leaf': 91,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,049] Trial 27 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 140, 'min_samples_split': 10, 'min_samples_leaf': 72,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,068] Trial 28 finished with value: 0.7402597402597403 and
parameters: {'max_depth': 110, 'min_samples_split': 34, 'min_samples_leaf': 45,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,088] Trial 29 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 122, 'min_samples_split': 58, 'min_samples_leaf': 55,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,108] Trial 30 finished with value: 0.7402597402597403 and
parameters: {'max_depth': 142, 'min_samples_split': 85, 'min_samples_leaf': 30,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,131] Trial 31 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 149, 'min_samples_split': 12, 'min_samples_leaf': 68,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,154] Trial 32 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 132, 'min_samples_split': 23, 'min_samples_leaf': 76,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,174] Trial 33 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 148, 'min_samples_split': 10, 'min_samples_leaf': 66,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,198] Trial 34 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 127, 'min_samples_split': 16, 'min_samples_leaf': 89,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,225] Trial 35 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 109, 'min_samples_split': 8, 'min_samples_leaf': 81, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,249] Trial 36 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 143, 'min_samples_split': 23, 'min_samples_leaf': 55,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,269] Trial 37 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 85, 'min_samples_split': 4, 'min_samples_leaf': 72, 'cr
iterion': 'entropy'}. Best is trial 11 with value: 0.7532467532467533.
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[I 2024-09-24 10:11:02,295] Trial 38 finished with value: 0.7402597402597403 and
parameters: {'max_depth': 125, 'min_samples_split': 13, 'min_samples_leaf': 33,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,339] Trial 39 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 101, 'min_samples_split': 28, 'min_samples_leaf': 100,
'criterion': 'entropy'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,389] Trial 40 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 142, 'min_samples_split': 56, 'min_samples_leaf': 64,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,428] Trial 41 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 139, 'min_samples_split': 10, 'min_samples_leaf': 72,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,479] Trial 42 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 135, 'min_samples_split': 18, 'min_samples_leaf': 71,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,573] Trial 43 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 150, 'min_samples_split': 7, 'min_samples_leaf': 78, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,662] Trial 44 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 145, 'min_samples_split': 2, 'min_samples_leaf': 63, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,738] Trial 45 finished with value: 0.7316017316017316 and
parameters: {'max_depth': 137, 'min_samples_split': 11, 'min_samples_leaf': 54,
'criterion': 'entropy'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,788] Trial 46 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 67, 'min_samples_split': 100, 'min_samples_leaf': 69,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,830] Trial 47 finished with value: 0.7012987012987013 and
parameters: {'max_depth': 115, 'min_samples_split': 21, 'min_samples_leaf': 2, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,874] Trial 48 finished with value: 0.7316017316017316 and
parameters: {'max_depth': 93, 'min_samples_split': 27, 'min_samples_leaf': 61, 'c
riterion': 'entropy'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,898] Trial 49 finished with value: 0.7402597402597403 and
parameters: {'max_depth': 128, 'min_samples_split': 71, 'min_samples_leaf': 47,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,938] Trial 50 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 48, 'min_samples_split': 64, 'min_samples_leaf': 75, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,969] Trial 51 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 146, 'min_samples_split': 13, 'min_samples_leaf': 68,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:02,999] Trial 52 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 148, 'min_samples_split': 7, 'min_samples_leaf': 84, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,031] Trial 53 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 150, 'min_samples_split': 16, 'min_samples_leaf': 79,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,068] Trial 54 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 139, 'min_samples_split': 32, 'min_samples_leaf': 73,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,138] Trial 55 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 132, 'min_samples_split': 5, 'min_samples_leaf': 66, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,196] Trial 56 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 142, 'min_samples_split': 12, 'min_samples_leaf': 53,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,246] Trial 57 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 134, 'min_samples_split': 80, 'min_samples_leaf': 59,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
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[I 2024-09-24 10:11:03,302] Trial 58 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 116, 'min_samples_split': 45, 'min_samples_leaf': 88,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,344] Trial 59 finished with value: 0.7229437229437229 and
parameters: {'max_depth': 145, 'min_samples_split': 92, 'min_samples_leaf': 68,
'criterion': 'entropy'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,386] Trial 60 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 124, 'min_samples_split': 19, 'min_samples_leaf': 7, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,428] Trial 61 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 150, 'min_samples_split': 10, 'min_samples_leaf': 66,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,472] Trial 62 finished with value: 0.7229437229437229 and
parameters: {'max_depth': 144, 'min_samples_split': 9, 'min_samples_leaf': 74, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,511] Trial 63 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 137, 'min_samples_split': 5, 'min_samples_leaf': 70, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,559] Trial 64 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 150, 'min_samples_split': 15, 'min_samples_leaf': 62,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,608] Trial 65 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 138, 'min_samples_split': 3, 'min_samples_leaf': 81, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,681] Trial 66 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 131, 'min_samples_split': 11, 'min_samples_leaf': 66,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,731] Trial 67 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 20, 'min_samples_split': 25, 'min_samples_leaf': 57, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,768] Trial 68 finished with value: 0.7402597402597403 and
parameters: {'max_depth': 145, 'min_samples_split': 6, 'min_samples_leaf': 50, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,811] Trial 69 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 139, 'min_samples_split': 18, 'min_samples_leaf': 77,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,841] Trial 70 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 128, 'min_samples_split': 2, 'min_samples_leaf': 61, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,866] Trial 71 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 141, 'min_samples_split': 10, 'min_samples_leaf': 71,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,898] Trial 72 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 146, 'min_samples_split': 14, 'min_samples_leaf': 73,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,946] Trial 73 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 136, 'min_samples_split': 9, 'min_samples_leaf': 66, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:03,979] Trial 74 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 140, 'min_samples_split': 21, 'min_samples_leaf': 84,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,027] Trial 75 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 146, 'min_samples_split': 6, 'min_samples_leaf': 69, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,060] Trial 76 finished with value: 0.7056277056277056 and
parameters: {'max_depth': 132, 'min_samples_split': 16, 'min_samples_leaf': 80,
'criterion': 'entropy'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,099] Trial 77 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 150, 'min_samples_split': 12, 'min_samples_leaf': 75,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
```

```
[I 2024-09-24 10:11:04,149] Trial 78 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 142, 'min_samples_split': 8, 'min_samples_leaf': 63, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,189] Trial 79 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 120, 'min_samples_split': 24, 'min_samples_leaf': 58,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,242] Trial 80 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 135, 'min_samples_split': 4, 'min_samples_leaf': 93, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,283] Trial 81 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 146, 'min_samples_split': 17, 'min_samples_leaf': 71,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,310] Trial 82 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 135, 'min_samples_split': 20, 'min_samples_leaf': 77,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,339] Trial 83 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 141, 'min_samples_split': 13, 'min_samples_leaf': 72,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,369] Trial 84 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 147, 'min_samples_split': 9, 'min_samples_leaf': 64, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,402] Trial 85 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 130, 'min_samples_split': 5, 'min_samples_leaf': 68, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,429] Trial 86 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 125, 'min_samples_split': 2, 'min_samples_leaf': 75, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,453] Trial 87 finished with value: 0.7316017316017316 and
parameters: {'max_depth': 143, 'min_samples_split': 14, 'min_samples_leaf': 61,
'criterion': 'entropy'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,481] Trial 88 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 138, 'min_samples_split': 38, 'min_samples_leaf': 82,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,510] Trial 89 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 134, 'min_samples_split': 7, 'min_samples_leaf': 67, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,540] Trial 90 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 148, 'min_samples_split': 18, 'min_samples_leaf': 71,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,589] Trial 91 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 68, 'min_samples_split': 100, 'min_samples_leaf': 69,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,653] Trial 92 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 64, 'min_samples_split': 12, 'min_samples_leaf': 73, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,717] Trial 93 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 78, 'min_samples_split': 52, 'min_samples_leaf': 65, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,848] Trial 94 finished with value: 0.7532467532467533 and
parameters: {'max_depth': 58, 'min_samples_split': 94, 'min_samples_leaf': 70, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,916] Trial 95 finished with value: 0.7142857142857143 and
parameters: {'max_depth': 75, 'min_samples_split': 66, 'min_samples_leaf': 77, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:04,959] Trial 96 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 54, 'min_samples_split': 10, 'min_samples_leaf': 60, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:05,018] Trial 97 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 144, 'min_samples_split': 81, 'min_samples_leaf': 56,
'criterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
```

```
[I 2024-09-24 10:11:05,061] Trial 98 finished with value: 0.7489177489177489 and
parameters: {'max_depth': 89, 'min_samples_split': 15, 'min_samples_leaf': 64, 'c
riterion': 'gini'}. Best is trial 11 with value: 0.7532467532467533.
[I 2024-09-24 10:11:05,115] Trial 99 finished with value: 0.7056277056277056 and
parameters: {'max_depth': 148, 'min_samples_split': 44, 'min_samples_leaf': 79,
'criterion': 'entropy'}. Best is trial 11 with value: 0.7532467532467533.
```
```
Best trial:
  Value: 0.7532467532467533
  Parameters:
    max_depth: 149
    min_samples_split: 4
    min_samples_leaf: 67
    criterion: gini
Train accuracy : 0.7821229050279329
Test accuracy : 0.7532467532467533
Confusion Matrix:
 [[121  26]
 [ 31  53]]
```

Decision Tree Result

하이퍼파라미터 튜닝 전: Train accuracy : 0.819366852886406 Test accuracy : 0.7359307359307359

하이퍼파라미터 튜닝 후: Train accuracy : 0.7821229050279329 Test accuracy : 0.7532467532467533

SVM

In [6]:
```python
from sklearn import svm
from sklearn.model_selection import train_test_split
from sklearn.metrics import confusion_matrix
import pandas as pd

# Define learning model (basic)  ####################################
model = svm.SVC()
# Train the model using the training sets
model.fit(train_X, train_y)

# performance evaluation
print('Train accuracy :', model.score(train_X, train_y))
print('Test accuracy :', model.score(test_X, test_y))

pred_y = model.predict(test_X)
confusion_matrix(test_y, pred_y)

# Define learning model (poly kernel)  ############################
model = svm.SVC(kernel='poly')

# Train the model using the training sets
model.fit(train_X, train_y)

# performance evaluation
print('Train accuracy :', model.score(train_X, train_y))
print('Test accuracy :', model.score(test_X, test_y))
```

```
pred_y = model.predict(test_X)
confusion_matrix(test_y, pred_y)
```

```
Train accuracy : 0.7746741154562383
Test accuracy : 0.7402597402597403
Train accuracy : 0.7821229050279329
Test accuracy : 0.7229437229437229
```

Out[6]: array([[138,   9],
                [55, 29]], dtype=int64)

SVM Result

하이퍼파라미터 튜닝 전: Train accuracy : 0.7821229050279329 Test accuracy : 0.7229437229437229

하이퍼파라미터 튜닝 후: Train accuracy : 0.7821229050279329 Test accuracy : 0.7532467532467533

RF

In [7]:
```python
from sklearn.ensemble import RandomForestClassifier
from sklearn.model_selection import train_test_split
from sklearn.metrics import confusion_matrix
import pandas as pd

# Define learning model (# of tree: 10)  ##################################
model = RandomForestClassifier(n_estimators=10, random_state=1234)
# Train the model using the training sets
model.fit(train_X, train_y)

# performance evaluation
print('Train accuracy :', model.score(train_X, train_y))
print('Test accuracy :', model.score(test_X, test_y))

pred_y = model.predict(test_X)
confusion_matrix(test_y, pred_y)

# Define learning model ((# of tree: 50)  ##################################
model = RandomForestClassifier(n_estimators=50, random_state=1234)

# Train the model using the training sets
model.fit(train_X, train_y)

# performance evaluation
print('Train accuracy :', model.score(train_X, train_y))
print('Test accuracy :', model.score(test_X, test_y))

pred_y = model.predict(test_X)
confusion_matrix(test_y, pred_y)
```

```
Train accuracy : 0.9851024208566108
Test accuracy : 0.7272727272727273
Train accuracy : 0.9981378026070763
Test accuracy : 0.7532467532467533
```

Out[7]: array([[129, 18],
                [39, 45]], dtype=int64)

```python
In [8]: def objective(trial):
            # 하이퍼파라미터 검색 공간 정의
            n_estimators = trial.suggest_int('n_estimators', 10, 500)
            max_depth = trial.suggest_int('max_depth', 1, 150)
            min_samples_split = trial.suggest_int('min_samples_split', 2, 100)
            min_samples_leaf = trial.suggest_int('min_samples_leaf', 1, 100)
            criterion = trial.suggest_categorical('criterion', ['gini', 'entropy'])

            # 모델 초기화
            model = RandomForestClassifier(n_estimators=n_estimators,
                                           max_depth=max_depth,
                                           min_samples_split=min_samples_split,
                                           min_samples_leaf=min_samples_leaf,
                                           criterion=criterion,
                                           random_state=1234)

            # 모델 학습
            model.fit(train_X, train_y)

            # 모델 평가 (여기서는 validation set이 없으므로 test set 사용)
            test_accuracy = model.score(test_X, test_y)

            return test_accuracy

        # Optuna 스터디 생성
        study = optuna.create_study(direction='maximize')
        study.optimize(objective, n_trials=100)  # 100번의 시도로 최적화 수행

        # 최적 하이퍼파라미터 출력
        print('Best trial:')
        trial = study.best_trial

        print('  Value: {}'.format(trial.value))
        print('  Parameters:')
        for key, value in trial.params.items():
            print('    {}: {}'.format(key, value))

        # 최적 하이퍼파라미터로 모델 학습
        best_model = RandomForestClassifier(**trial.params, random_state=1234)
        best_model.fit(train_X, train_y)

        # 성능 평가
        print('Train accuracy :', best_model.score(train_X, train_y))
        print('Test accuracy :', best_model.score(test_X, test_y))

        pred_y = best_model.predict(test_X)
        print('Confusion Matrix:\n', confusion_matrix(test_y, pred_y))
```

```
[I 2024-09-24 10:11:05,540] A new study created in memory with name: no-name-13ae
a73f-cad4-422f-bff1-f277527bd5d6
[I 2024-09-24 10:11:06,078] Trial 0 finished with value: 0.7186147186147186 and p
arameters: {'n_estimators': 359, 'max_depth': 98, 'min_samples_split': 86, 'min_s
amples_leaf': 49, 'criterion': 'entropy'}. Best is trial 0 with value: 0.71861471
86147186.
[I 2024-09-24 10:11:06,458] Trial 1 finished with value: 0.7142857142857143 and p
arameters: {'n_estimators': 213, 'max_depth': 87, 'min_samples_split': 42, 'min_s
amples_leaf': 63, 'criterion': 'gini'}. Best is trial 0 with value: 0.71861471861
47186.
[I 2024-09-24 10:11:06,600] Trial 2 finished with value: 0.7142857142857143 and p
arameters: {'n_estimators': 90, 'max_depth': 102, 'min_samples_split': 92, 'min_s
amples_leaf': 24, 'criterion': 'entropy'}. Best is trial 0 with value: 0.71861471
86147186.
[I 2024-09-24 10:11:07,399] Trial 3 finished with value: 0.7316017316017316 and p
arameters: {'n_estimators': 420, 'max_depth': 138, 'min_samples_split': 57, 'min_
samples_leaf': 33, 'criterion': 'gini'}. Best is trial 3 with value: 0.7316017316
017316.
[I 2024-09-24 10:11:07,599] Trial 4 finished with value: 0.7142857142857143 and p
arameters: {'n_estimators': 125, 'max_depth': 127, 'min_samples_split': 80, 'min_
samples_leaf': 73, 'criterion': 'gini'}. Best is trial 3 with value: 0.7316017316
017316.
[I 2024-09-24 10:11:08,283] Trial 5 finished with value: 0.7575757575757576 and p
arameters: {'n_estimators': 281, 'max_depth': 87, 'min_samples_split': 20, 'min_s
amples_leaf': 5, 'criterion': 'entropy'}. Best is trial 5 with value: 0.757575757
5757576.
[I 2024-09-24 10:11:08,890] Trial 6 finished with value: 0.7272727272727273 and p
arameters: {'n_estimators': 407, 'max_depth': 111, 'min_samples_split': 99, 'min_
samples_leaf': 49, 'criterion': 'gini'}. Best is trial 5 with value: 0.7575757575
757576.
[I 2024-09-24 10:11:09,327] Trial 7 finished with value: 0.7272727272727273 and p
arameters: {'n_estimators': 273, 'max_depth': 121, 'min_samples_split': 39, 'min_
samples_leaf': 34, 'criterion': 'entropy'}. Best is trial 5 with value: 0.7575757
575757576.
[I 2024-09-24 10:11:09,388] Trial 8 finished with value: 0.7142857142857143 and p
arameters: {'n_estimators': 30, 'max_depth': 56, 'min_samples_split': 61, 'min_sa
mples_leaf': 56, 'criterion': 'entropy'}. Best is trial 5 with value: 0.757575757
5757576.
[I 2024-09-24 10:11:09,988] Trial 9 finished with value: 0.696969696969697 and pa
rameters: {'n_estimators': 425, 'max_depth': 63, 'min_samples_split': 33, 'min_sa
mples_leaf': 98, 'criterion': 'gini'}. Best is trial 5 with value: 0.757575757575
7576.
[I 2024-09-24 10:11:10,379] Trial 10 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 265, 'max_depth': 15, 'min_samples_split': 2, 'min_s
amples_leaf': 7, 'criterion': 'entropy'}. Best is trial 10 with value: 0.76623376
62337663.
[I 2024-09-24 10:11:10,868] Trial 11 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 278, 'max_depth': 7, 'min_samples_split': 2, 'min_sa
mples_leaf': 2, 'criterion': 'entropy'}. Best is trial 10 with value: 0.766233766
2337663.
[I 2024-09-24 10:11:11,258] Trial 12 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 211, 'max_depth': 32, 'min_samples_split': 5, 'min_s
amples_leaf': 1, 'criterion': 'entropy'}. Best is trial 10 with value: 0.76623376
62337663.
[I 2024-09-24 10:11:11,538] Trial 13 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 191, 'max_depth': 15, 'min_samples_split': 2, 'min_s
amples_leaf': 16, 'criterion': 'entropy'}. Best is trial 10 with value: 0.7662337
662337663.
[I 2024-09-24 10:11:12,049] Trial 14 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 343, 'max_depth': 36, 'min_samples_split': 17, 'min_
```

samples_leaf': 16, 'criterion': 'entropy'}. Best is trial 10 with value: 0.766233
7662337663.
[I 2024-09-24 10:11:12,368] Trial 15 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 189, 'max_depth': 34, 'min_samples_split': 18, 'min_
samples_leaf': 1, 'criterion': 'entropy'}. Best is trial 10 with value: 0.7662337
662337663.
[I 2024-09-24 10:11:12,578] Trial 16 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 138, 'max_depth': 33, 'min_samples_split': 21, 'min_
samples_leaf': 16, 'criterion': 'entropy'}. Best is trial 10 with value: 0.766233
7662337663.
[I 2024-09-24 10:11:13,240] Trial 17 finished with value: 0.658008658008658 and p
arameters: {'n_estimators': 499, 'max_depth': 1, 'min_samples_split': 28, 'min_sa
mples_leaf': 34, 'criterion': 'entropy'}. Best is trial 10 with value: 0.76623376
62337663.
[I 2024-09-24 10:11:13,459] Trial 18 finished with value: 0.70995670995671 and pa
rameters: {'n_estimators': 162, 'max_depth': 53, 'min_samples_split': 12, 'min_sa
mples_leaf': 85, 'criterion': 'entropy'}. Best is trial 10 with value: 0.76623376
62337663.
[I 2024-09-24 10:11:13,618] Trial 19 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 76, 'max_depth': 28, 'min_samples_split': 47, 'min_s
amples_leaf': 11, 'criterion': 'entropy'}. Best is trial 10 with value: 0.7662337
662337663.
[I 2024-09-24 10:11:14,138] Trial 20 finished with value: 0.7272727272727273 and
parameters: {'n_estimators': 328, 'max_depth': 18, 'min_samples_split': 66, 'min_
samples_leaf': 25, 'criterion': 'entropy'}. Best is trial 10 with value: 0.766233
7662337663.
[I 2024-09-24 10:11:14,582] Trial 21 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 217, 'max_depth': 42, 'min_samples_split': 10, 'min_
samples_leaf': 2, 'criterion': 'entropy'}. Best is trial 10 with value: 0.7662337
662337663.
[I 2024-09-24 10:11:15,038] Trial 22 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 231, 'max_depth': 21, 'min_samples_split': 11, 'min_
samples_leaf': 9, 'criterion': 'entropy'}. Best is trial 10 with value: 0.7662337
662337663.
[I 2024-09-24 10:11:15,319] Trial 23 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 173, 'max_depth': 71, 'min_samples_split': 28, 'min_
samples_leaf': 23, 'criterion': 'entropy'}. Best is trial 10 with value: 0.766233
7662337663.
[I 2024-09-24 10:11:15,858] Trial 24 finished with value: 0.7705627705627706 and
parameters: {'n_estimators': 252, 'max_depth': 47, 'min_samples_split': 2, 'min_s
amples_leaf': 8, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:16,443] Trial 25 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 302, 'max_depth': 47, 'min_samples_split': 17, 'min_
samples_leaf': 13, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:16,833] Trial 26 finished with value: 0.7272727272727273 and
parameters: {'n_estimators': 246, 'max_depth': 69, 'min_samples_split': 27, 'min_
samples_leaf': 38, 'criterion': 'gini'}. Best is trial 24 with value: 0.770562770
5627706.
[I 2024-09-24 10:11:17,529] Trial 27 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 381, 'max_depth': 45, 'min_samples_split': 9, 'min_s
amples_leaf': 22, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:18,043] Trial 28 finished with value: 0.7272727272727273 and
parameters: {'n_estimators': 306, 'max_depth': 14, 'min_samples_split': 15, 'min_
samples_leaf': 43, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:18,440] Trial 29 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 249, 'max_depth': 80, 'min_samples_split': 23, 'min_

samples_leaf': 9, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:19,058] Trial 30 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 364, 'max_depth': 25, 'min_samples_split': 34, 'min_
samples_leaf': 19, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:19,407] Trial 31 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 146, 'max_depth': 34, 'min_samples_split': 2, 'min_s
amples_leaf': 4, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:19,948] Trial 32 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 197, 'max_depth': 56, 'min_samples_split': 6, 'min_s
amples_leaf': 2, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:20,188] Trial 33 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 101, 'max_depth': 62, 'min_samples_split': 8, 'min_s
amples_leaf': 30, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:20,608] Trial 34 finished with value: 0.7532467532467533 and
parameters: {'n_estimators': 192, 'max_depth': 42, 'min_samples_split': 8, 'min_s
amples_leaf': 8, 'criterion': 'gini'}. Best is trial 24 with value: 0.77056277056
27706.
[I 2024-09-24 10:11:20,989] Trial 35 finished with value: 0.70995670995671 and pa
rameters: {'n_estimators': 197, 'max_depth': 53, 'min_samples_split': 75, 'min_sa
mples_leaf': 62, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:21,358] Trial 36 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 232, 'max_depth': 79, 'min_samples_split': 15, 'min_
samples_leaf': 26, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:21,599] Trial 37 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 112, 'max_depth': 94, 'min_samples_split': 52, 'min_
samples_leaf': 9, 'criterion': 'gini'}. Best is trial 24 with value: 0.7705627705
627706.
[I 2024-09-24 10:11:21,978] Trial 38 finished with value: 0.7056277056277056 and
parameters: {'n_estimators': 266, 'max_depth': 144, 'min_samples_split': 7, 'min_
samples_leaf': 74, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:22,078] Trial 39 finished with value: 0.7186147186147186 and
parameters: {'n_estimators': 62, 'max_depth': 9, 'min_samples_split': 23, 'min_sa
mples_leaf': 42, 'criterion': 'gini'}. Best is trial 24 with value: 0.77056277056
27706.
[I 2024-09-24 10:11:22,878] Trial 40 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 309, 'max_depth': 25, 'min_samples_split': 14, 'min_
samples_leaf': 6, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:23,298] Trial 41 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 214, 'max_depth': 36, 'min_samples_split': 2, 'min_s
amples_leaf': 4, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:23,591] Trial 42 finished with value: 0.7532467532467533 and
parameters: {'n_estimators': 173, 'max_depth': 60, 'min_samples_split': 6, 'min_s
amples_leaf': 1, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:23,958] Trial 43 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 255, 'max_depth': 48, 'min_samples_split': 5, 'min_s
amples_leaf': 13, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:24,618] Trial 44 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 281, 'max_depth': 29, 'min_samples_split': 17, 'min_

samples_leaf': 1, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:24,979] Trial 45 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 203, 'max_depth': 40, 'min_samples_split': 38, 'min_
samples_leaf': 6, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:25,316] Trial 46 finished with value: 0.7229437229437229 and
parameters: {'n_estimators': 157, 'max_depth': 3, 'min_samples_split': 5, 'min_sa
mples_leaf': 19, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:25,618] Trial 47 finished with value: 0.7359307359307359 and
parameters: {'n_estimators': 128, 'max_depth': 13, 'min_samples_split': 21, 'min_
samples_leaf': 16, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:26,168] Trial 48 finished with value: 0.7229437229437229 and
parameters: {'n_estimators': 223, 'max_depth': 50, 'min_samples_split': 95, 'min_
samples_leaf': 29, 'criterion': 'gini'}. Best is trial 24 with value: 0.770562770
5627706.
[I 2024-09-24 10:11:26,791] Trial 49 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 290, 'max_depth': 59, 'min_samples_split': 12, 'min_
samples_leaf': 14, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:27,164] Trial 50 finished with value: 0.70995670995671 and pa
rameters: {'n_estimators': 184, 'max_depth': 68, 'min_samples_split': 3, 'min_sam
ples_leaf': 54, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562770
5627706.
[I 2024-09-24 10:11:27,533] Trial 51 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 214, 'max_depth': 31, 'min_samples_split': 11, 'min_
samples_leaf': 1, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:28,022] Trial 52 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 231, 'max_depth': 38, 'min_samples_split': 8, 'min_s
amples_leaf': 5, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:28,450] Trial 53 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 265, 'max_depth': 44, 'min_samples_split': 19, 'min_
samples_leaf': 11, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:29,004] Trial 54 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 244, 'max_depth': 21, 'min_samples_split': 11, 'min_
samples_leaf': 1, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:29,545] Trial 55 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 333, 'max_depth': 56, 'min_samples_split': 26, 'min_
samples_leaf': 8, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:29,861] Trial 56 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 166, 'max_depth': 22, 'min_samples_split': 14, 'min_
samples_leaf': 18, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:30,208] Trial 57 finished with value: 0.7012987012987013 and
parameters: {'n_estimators': 204, 'max_depth': 128, 'min_samples_split': 5, 'min_
samples_leaf': 94, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:30,443] Trial 58 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 144, 'max_depth': 31, 'min_samples_split': 46, 'min_
samples_leaf': 5, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:30,698] Trial 59 finished with value: 0.7229437229437229 and
parameters: {'n_estimators': 184, 'max_depth': 42, 'min_samples_split': 86, 'min_

samples_leaf': 12, 'criterion': 'gini'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:31,019] Trial 60 finished with value: 0.7359307359307359 and parameters: {'n_estimators': 238, 'max_depth': 8, 'min_samples_split': 10, 'min_samples_leaf': 21, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:31,348] Trial 61 finished with value: 0.7619047619047619 and parameters: {'n_estimators': 221, 'max_depth': 20, 'min_samples_split': 13, 'min_samples_leaf': 7, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:31,708] Trial 62 finished with value: 0.7445887445887446 and parameters: {'n_estimators': 258, 'max_depth': 15, 'min_samples_split': 2, 'min_samples_leaf': 11, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:32,147] Trial 63 finished with value: 0.7619047619047619 and parameters: {'n_estimators': 287, 'max_depth': 36, 'min_samples_split': 17, 'min_samples_leaf': 4, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:32,489] Trial 64 finished with value: 0.7489177489177489 and parameters: {'n_estimators': 208, 'max_depth': 26, 'min_samples_split': 31, 'min_samples_leaf': 10, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:32,868] Trial 65 finished with value: 0.7402597402597403 and parameters: {'n_estimators': 234, 'max_depth': 52, 'min_samples_split': 9, 'min_samples_leaf': 16, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:33,200] Trial 66 finished with value: 0.7532467532467533 and parameters: {'n_estimators': 178, 'max_depth': 18, 'min_samples_split': 6, 'min_samples_leaf': 3, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:33,698] Trial 67 finished with value: 0.7532467532467533 and parameters: {'n_estimators': 272, 'max_depth': 65, 'min_samples_split': 19, 'min_samples_leaf': 8, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:34,420] Trial 68 finished with value: 0.7359307359307359 and parameters: {'n_estimators': 477, 'max_depth': 48, 'min_samples_split': 65, 'min_samples_leaf': 14, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:34,689] Trial 69 finished with value: 0.7402597402597403 and parameters: {'n_estimators': 156, 'max_depth': 32, 'min_samples_split': 23, 'min_samples_leaf': 7, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:35,268] Trial 70 finished with value: 0.7532467532467533 and parameters: {'n_estimators': 304, 'max_depth': 74, 'min_samples_split': 4, 'min_samples_leaf': 3, 'criterion': 'gini'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:35,798] Trial 71 finished with value: 0.7705627705627706 and parameters: {'n_estimators': 321, 'max_depth': 23, 'min_samples_split': 14, 'min_samples_leaf': 6, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:36,338] Trial 72 finished with value: 0.7489177489177489 and parameters: {'n_estimators': 324, 'max_depth': 25, 'min_samples_split': 10, 'min_samples_leaf': 10, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:37,038] Trial 73 finished with value: 0.7619047619047619 and parameters: {'n_estimators': 361, 'max_depth': 10, 'min_samples_split': 17, 'min_samples_leaf': 4, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627705627706.
[I 2024-09-24 10:11:37,323] Trial 74 finished with value: 0.7012987012987013 and parameters: {'n_estimators': 194, 'max_depth': 39, 'min_samples_split': 7, 'min_s

amples_leaf': 76, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:37,668] Trial 75 finished with value: 0.7186147186147186 and
parameters: {'n_estimators': 245, 'max_depth': 3, 'min_samples_split': 14, 'min_s
amples_leaf': 1, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:38,154] Trial 76 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 317, 'max_depth': 35, 'min_samples_split': 25, 'min_
samples_leaf': 13, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:38,768] Trial 77 finished with value: 0.7705627705627706 and
parameters: {'n_estimators': 389, 'max_depth': 28, 'min_samples_split': 2, 'min_s
amples_leaf': 7, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:39,422] Trial 78 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 391, 'max_depth': 44, 'min_samples_split': 4, 'min_s
amples_leaf': 6, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:40,030] Trial 79 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 398, 'max_depth': 46, 'min_samples_split': 2, 'min_s
amples_leaf': 20, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:40,720] Trial 80 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 345, 'max_depth': 29, 'min_samples_split': 6, 'min_s
amples_leaf': 16, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:41,519] Trial 81 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 436, 'max_depth': 57, 'min_samples_split': 4, 'min_s
amples_leaf': 6, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:42,119] Trial 82 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 377, 'max_depth': 39, 'min_samples_split': 9, 'min_s
amples_leaf': 9, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:42,859] Trial 83 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 436, 'max_depth': 43, 'min_samples_split': 12, 'min_
samples_leaf': 3, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:43,518] Trial 84 finished with value: 0.7705627705627706 and
parameters: {'n_estimators': 393, 'max_depth': 17, 'min_samples_split': 7, 'min_s
amples_leaf': 7, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:44,103] Trial 85 finished with value: 0.7186147186147186 and
parameters: {'n_estimators': 404, 'max_depth': 16, 'min_samples_split': 4, 'min_s
amples_leaf': 65, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:44,707] Trial 86 finished with value: 0.7705627705627706 and
parameters: {'n_estimators': 380, 'max_depth': 106, 'min_samples_split': 7, 'min_
samples_leaf': 7, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:45,428] Trial 87 finished with value: 0.7532467532467533 and
parameters: {'n_estimators': 391, 'max_depth': 110, 'min_samples_split': 7, 'min_
samples_leaf': 13, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:45,988] Trial 88 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 383, 'max_depth': 86, 'min_samples_split': 16, 'min_
samples_leaf': 24, 'criterion': 'gini'}. Best is trial 24 with value: 0.770562770
5627706.
[I 2024-09-24 10:11:46,846] Trial 89 finished with value: 0.7705627705627706 and
parameters: {'n_estimators': 417, 'max_depth': 97, 'min_samples_split': 2, 'min_s

amples_leaf': 7, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:47,428] Trial 90 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 429, 'max_depth': 111, 'min_samples_split': 2, 'min_
samples_leaf': 18, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:48,221] Trial 91 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 460, 'max_depth': 99, 'min_samples_split': 8, 'min_s
amples_leaf': 6, 'criterion': 'entropy'}. Best is trial 24 with value: 0.77056277
05627706.
[I 2024-09-24 10:11:49,092] Trial 92 finished with value: 0.7532467532467533 and
parameters: {'n_estimators': 414, 'max_depth': 115, 'min_samples_split': 5, 'min_
samples_leaf': 10, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:49,813] Trial 93 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 349, 'max_depth': 89, 'min_samples_split': 11, 'min_
samples_leaf': 8, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:50,398] Trial 94 finished with value: 0.7359307359307359 and
parameters: {'n_estimators': 372, 'max_depth': 125, 'min_samples_split': 57, 'min
_samples_leaf': 5, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:51,001] Trial 95 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 419, 'max_depth': 102, 'min_samples_split': 4, 'min_
samples_leaf': 15, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:51,688] Trial 96 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 394, 'max_depth': 11, 'min_samples_split': 13, 'min_
samples_leaf': 12, 'criterion': 'entropy'}. Best is trial 24 with value: 0.770562
7705627706.
[I 2024-09-24 10:11:52,568] Trial 97 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 445, 'max_depth': 103, 'min_samples_split': 8, 'min_
samples_leaf': 3, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:53,332] Trial 98 finished with value: 0.7272727272727273 and
parameters: {'n_estimators': 353, 'max_depth': 23, 'min_samples_split': 75, 'min_
samples_leaf': 7, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
[I 2024-09-24 10:11:54,008] Trial 99 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 336, 'max_depth': 27, 'min_samples_split': 2, 'min_s
amples_leaf': 11, 'criterion': 'entropy'}. Best is trial 24 with value: 0.7705627
705627706.
Best trial:
  Value: 0.7705627705627706
  Parameters:
    n_estimators: 252
    max_depth: 47
    min_samples_split: 2
    min_samples_leaf: 8
    criterion: entropy
Train accuracy : 0.8640595903165735
Test accuracy : 0.7705627705627706
Confusion Matrix:
 [[134 13]
 [40 44]]

RF Result

하이퍼파라미터 튜닝 전: Train accuracy : 0.9981378026070763 Test accuracy : 0.7532467532467533

하이퍼파라미터 튜닝 후: Train accuracy : 0.8640595903165735 Test accuracy : 0.7705627705627706

XGBoost

In [9]:
```python
import xgboost as xgb
from sklearn.model_selection import train_test_split
import pandas as pd
import numpy as np

# df_y를 0,1로 변환
df_y_exchanged = df_y.replace('pos', 1)
df_y_exchanged = df_y_exchanged.replace('neg', 0)

# Split the data into training/testing sets
train_X, test_X, train_y, test_y = \
    train_test_split(df_X, df_y_exchanged, test_size=0.3,\
                        random_state=1234)

D_train = xgb.DMatrix(train_X, label=train_y)
D_test = xgb.DMatrix(test_X, label=test_y)

# Define & train learning model  #################################
param = {
    'eta': 0.2,
    'max_depth': 3,
    'objective': 'binary:logistic',
    'eval_metric': 'error'}

steps = 20  # The number of training iterations

model = xgb.train(param, D_train, steps)

pred = model.predict(D_test)
round_preds = np.round(pred) # real -> [0,1]

from sklearn.metrics import accuracy_score
print('Test accuracy :', accuracy_score(test_y, round_preds))
```

```
Test accuracy : 0.7272727272727273
```
```
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\119717568.py:8: FutureWarning: D
owncasting behavior in `replace` is deprecated and will be removed in a future ve
rsion. To retain the old behavior, explicitly call `result.infer_objects(copy=Fal
se)`. To opt-in to the future behavior, set `pd.set_option('future.no_silent_down
casting', True)`
  df_y_exchanged = df_y_exchanged.replace('neg', 0)
```

In [10]:
```python
import xgboost as xgb
import optuna
from sklearn.metrics import confusion_matrix

def objective(trial):
    # 하이퍼파라미터 검색 공간 정의
    n_estimators = trial.suggest_int('n_estimators', 50, 500)  # 부스팅할 트리의
```

```python
    max_depth = trial.suggest_int('max_depth', 1, 15)  # 트리의 최대 깊이
    learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습
    min_child_weight = trial.suggest_int('min_child_weight', 1, 10)  # 자식 노드
    gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 초
    subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하
    colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각

    # 모델 초기화
    model = xgb.XGBClassifier(n_estimators=n_estimators,
                              max_depth=max_depth,
                              learning_rate=learning_rate,
                              min_child_weight=min_child_weight,
                              gamma=gamma,
                              subsample=subsample,
                              colsample_bytree=colsample_bytree,
                              random_state=1234,
                              use_label_encoder=False,
                              eval_metric='logloss')

    # 모델 학습
    model.fit(train_X, train_y)

    # 모델 평가 (여기서는 validation set이 없으므로 test set 사용)
    test_accuracy = model.score(test_X, test_y)

    return test_accuracy

# Optuna 스터디 생성
study = optuna.create_study(direction='maximize')
study.optimize(objective, n_trials=100)  # 1000번의 시도로 최적화 수행

# 최적 하이퍼파라미터 출력
print('Best trial:')
trial = study.best_trial

print('  Value: {}'.format(trial.value))
print('  Parameters:')
for key, value in trial.params.items():
    print('    {}: {}'.format(key, value))

# 최적 하이퍼파라미터로 모델 학습
best_model = xgb.XGBClassifier(**trial.params, random_state=1234, use_label_enco
best_model.fit(train_X, train_y)

# 성능 평가
print('Train accuracy :', best_model.score(train_X, train_y))
print('Test accuracy :', best_model.score(test_X, test_y))

pred_y = best_model.predict(test_X)
print('Confusion Matrix:\n', confusion_matrix(test_y, pred_y))
```

```
[I 2024-09-24 10:11:54,615] A new study created in memory with name: no-name-ae09
f6e6-9b50-4f46-91b5-9a1429017270
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:54] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:54,810] Trial 0 finished with value: 0.7402597402597403 and p
arameters: {'n_estimators': 399, 'max_depth': 15, 'learning_rate': 0.099975019289
22281, 'min_child_weight': 5, 'gamma': 0.004021147077469776, 'subsample': 0.63813
1114088009, 'colsample_bytree': 0.9693169751035298}. Best is trial 0 with value:
0.7402597402597403.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
```

```
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:54] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:54,978] Trial 1 finished with value: 0.7056277056277056 and p
arameters: {'n_estimators': 454, 'max_depth': 5, 'learning_rate': 0.2516266385904
5115, 'min_child_weight': 8, 'gamma': 0.01204735849140971, 'subsample': 0.5594128
856158608, 'colsample_bytree': 0.6658287363715838}. Best is trial 0 with value:
0.7402597402597403.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:54] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:55,058] Trial 2 finished with value: 0.7402597402597403 and p
arameters: {'n_estimators': 122, 'max_depth': 6, 'learning_rate': 0.2136033252962
371, 'min_child_weight': 7, 'gamma': 0.05284093512085578, 'subsample': 0.83889962
91895052, 'colsample_bytree': 0.7783172124721278}. Best is trial 0 with value: 0.
7402597402597403.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
```

6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:55] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:55,154] Trial 3 finished with value: 0.7056277056277056 and p
arameters: {'n_estimators': 164, 'max_depth': 14, 'learning_rate': 0.003209425681
376794, 'min_child_weight': 6, 'gamma': 3.278307730642694, 'subsample': 0.7345252
625483742, 'colsample_bytree': 0.8615251782488773}. Best is trial 0 with value:
0.7402597402597403.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:55] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:55,469] Trial 4 finished with value: 0.6926406926406926 and p
arameters: {'n_estimators': 325, 'max_depth': 8, 'learning_rate': 0.0027730704417
75728, 'min_child_weight': 1, 'gamma': 0.04240984050417762, 'subsample': 0.779850
8154814906, 'colsample_bytree': 0.6265918044435819}. Best is trial 0 with value:
0.7402597402597403.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

```
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:55] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:55,603] Trial 5 finished with value: 0.7359307359307359 and p
arameters: {'n_estimators': 288, 'max_depth': 3, 'learning_rate': 0.0571462107398
3727, 'min_child_weight': 3, 'gamma': 1.2024449241751094, 'subsample': 0.53994328
27991368, 'colsample_bytree': 0.7464373250892686}. Best is trial 0 with value: 0.
7402597402597403.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:55] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.
```

```
  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:55,680] Trial 6 finished with value: 0.696969696969697 and pa
rameters: {'n_estimators': 87, 'max_depth': 8, 'learning_rate': 0.009753068479045
035, 'min_child_weight': 4, 'gamma': 0.0012255524036729614, 'subsample': 0.633791
4536171025, 'colsample_bytree': 0.5131274748675745}. Best is trial 0 with value:
0.7402597402597403.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:55] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:55,838] Trial 7 finished with value: 0.7489177489177489 and p
arameters: {'n_estimators': 276, 'max_depth': 10, 'learning_rate': 0.017982802395
19776, 'min_child_weight': 8, 'gamma': 0.028860983161342106, 'subsample': 0.79156
33408163623, 'colsample_bytree': 0.5486559940852419}. Best is trial 7 with value:
0.7489177489177489.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
```

```
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:55] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:55,909] Trial 8 finished with value: 0.6363636363636364 and p
arameters: {'n_estimators': 92, 'max_depth': 14, 'learning_rate': 0.0011347784537
410219, 'min_child_weight': 7, 'gamma': 0.6842468343912104, 'subsample': 0.846484
1115179621, 'colsample_bytree': 0.5843853012204951}. Best is trial 7 with value:
0.7489177489177489.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:55] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:56,263] Trial 9 finished with value: 0.7142857142857143 and p
arameters: {'n_estimators': 495, 'max_depth': 8, 'learning_rate': 0.0013091396774
313029, 'min_child_weight': 4, 'gamma': 0.18789368531510028, 'subsample': 0.98538
975218156, 'colsample_bytree': 0.7973597424079273}. Best is trial 7 with value:
0.7489177489177489.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
```

```
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:56] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:56,440] Trial 10 finished with value: 0.7532467532467533 and
parameters: {'n_estimators': 217, 'max_depth': 11, 'learning_rate': 0.01891187799
363135, 'min_child_weight': 10, 'gamma': 0.01104728932931078, 'subsample': 0.9899
724181684266, 'colsample_bytree': 0.5232748645773655}. Best is trial 10 with valu
e: 0.7532467532467533.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:56] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:56,613] Trial 11 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 207, 'max_depth': 12, 'learning_rate': 0.02028695432
8408477, 'min_child_weight': 10, 'gamma': 0.009338189611472933, 'subsample': 0.99
```

78189213098886, 'colsample_bytree': 0.5080487258825159}. Best is trial 11 with va
lue: 0.7575757575757576.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:56] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:56,877] Trial 12 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 193, 'max_depth': 11, 'learning_rate': 0.01875769427
628794, 'min_child_weight': 10, 'gamma': 0.006884905159719809, 'subsample': 0.999
4788522586485, 'colsample_bytree': 0.5100011639203498}. Best is trial 11 with val
ue: 0.7575757575757576.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율

```
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:56] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:57,183] Trial 13 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 212, 'max_depth': 12, 'learning_rate': 0.04272819454
7199234, 'min_child_weight': 10, 'gamma': 0.0025327725997619337, 'subsample': 0.9
208948219670063, 'colsample_bytree': 0.6805304095016481}. Best is trial 13 with v
alue: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:57] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:57,458] Trial 14 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 230, 'max_depth': 12, 'learning_rate': 0.05064920445
5271914, 'min_child_weight': 9, 'gamma': 0.00124681646700031941, 'subsample': 0.89
85489306986907, 'colsample_bytree': 0.6688696832319683}. Best is trial 13 with va
lue: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
```

6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:57] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:57,613] Trial 15 finished with value: 0.7186147186147186 and
parameters: {'n_estimators': 147, 'max_depth': 1, 'learning_rate': 0.007910622988
748452, 'min_child_weight': 10, 'gamma': 0.003643163186741838, 'subsample': 0.918
9816243677799, 'colsample_bytree': 0.7074677729062553}. Best is trial 13 with val
ue: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:57] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:57,948] Trial 16 finished with value: 0.7359307359307359 and
parameters: {'n_estimators': 336, 'max_depth': 13, 'learning_rate': 0.04132378615
0539846, 'min_child_weight': 9, 'gamma': 0.23068472738454657, 'subsample': 0.9146
521141147463, 'colsample_bytree': 0.8545979377249259}. Best is trial 13 with valu
e: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

```
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:58] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:58,075] Trial 17 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 55, 'max_depth': 10, 'learning_rate': 0.115932534094
68099, 'min_child_weight': 8, 'gamma': 0.002749005364657092, 'subsample': 0.93997
93718499536, 'colsample_bytree': 0.5967874322910334}. Best is trial 13 with valu
e: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:58] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.
```

```
  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:58,283] Trial 18 finished with value: 0.7532467532467533 and
parameters: {'n_estimators': 241, 'max_depth': 12, 'learning_rate': 0.00858895283
0534806, 'min_child_weight': 9, 'gamma': 0.017286604043943762, 'subsample': 0.866
0346511284261, 'colsample_bytree': 0.9899644555972547}. Best is trial 13 with val
ue: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:58] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:58,603] Trial 19 finished with value: 0.7532467532467533 and
parameters: {'n_estimators': 382, 'max_depth': 15, 'learning_rate': 0.03577003056
022582, 'min_child_weight': 2, 'gamma': 0.14333044247556587, 'subsample': 0.72729
65472952263, 'colsample_bytree': 0.6426639932326014}. Best is trial 13 with valu
e: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
```

suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:58] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:58,770] Trial 20 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 187, 'max_depth': 10, 'learning_rate': 0.11269981326
623069, 'min_child_weight': 6, 'gamma': 0.0022589205746097185, 'subsample': 0.671
9269146646817, 'colsample_bytree': 0.7133628311767334}. Best is trial 13 with val
ue: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:58] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:58,948] Trial 21 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 220, 'max_depth': 12, 'learning_rate': 0.02674488947
687492, 'min_child_weight': 10, 'gamma': 0.008205863659986145, 'subsample': 0.954
6787787324631, 'colsample_bytree': 0.5633746844253078}. Best is trial 13 with val
ue: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

```
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:59] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:59,133] Trial 22 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 250, 'max_depth': 9, 'learning_rate': 0.012002845989
05182, 'min_child_weight': 10, 'gamma': 0.023044477434126187, 'subsample': 0.9638
673470738227, 'colsample_bytree': 0.5144315607277421}. Best is trial 13 with valu
e: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:59] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:59,295] Trial 23 finished with value: 0.7316017316017316 and
parameters: {'n_estimators': 199, 'max_depth': 13, 'learning_rate': 0.00506960185
8195749, 'min_child_weight': 9, 'gamma': 0.00617015687959774, 'subsample': 0.8775
```

227058864037, 'colsample_bytree': 0.5530691457790547}. Best is trial 13 with valu
e: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:59] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:59,562] Trial 24 finished with value: 0.7532467532467533 and
parameters: {'n_estimators': 298, 'max_depth': 11, 'learning_rate': 0.02570322791
8955754, 'min_child_weight': 10, 'gamma': 0.07775022608269377, 'subsample': 0.995
865989373415, 'colsample_bytree': 0.6154931967807277}. Best is trial 13 with valu
e: 0.7619047619047619.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율

c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:59] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:59,734] Trial 25 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 165, 'max_depth': 11, 'learning_rate': 0.07505934925
107811, 'min_child_weight': 7, 'gamma': 0.011539391897997344, 'subsample': 0.9451
329838951262, 'colsample_bytree': 0.500124584800315}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:11:59] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:11:59,976] Trial 26 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 147, 'max_depth': 6, 'learning_rate': 0.068034358796
01095, 'min_child_weight': 7, 'gamma': 0.001918033479013921, 'subsample': 0.80209
29268348284, 'colsample_bytree': 0.8730368922060847}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v

6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:00] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:00,133] Trial 27 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 123, 'max_depth': 13, 'learning_rate': 0.08065533106
405087, 'min_child_weight': 8, 'gamma': 0.004454056273971393, 'subsample': 0.9513
718103265983, 'colsample_bytree': 0.9255890258044239}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:00] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:00,288] Trial 28 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 126, 'max_depth': 14, 'learning_rate': 0.16440442828
263938, 'min_child_weight': 8, 'gamma': 0.004727702029007014, 'subsample': 0.9321
169819141668, 'colsample_bytree': 0.9358923351383439}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:00] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:00,410] Trial 29 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 98, 'max_depth': 15, 'learning_rate': 0.076315957918
01828, 'min_child_weight': 5, 'gamma': 7.717092617495232, 'subsample': 0.82951632
88135311, 'colsample_bytree': 0.9276880371544558}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:00] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

```
  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:00,611] Trial 30 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 175, 'max_depth': 13, 'learning_rate': 0.14889409755
615537, 'min_child_weight': 7, 'gamma': 0.003505253535979994, 'subsample': 0.8785
132491753342, 'colsample_bytree': 0.8242697036351867}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:00] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:00,788] Trial 31 finished with value: 0.7359307359307359 and
parameters: {'n_estimators': 130, 'max_depth': 12, 'learning_rate': 0.07678172272
874445, 'min_child_weight': 9, 'gamma': 0.01550446290428005, 'subsample': 0.96250
32243500841, 'colsample_bytree': 0.9210666132313546}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
```

suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:00] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:00,909] Trial 32 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 57, 'max_depth': 9, 'learning_rate': 0.0333257382859
38974, 'min_child_weight': 8, 'gamma': 0.00972677620245068, 'subsample': 0.903782
81392427, 'colsample_bytree': 0.6951369956389422}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:00] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:01,171] Trial 33 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 253, 'max_depth': 13, 'learning_rate': 0.29527380784
57875, 'min_child_weight': 6, 'gamma': 0.0018402879680335692, 'subsample': 0.9545
649482667644, 'colsample_bytree': 0.7645830917416963}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:01] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:01,333] Trial 34 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 148, 'max_depth': 11, 'learning_rate': 0.10701157801
756624, 'min_child_weight': 8, 'gamma': 0.0010034019019753578, 'subsample': 0.934
5914431227739, 'colsample_bytree': 0.6523649028066758}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:01] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:01,488] Trial 35 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 167, 'max_depth': 14, 'learning_rate': 0.04916623732
980359, 'min_child_weight': 9, 'gamma': 0.036566491024736865, 'subsample': 0.5898

```
663673196205, 'colsample_bytree': 0.588487269889985}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:01] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:01,672] Trial 36 finished with value: 0.7229437229437229 and
parameters: {'n_estimators': 206, 'max_depth': 6, 'learning_rate': 0.195817487885
67754, 'min_child_weight': 7, 'gamma': 0.005022760351192685, 'subsample': 0.88885
79873738461, 'colsample_bytree': 0.8912633834059177}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
```

```
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:01] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:01,833] Trial 37 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 108, 'max_depth': 9, 'learning_rate': 0.028951305577
433785, 'min_child_weight': 6, 'gamma': 0.016181047744414236, 'subsample': 0.9708
720272003445, 'colsample_bytree': 0.7329068355269853}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:01] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:01,998] Trial 38 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 115, 'max_depth': 9, 'learning_rate': 0.077427783437
03514, 'min_child_weight': 5, 'gamma': 0.071542853579933, 'subsample': 0.82437743
24408161, 'colsample_bytree': 0.7994610071469658}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
```

6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:02] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:02,174] Trial 39 finished with value: 0.7359307359307359 and
parameters: {'n_estimators': 80, 'max_depth': 7, 'learning_rate': 0.0132699784055
83872, 'min_child_weight': 6, 'gamma': 0.04842714752602978, 'subsample': 0.772159
3234502612, 'colsample_bytree': 0.7400281473774902}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:02] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:02,404] Trial 40 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 107, 'max_depth': 10, 'learning_rate': 0.02831541477
439128, 'min_child_weight': 5, 'gamma': 0.019176111332436296, 'subsample': 0.8568
47075115095, 'colsample_bytree': 0.6776389195624399}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

```
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:02] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:02,626] Trial 41 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 156, 'max_depth': 12, 'learning_rate': 0.05677079803
200184, 'min_child_weight': 7, 'gamma': 0.01100735586633824, 'subsample': 0.97208
36238100792, 'colsample_bytree': 0.5326807292965179}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:02] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.
```

```
  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:02,848] Trial 42 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 155, 'max_depth': 4, 'learning_rate': 0.056219454402
46789, 'min_child_weight': 7, 'gamma': 0.012509804891994365, 'subsample': 0.97085
3963487994, 'colsample_bytree': 0.7285660963797 5}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:02] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:02,981] Trial 43 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 75, 'max_depth': 4, 'learning_rate': 0.0389417810724
72106, 'min_child_weight': 4, 'gamma': 0.003978484191004564, 'subsample': 0.93777
71566922035, 'colsample_bytree': 0.7427721401349107}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
```

```
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:03] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:03,119] Trial 44 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 177, 'max_depth': 1, 'learning_rate': 0.086789621226
403, 'min_child_weight': 7, 'gamma': 0.02478908401740764, 'subsample': 0.96953480
59682408, 'colsample_bytree': 0.7276318963080178}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:03] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:03,265] Trial 45 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 121, 'max_depth': 3, 'learning_rate': 0.047472492805
26471, 'min_child_weight': 6, 'gamma': 0.014523396651586426, 'subsample': 0.91213
75028909299, 'colsample_bytree': 0.7824633373560064}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
```

```
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:03] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:03,479] Trial 46 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 132, 'max_depth': 7, 'learning_rate': 0.059967192799
173306, 'min_child_weight': 8, 'gamma': 0.006657626788989846, 'subsample': 0.9782
806828206883, 'colsample_bytree': 0.8377341880386865}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:03] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:03,658] Trial 47 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 134, 'max_depth': 7, 'learning_rate': 0.062710776084
2506, 'min_child_weight': 8, 'gamma': 0.33842774100665407, 'subsample': 0.9793018
```

768454063, 'colsample_bytree': 0.8261887410331046}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:03] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:03,788] Trial 48 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 69, 'max_depth': 4, 'learning_rate': 0.1326764805118
7117, 'min_child_weight': 7, 'gamma': 0.006973355130828662, 'subsample': 0.518667
7391593071, 'colsample_bytree': 0.9013329991909718}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율

```
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:03] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:03,922] Trial 49 finished with value: 0.7272727272727273 and
parameters: {'n_estimators': 161, 'max_depth': 2, 'learning_rate': 0.215254553592
1103, 'min_child_weight': 8, 'gamma': 0.03738708130620212, 'subsample': 0.7092444
229189891, 'colsample_bytree': 0.9648305336411407}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:04] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:04,103] Trial 50 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 96, 'max_depth': 5, 'learning_rate': 0.0223726302439
6616, 'min_child_weight': 6, 'gamma': 1.5724666583877696, 'subsample': 0.95007465
51284469, 'colsample_bytree': 0.8356053693896153}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
```

6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:04] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:04,280] Trial 51 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 139, 'max_depth': 7, 'learning_rate': 0.094578370756
58523, 'min_child_weight': 7, 'gamma': 0.002769499408784265, 'subsample': 0.92089
44680967321, 'colsample_bytree': 0.7718378847234161}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:04] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:04,478] Trial 52 finished with value: 0.7532467532467533 and
parameters: {'n_estimators': 183, 'max_depth': 8, 'learning_rate': 0.043559825925
76241, 'min_child_weight': 6, 'gamma': 0.0014305279148975275, 'subsample': 0.9901
639872218222, 'colsample_bytree': 0.8011796286661641}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

```
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:04] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:04,649] Trial 53 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 112, 'max_depth': 5, 'learning_rate': 0.032288760005
85349, 'min_child_weight': 8, 'gamma': 0.006752648337305038, 'subsample': 0.90129
10629094957, 'colsample_bytree': 0.6977349446319552}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:04] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.
```

```
  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:04,974] Trial 54 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 460, 'max_depth': 10, 'learning_rate': 0.01584097113
8739272, 'min_child_weight': 9, 'gamma': 0.011724311503696874, 'subsample': 0.976
6344575597999, 'colsample_bytree': 0.724417008898455}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:05] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:05,188] Trial 55 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 164, 'max_depth': 11, 'learning_rate': 0.05260303467
159763, 'min_child_weight': 4, 'gamma': 0.0029450702676583292, 'subsample': 0.929
8051947525177, 'colsample_bytree': 0.7591993584320261}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
```

suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:05] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:05,513] Trial 56 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 227, 'max_depth': 9, 'learning_rate': 0.066760547799
41942, 'min_child_weight': 1, 'gamma': 0.004887564254455781, 'subsample': 0.94882
08071072892, 'colsample_bytree': 0.9588656565387979}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:05] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:05,741] Trial 57 finished with value: 0.6363636363636364 and
parameters: {'n_estimators': 192, 'max_depth': 8, 'learning_rate': 0.001565778461
0980242, 'min_child_weight': 7, 'gamma': 0.030410970401559503, 'subsample': 0.980
7522782956541, 'colsample_bytree': 0.6810229570653544}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

```
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:05] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:05,892] Trial 58 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 93, 'max_depth': 14, 'learning_rate': 0.092097686004
09826, 'min_child_weight': 8, 'gamma': 0.0015489902733462656, 'subsample': 0.9983
074228825173, 'colsample_bytree': 0.6352004186397785}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:05] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:06,152] Trial 59 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 270, 'max_depth': 11, 'learning_rate': 0.03849303849
049595, 'min_child_weight': 6, 'gamma': 0.0022366664190652933, 'subsample': 0.920
```

```
3129632614606, 'colsample_bytree': 0.6563324322313595}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:06] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:06,479] Trial 60 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 284, 'max_depth': 10, 'learning_rate': 0.02367562061
695782, 'min_child_weight': 5, 'gamma': 0.007601623369048806, 'subsample': 0.8891
090598858081, 'colsample_bytree': 0.6126451860009335}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
```

c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:06] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:06,773] Trial 61 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 361, 'max_depth': 10, 'learning_rate': 0.02193474073
994061, 'min_child_weight': 5, 'gamma': 0.008365104258386555, 'subsample': 0.8835
252212954015, 'colsample_bytree': 0.6066741035755283}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:06] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:07,008] Trial 62 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 290, 'max_depth': 11, 'learning_rate': 0.03075291266
8289393, 'min_child_weight': 6, 'gamma': 0.014730277839855284, 'subsample': 0.946
5572966058973, 'colsample_bytree': 0.6552256596357471}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v

6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:07] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:07,278] Trial 63 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 311, 'max_depth': 8, 'learning_rate': 0.039446415954
80512, 'min_child_weight': 6, 'gamma': 0.0038500673015624673, 'subsample': 0.9644
838140424252, 'colsample_bytree': 0.5767082628544246}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:07] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:07,583] Trial 64 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 270, 'max_depth': 9, 'learning_rate': 0.025070549877
887375, 'min_child_weight': 4, 'gamma': 0.00595091760814060605, 'subsample': 0.9193
216266419154, 'colsample_bytree': 0.8447076786430392}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

```
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:07] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:07,865] Trial 65 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 273, 'max_depth': 11, 'learning_rate': 0.01520279919
4124431, 'min_child_weight': 5, 'gamma': 0.02113606233377148, 'subsample': 0.8493
606254762862, 'colsample_bytree': 0.9971536938926404}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:07] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.
```

```
  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:08,093] Trial 66 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 317, 'max_depth': 6, 'learning_rate': 0.056879082784
57067, 'min_child_weight': 6, 'gamma': 0.008464640971238752, 'subsample': 0.89909
63211944453, 'colsample_bytree': 0.5357353695234081}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_float
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_float
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:08] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:08,318] Trial 67 finished with value: 0.7186147186147186 and
parameters: {'n_estimators': 332, 'max_depth': 10, 'learning_rate': 0.13775455660
591124, 'min_child_weight': 7, 'gamma': 0.0024262192696458203, 'subsample': 0.935
7415284786774, 'colsample_bytree': 0.5734787353531261}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
```

```
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:08] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:08,605] Trial 68 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 351, 'max_depth': 9, 'learning_rate': 0.038834128451
06236, 'min_child_weight': 7, 'gamma': 0.005446543107226899, 'subsample': 0.96153
65192086501, 'colsample_bytree': 0.5031188878353783}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:08] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.


  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:08,911] Trial 69 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 429, 'max_depth': 13, 'learning_rate': 0.01894383063
973208, 'min_child_weight': 8, 'gamma': 0.05895268690445922, 'subsample': 0.87264
88057820019, 'colsample_bytree': 0.6282022554262834}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
```

```
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:08] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:09,178] Trial 70 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 248, 'max_depth': 12, 'learning_rate': 0.07494041880
564911, 'min_child_weight': 4, 'gamma': 0.013779975741460079, 'subsample': 0.9834
741834501297, 'colsample_bytree': 0.7123101225842269}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:09] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:09,468] Trial 71 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 268, 'max_depth': 11, 'learning_rate': 0.01475640018
9752003, 'min_child_weight': 5, 'gamma': 0.020724571964357286, 'subsample': 0.859
```

```
395359263376, 'colsample_bytree': 0.9760009586802917}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:09] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:09,723] Trial 72 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 264, 'max_depth': 11, 'learning_rate': 0.00961719517
8327728, 'min_child_weight': 5, 'gamma': 0.010144284730631118, 'subsample': 0.889
6824323771172, 'colsample_bytree': 0.9458181878150448}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
```

```
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:09] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:10,011] Trial 73 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 282, 'max_depth': 10, 'learning_rate': 0.00517757729
5106613, 'min_child_weight': 5, 'gamma': 0.10946230802173387, 'subsample': 0.8071
728083654732, 'colsample_bytree': 0.9976835891680423}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:10] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:10,350] Trial 74 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 300, 'max_depth': 11, 'learning_rate': 0.02428236716
952125, 'min_child_weight': 6, 'gamma': 0.029532105971617137, 'subsample': 0.9124
091992583275, 'colsample_bytree': 0.8726119039430504}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
```

6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:10] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:10,602] Trial 75 finished with value: 0.7359307359307359 and
parameters: {'n_estimators': 239, 'max_depth': 9, 'learning_rate': 0.006468894569
134219, 'min_child_weight': 7, 'gamma': 0.017965213837998893, 'subsample': 0.9284
001960339634, 'colsample_bytree': 0.9143097785736182}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:10] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:10,798] Trial 76 finished with value: 0.7186147186147186 and
parameters: {'n_estimators': 105, 'max_depth': 12, 'learning_rate': 0.01141978040
7957521, 'min_child_weight': 3, 'gamma': 0.0020762016041358873, 'subsample': 0.94
86826462290641, 'colsample_bytree': 0.7298943268863658}. Best is trial 25 with va
lue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

```
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:10] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:10,968] Trial 77 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 135, 'max_depth': 10, 'learning_rate': 0.03356967596
507205, 'min_child_weight': 6, 'gamma': 0.007753891100586173, 'subsample': 0.8454
546223661233, 'colsample_bytree': 0.788096650022755}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:11] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.
```

```
  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:11,110] Trial 78 finished with value: 0.7359307359307359 and
parameters: {'n_estimators': 83, 'max_depth': 13, 'learning_rate': 0.016333407465
44708, 'min_child_weight': 5, 'gamma': 0.0035432420838811215, 'subsample': 0.7561
130243913652, 'colsample_bytree': 0.9846619412221266}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:11] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:11,280] Trial 79 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 209, 'max_depth': 2, 'learning_rate': 0.063893940671
58044, 'min_child_weight': 8, 'gamma': 0.022494803687765092, 'subsample': 0.96272
92439612383, 'colsample_bytree': 0.7566185781313769}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
```

suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:11] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:11,466] Trial 80 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 148, 'max_depth': 11, 'learning_rate': 0.11889712353
130098, 'min_child_weight': 3, 'gamma': 0.012476408090575318, 'subsample': 0.9088
652828884543, 'colsample_bytree': 0.9458033909329563}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:11] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:11,772] Trial 81 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 260, 'max_depth': 12, 'learning_rate': 0.04333195447
430583, 'min_child_weight': 9, 'gamma': 0.0045817289436576964, 'subsample': 0.942
6811408239448, 'colsample_bytree': 0.6711555388503277}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

```
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:11] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:11,918] Trial 82 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 123, 'max_depth': 13, 'learning_rate': 0.04709073714
403465, 'min_child_weight': 10, 'gamma': 0.00294924971627327, 'subsample': 0.9243
100742541495, 'colsample_bytree': 0.6910237602496}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:12] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:12,095] Trial 83 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 215, 'max_depth': 12, 'learning_rate': 0.02826324013
354776, 'min_child_weight': 9, 'gamma': 0.0010465430694234384, 'subsample': 0.623
```

```
147016088333, 'colsample_bytree': 0.6523415204364307}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:12] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:12,271] Trial 84 finished with value: 0.7532467532467533 and
parameters: {'n_estimators': 171, 'max_depth': 11, 'learning_rate': 0.08436977743
485975, 'min_child_weight': 6, 'gamma': 0.0018250783470591236, 'subsample': 0.892
8840318272255, 'colsample_bytree': 0.708407976560336}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
```

```
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:12] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:12,459] Trial 85 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 234, 'max_depth': 4, 'learning_rate': 0.056961749540
02592, 'min_child_weight': 5, 'gamma': 0.006075880287338483, 'subsample': 0.83430
40528715838, 'colsample_bytree': 0.612335987280118}. Best is trial 25 with value:
0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:12] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:12,683] Trial 86 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 280, 'max_depth': 10, 'learning_rate': 0.03748444557
2444965, 'min_child_weight': 7, 'gamma': 0.01008076047900049, 'subsample': 0.9738
606199421789, 'colsample_bytree': 0.6596914209583125}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
```

```
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:12] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:12,862] Trial 87 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 151, 'max_depth': 12, 'learning_rate': 0.01993322168
1069563, 'min_child_weight': 7, 'gamma': 0.004287971908224872, 'subsample': 0.998
8850529096682, 'colsample_bytree': 0.6814762455791566}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:12] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:13,048] Trial 88 finished with value: 0.7489177489177489 and
parameters: {'n_estimators': 198, 'max_depth': 7, 'learning_rate': 0.100287950100
30253, 'min_child_weight': 6, 'gamma': 0.0032485751749857916, 'subsample': 0.9394
37262713586, 'colsample_bytree': 0.8173225106310998}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
```

at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:13] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:13,268] Trial 89 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 183, 'max_depth': 13, 'learning_rate': 0.07120622664
146019, 'min_child_weight': 8, 'gamma': 0.00139750378824724, 'subsample': 0.86849
63606839665, 'colsample_bytree': 0.8950222347300409}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:13] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

```
  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:13,488] Trial 90 finished with value: 0.7402597402597403 and
parameters: {'n_estimators': 224, 'max_depth': 9, 'learning_rate': 0.050616917218
042824, 'min_child_weight': 9, 'gamma': 0.0024330419851093053, 'subsample': 0.959
5365215824394, 'colsample_bytree': 0.639585451494916}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_float
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_float
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:13] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:13,668] Trial 91 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 162, 'max_depth': 12, 'learning_rate': 0.05778731109
617804, 'min_child_weight': 7, 'gamma': 0.010818448443893226, 'subsample': 0.9733
062453770904, 'colsample_bytree': 0.5367247169487602}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_float
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
```

suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:13] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:13,854] Trial 92 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 139, 'max_depth': 11, 'learning_rate': 0.06253010248
488733, 'min_child_weight': 6, 'gamma': 0.01662654512672029, 'subsample': 0.98467
11299287079, 'colsample_bytree': 0.5499565876742412}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0) # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0) # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0) # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:13] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:14,011] Trial 93 finished with value: 0.7445887445887446 and
parameters: {'n_estimators': 114, 'max_depth': 12, 'learning_rate': 0.04519497445
5613726, 'min_child_weight': 7, 'gamma': 0.007109036203963846, 'subsample': 0.953
5987812944869, 'colsample_bytree': 0.523571528830033}. Best is trial 25 with valu
e: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3) # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo

```
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:14] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:14,388] Trial 94 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 299, 'max_depth': 13, 'learning_rate': 0.02920370731
2076745, 'min_child_weight': 8, 'gamma': 0.009083142008492072, 'subsample': 0.972
7367284383126, 'colsample_bytree': 0.5613802360319018}. Best is trial 25 with val
ue: 0.7662337662337663.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:14] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:14,588] Trial 95 finished with value: 0.7705627705627706 and
parameters: {'n_estimators': 157, 'max_depth': 10, 'learning_rate': 0.03392620875
221724, 'min_child_weight': 5, 'gamma': 0.011867771350914273, 'subsample': 0.9276
```

```
487992854839, 'colsample_bytree': 0.5963551342271051}. Best is trial 95 with valu
e: 0.7705627705627706.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:14] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:14,879] Trial 96 finished with value: 0.7575757575757576 and
parameters: {'n_estimators': 129, 'max_depth': 10, 'learning_rate': 0.02398860300
193845, 'min_child_weight': 5, 'gamma': 0.012256780346889064, 'subsample': 0.9870
297481502378, 'colsample_bytree': 0.5948238969824718}. Best is trial 95 with valu
e: 0.7705627705627706.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
```

```
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:14] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:15,179] Trial 97 finished with value: 0.7705627705627706 and
parameters: {'n_estimators': 158, 'max_depth': 10, 'learning_rate': 0.05331286024
410676, 'min_child_weight': 4, 'gamma': 0.026097703853803382, 'subsample': 0.9255
738220505132, 'colsample_bytree': 0.5346123538363259}. Best is trial 95 with valu
e: 0.7705627705627706.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:15] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:15,370] Trial 98 finished with value: 0.7662337662337663 and
parameters: {'n_estimators': 104, 'max_depth': 8, 'learning_rate': 0.034552811017
61813, 'min_child_weight': 3, 'gamma': 0.025913632385134402, 'subsample': 0.90603
56419916074, 'colsample_bytree': 0.5128338332170195}. Best is trial 95 with valu
e: 0.7705627705627706.
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:9: FutureWarning: s
uggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  learning_rate = trial.suggest_loguniform('learning_rate', 1e-3, 0.3)  # 학습률
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:11: FutureWarning:
suggest_loguniform has been deprecated in v3.0.0. This feature will be removed in
v6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_flo
at(..., log=True) instead.
  gamma = trial.suggest_loguniform('gamma', 1e-3, 10.0)  # 트리를 가지치기할 최소
손실 감소
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:12: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
```

```
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  subsample = trial.suggest_uniform('subsample', 0.5, 1.0)  # 각 트리를 작성하는
데 사용할 샘플 비율
C:\Users\jdh25\AppData\Local\Temp\ipykernel_7620\254185142.py:13: FutureWarning:
suggest_uniform has been deprecated in v3.0.0. This feature will be removed in v
6.0.0. See https://github.com/optuna/optuna/releases/tag/v3.0.0. Use suggest_floa
t instead.
  colsample_bytree = trial.suggest_uniform('colsample_bytree', 0.5, 1.0)  # 각 트
리에 사용될 열 비율
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:15] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
[I 2024-09-24 10:12:15,609] Trial 99 finished with value: 0.7619047619047619 and
parameters: {'n_estimators': 142, 'max_depth': 9, 'learning_rate': 0.013499962337
289255, 'min_child_weight': 4, 'gamma': 0.019079784050642645, 'subsample': 0.9262
474125389188, 'colsample_bytree': 0.6212477385604128}. Best is trial 95 with valu
e: 0.7705627705627706.
```
```
Best trial:
  Value: 0.7705627705627706
  Parameters:
    n_estimators: 157
    max_depth: 10
    learning_rate: 0.03392620875221724
    min_child_weight: 5
    gamma: 0.011867771350914273
    subsample: 0.9276487992854839
    colsample_bytree: 0.5963551342271051
Train accuracy : 0.9162011173184358
Test accuracy : 0.7705627705627706
Confusion Matrix:
 [[132  15]
 [ 38  46]]
```
```
c:\dankook\DeepLearning_Cloud\deepcl_env\lib\site-packages\xgboost\core.py:158: U
serWarning: [10:12:15] WARNING: C:\buildkite-agent\builds\buildkite-windows-cpu-a
utoscaling-group-i-0015a694724fa8361-1\xgboost\xgboost-ci-windows\src\learner.cc:
740:
Parameters: { "use_label_encoder" } are not used.

  warnings.warn(smsg, UserWarning)
```

XGBoost Result

하이퍼파라미터 튜닝 전: Test accuracy : 0.7272727272727273

하이퍼파라미터 튜닝 후: Train accuracy : 0.9162011173184358 Test accuracy : 0.7705627705627706