26.Loan_predict_phase3-LGBM

February 8, 2022

[1]:
```
#import packages to do EDA
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt

import os
%matplotlib inline
plt.style.use('fivethirtyeight')
import gc

# http://zetcode.com/python/prettytable/
from prettytable import PrettyTable
import matplotlib.font_manager


from sklearn.model_selection import train_test_split
from tqdm import tqdm

import lightgbm as lgb
import pickle


#reference:https://scikit-learn.org/stable/modules/generated/sklearn.
↪model_selection.GridSearchCV.html
from sklearn.model_selection import StratifiedKFold
from sklearn.metrics import confusion_matrix,roc_curve, auc
from sklearn.metrics import log_loss
import optuna
import warnings
warnings.filterwarnings('ignore')
```

Read vector from pickle file

[2]:
```
with open('./data/train_vector.pkl', 'rb') as f:
    X = pickle.load(f)
```

[3]:
```
with open('./data/feature_names.pkl', 'rb') as f:
    feature_names = pickle.load(f)
```

[4]:
```
print(X.shape[1],len(feature_names))
```

```
930 930
```

[5]:
```
with open('./data/yvalues.pkl', 'rb') as f:
    y = pickle.load(f)
```

1 testing purpose only

traindata=50000 X = X.toarray()[:traindata,:] y=y[:traindata] print(X.shape,y.shape)

[6]:
```
#split data only train and test.
#Hypertuning with gridsearch and random
#hypertuning, will do automatic cv. Hence, split data into Train and Test only.
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.33,␣
 ↪stratify=y,random_state=42)
```

[7]:
```
gc.enable()
del X,y
gc.collect()
```

[7]:
```
0
```

Model Evaluation

[8]:
```
from sklearn.utils import class_weight
#class_weights = class_weight.compute_class_weight('balanced', np.
 ↪unique(y_train),y_train)
#class_weights = dict(zip(np.unique(y_train), class_weight.
 ↪compute_class_weight('balanced', np.unique(y_train),y_train)))
#y_integers = np.argmax(y_train, axis=1)
class_weights = class_weight.compute_class_weight(class_weight='balanced',␣
 ↪classes=[0,1], y=y_train)
d_class_weights = dict(enumerate(class_weights))
d_class_weights
```

[8]:
```
{0: 0.5439099467262235, 1: 6.193470811038297}
```

Hyper parameter tuning for ensemble models

[9]:
```
#credit:https://www.kaggle.com/saurabhshahane/
 ↪lgbm-hyperparameter-tuning-with-optuna-beginners
#credit:https://towardsdatascience.com/
 ↪kagglers-guide-to-lightgbm-hyperparameter-tuning-with-optuna-in-2021-ed048d9838b5
from sklearn.metrics import log_loss
from sklearn.model_selection import StratifiedKFold
```

```
from optuna import Trial
from optuna.integration import LightGBMPruningCallback
def objective(trial, X_data, y_label):

    param_grid = {
        "verbose":-1, "silent":True,
        "n_estimators": trial.suggest_categorical("n_estimators", [10000]),
        "learning_rate": trial.suggest_float("learning_rate", 0.001, 0.3),
        'min_child_samples': trial.suggest_int('min_child_samples', 5, 100),
        "num_leaves": trial.suggest_int("num_leaves", 20, 3000, step=20),
        "max_depth": trial.suggest_int("max_depth", 3, 12),
        "min_data_in_leaf": trial.suggest_int("min_data_in_leaf", 200, 10000,␣
↪step=100),
        "max_bin": trial.suggest_int("max_bin", 200, 300),
        "lambda_l1": trial.suggest_int("lambda_l1", 0, 100, step=5),
        "lambda_l2": trial.suggest_int("lambda_l2", 0, 100, step=5),
        "min_gain_to_split": trial.suggest_float("min_gain_to_split", 0, 15),
        "feature_fraction": trial.suggest_float("feature_fraction", 0.6, 0.9,␣
↪step=0.1),
        "bagging_fraction": trial.suggest_float("bagging_fraction", 0.5, 0.7,␣
↪step=0.1),
        "bagging_freq": trial.suggest_int('bagging_freq', 1, 7),

        }

    cv = StratifiedKFold(n_splits=5, shuffle=True, random_state=42)

    cv_scores = np.empty(5)
    for idx, (train_idx, test_idx) in enumerate(cv.split(X_data, y_label)):
        x_train, x_test = X_data[train_idx], X_data[test_idx]
        y_train, y_test = y_label[train_idx], y_label[test_idx]


        clf_model = lgb.LGBMClassifier(objective="binary",␣
↪**param_grid,class_weight=d_class_weights
                                       ,boosting_type='gbdt',random_state=42)
        params={'verbose':-1,"silent":True,}
        clf_model.set_params(**params)
        #earlystopping = [lgb.early_stopping(10, verbose=0), lgb.
↪log_evaluation(period=0)]

        clf_model.
↪fit(x_train,y_train,eval_set=[(x_test,y_test)],eval_metric='binary_logloss',early_stopping_
                    callbacks=[LightGBMPruningCallback(trial,␣
↪"binary_logloss")])
```

```
        preds = clf_model.predict_proba(x_test)
        cv_scores[idx] = log_loss(y_test, preds)

    return np.mean(cv_scores)
```

[12]:
```
def logging_callback(study, frozen_trial):
    previous_best_value = study.user_attrs.get("previous_best_value", None)
    if previous_best_value != study.best_value:
        study.set_user_attr("previous_best_value", study.best_value)
        print(
            "Trial {} finished with best value: {} and parameters: {}. ".format(
            frozen_trial.number,
            frozen_trial.value,
            frozen_trial.params,
            )
        )
```

[13]:
```
from warnings import simplefilter
simplefilter("ignore", category=RuntimeWarning)
warnings.filterwarnings('ignore')

optuna.logging.set_verbosity(optuna.logging.WARNING)

study = optuna.create_study(direction="minimize", study_name="LGBM Classifier")
optuna.logging.set_verbosity(optuna.logging.WARNING)
func = lambda trial: objective(trial, X_train, y_train)
study.optimize(func, n_trials=70,callbacks=[logging_callback])
```

```
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=6900, min_child_samples=79 will be
ignored. Current value: min_data_in_leaf=6900
[LightGBM] [Warning] min_gain_to_split is set=6.9418372895259655,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=6.9418372895259655
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=80, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=80
[LightGBM] [Warning] lambda_l2 is set=95, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=95
[LightGBM] [Warning] bagging_freq is set=4, subsample_freq=0 will be ignored.
Current value: bagging_freq=4
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=6900, min_child_samples=79 will be
ignored. Current value: min_data_in_leaf=6900
[LightGBM] [Warning] min_gain_to_split is set=6.9418372895259655,
```

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min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=6.9418372895259655
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=80, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=80
[LightGBM] [Warning] lambda_l2 is set=95, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=95
[LightGBM] [Warning] bagging_freq is set=4, subsample_freq=0 will be ignored.
Current value: bagging_freq=4
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
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Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=80, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=80
[LightGBM] [Warning] lambda_l2 is set=95, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=95
[LightGBM] [Warning] bagging_freq is set=4, subsample_freq=0 will be ignored.
Current value: bagging_freq=4
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[LightGBM] [Warning] min_gain_to_split is set=6.9418372895259655,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=6.9418372895259655
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Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=80, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=80
[LightGBM] [Warning] lambda_l2 is set=95, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=95
[LightGBM] [Warning] bagging_freq is set=4, subsample_freq=0 will be ignored.
Current value: bagging_freq=4
Trial 0 finished with best value: 0.5778927791191392 and parameters:
{'n_estimators': 10000, 'learning_rate': 0.009413073156339189,
'min_child_samples': 79, 'num_leaves': 1300, 'max_depth': 3, 'min_data_in_leaf':
6900, 'max_bin': 294, 'lambda_l1': 80, 'lambda_l2': 95, 'min_gain_to_split':
6.9418372895259655, 'feature_fraction': 0.7, 'bagging_fraction': 0.6,
'bagging_freq': 4}.
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
```

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[LightGBM] [Warning] min_data_in_leaf is set=8900, min_child_samples=39 will be
ignored. Current value: min_data_in_leaf=8900
[LightGBM] [Warning] min_gain_to_split is set=7.142852326546843,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=7.142852326546843
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=100, reg_alpha=0.0 will be ignored.
Current value: lambda_l1=100
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=8900, min_child_samples=39 will be
ignored. Current value: min_data_in_leaf=8900
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min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=7.142852326546843
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Current value: bagging_fraction=0.7
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Current value: lambda_l1=100
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Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
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Current value: bagging_fraction=0.7
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Current value: lambda_l1=100
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
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ignored. Current value: feature_fraction=0.8
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ignored. Current value: min_data_in_leaf=8900
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Current value: bagging_fraction=0.7
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Current value: lambda_l1=100
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
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Current value: bagging_freq=5
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ignored. Current value: feature_fraction=0.8
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ignored. Current value: min_data_in_leaf=8900
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min_split_gain=0.0 will be ignored. Current value:
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Current value: bagging_fraction=0.7
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Current value: lambda_l1=100
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
Trial 1 finished with best value: 0.5588957220836199 and parameters:
{'n_estimators': 10000, 'learning_rate': 0.22719200139014328,
'min_child_samples': 39, 'num_leaves': 2140, 'max_depth': 9, 'min_data_in_leaf':
8900, 'max_bin': 285, 'lambda_l1': 100, 'lambda_l2': 50, 'min_gain_to_split':
7.142852326546843, 'feature_fraction': 0.8, 'bagging_fraction': 0.7,
'bagging_freq': 5}.
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=9600, min_child_samples=51 will be
ignored. Current value: min_data_in_leaf=9600
[LightGBM] [Warning] min_gain_to_split is set=14.996587362150008,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=14.996587362150008
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=15, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=15
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
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Current value: bagging_freq=6
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ignored. Current value: feature_fraction=0.7
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Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=2700, min_child_samples=98 will be
ignored. Current value: min_data_in_leaf=2700
[LightGBM] [Warning] min_gain_to_split is set=0.6058656701440895,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.6058656701440895
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=55, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=55
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
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ignored. Current value: min_data_in_leaf=2700
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Current value: bagging_freq=2
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min_gain_to_split=0.6058656701440895
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
```

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Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=55, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=55
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=2700, min_child_samples=98 will be
ignored. Current value: min_data_in_leaf=2700
[LightGBM] [Warning] min_gain_to_split is set=0.6058656701440895,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.6058656701440895
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=55, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=55
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=2700, min_child_samples=98 will be
ignored. Current value: min_data_in_leaf=2700
[LightGBM] [Warning] min_gain_to_split is set=0.6058656701440895,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.6058656701440895
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=55, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=55
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
Trial 3 finished with best value: 0.5010103724941197 and parameters:
{'n_estimators': 10000, 'learning_rate': 0.2730213617018945,
'min_child_samples': 98, 'num_leaves': 2300, 'max_depth': 8, 'min_data_in_leaf':
2700, 'max_bin': 264, 'lambda_l1': 55, 'lambda_l2': 40, 'min_gain_to_split':
0.6058656701440895, 'feature_fraction': 0.7, 'bagging_fraction': 0.7,
'bagging_freq': 2}.
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=8600, min_child_samples=93 will be
ignored. Current value: min_data_in_leaf=8600
[LightGBM] [Warning] min_gain_to_split is set=1.97611633964254,
```

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min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.97611633964254
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=8600, min_child_samples=93 will be
ignored. Current value: min_data_in_leaf=8600
[LightGBM] [Warning] min_gain_to_split is set=1.97611633964254,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.97611633964254
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=8600, min_child_samples=93 will be
ignored. Current value: min_data_in_leaf=8600
[LightGBM] [Warning] min_gain_to_split is set=1.97611633964254,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.97611633964254
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=8600, min_child_samples=93 will be
ignored. Current value: min_data_in_leaf=8600
[LightGBM] [Warning] min_gain_to_split is set=1.97611633964254,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.97611633964254
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
```

```
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=8600, min_child_samples=93 will be
ignored. Current value: min_data_in_leaf=8600
[LightGBM] [Warning] min_gain_to_split is set=1.97611633964254,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.97611633964254
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=8000, min_child_samples=52 will be
ignored. Current value: min_data_in_leaf=8000
[LightGBM] [Warning] min_gain_to_split is set=10.343560906905589,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=10.343560906905589
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=85, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=85
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=8000, min_child_samples=52 will be
ignored. Current value: min_data_in_leaf=8000
[LightGBM] [Warning] min_gain_to_split is set=10.343560906905589,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=10.343560906905589
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=85, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=85
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[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=8000, min_child_samples=52 will be
ignored. Current value: min_data_in_leaf=8000
[LightGBM] [Warning] min_gain_to_split is set=10.343560906905589,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=10.343560906905589
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=85, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=85
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=8000, min_child_samples=52 will be
ignored. Current value: min_data_in_leaf=8000
[LightGBM] [Warning] min_gain_to_split is set=10.343560906905589,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=10.343560906905589
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=85, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=85
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=8000, min_child_samples=52 will be
ignored. Current value: min_data_in_leaf=8000
[LightGBM] [Warning] min_gain_to_split is set=10.343560906905589,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=10.343560906905589
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=85, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=85
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
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Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=3200, min_child_samples=36 will be
ignored. Current value: min_data_in_leaf=3200
[LightGBM] [Warning] min_gain_to_split is set=0.9420222826514335,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.9420222826514335
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=80, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=80
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=1, subsample_freq=0 will be ignored.
Current value: bagging_freq=1
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=6700, min_child_samples=87 will be
ignored. Current value: min_data_in_leaf=6700
[LightGBM] [Warning] min_gain_to_split is set=12.461761293874453,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=12.461761293874453
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=65, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=65
[LightGBM] [Warning] lambda_l2 is set=0, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=0
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=6700, min_child_samples=87 will be
ignored. Current value: min_data_in_leaf=6700
[LightGBM] [Warning] min_gain_to_split is set=12.461761293874453,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=12.461761293874453
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=65, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=65
[LightGBM] [Warning] lambda_l2 is set=0, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=0
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
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[LightGBM] [Warning] min_data_in_leaf is set=6700, min_child_samples=87 will be
ignored. Current value: min_data_in_leaf=6700
[LightGBM] [Warning] min_gain_to_split is set=12.461761293874453,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=12.461761293874453
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=65, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=65
[LightGBM] [Warning] lambda_l2 is set=0, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=0
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=6700, min_child_samples=87 will be
ignored. Current value: min_data_in_leaf=6700
[LightGBM] [Warning] min_gain_to_split is set=12.461761293874453,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=12.461761293874453
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=65, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=65
[LightGBM] [Warning] lambda_l2 is set=0, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=0
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=88 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=0.08833379415472853,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.08833379415472853
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=80, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=80
[LightGBM] [Warning] lambda_l2 is set=0, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=0
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=88 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=0.08833379415472853,
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min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.08833379415472853
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=80, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=80
[LightGBM] [Warning] lambda_l2 is set=0, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=0
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=88 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=0.08833379415472853,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.08833379415472853
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=80, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=80
[LightGBM] [Warning] lambda_l2 is set=0, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=0
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=88 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=0.08833379415472853,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.08833379415472853
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=80, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=80
[LightGBM] [Warning] lambda_l2 is set=0, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=0
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=88 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=0.08833379415472853,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.08833379415472853
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
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Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=80, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=80
[LightGBM] [Warning] lambda_l2 is set=0, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=0
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=2100, min_child_samples=99 will be
ignored. Current value: min_data_in_leaf=2100
[LightGBM] [Warning] min_gain_to_split is set=7.021071415654771,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=7.021071415654771
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=2100, min_child_samples=99 will be
ignored. Current value: min_data_in_leaf=2100
[LightGBM] [Warning] min_gain_to_split is set=7.021071415654771,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=7.021071415654771
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=2100, min_child_samples=99 will be
ignored. Current value: min_data_in_leaf=2100
[LightGBM] [Warning] min_gain_to_split is set=7.021071415654771,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=7.021071415654771
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
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[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=2100, min_child_samples=99 will be
ignored. Current value: min_data_in_leaf=2100
[LightGBM] [Warning] min_gain_to_split is set=7.021071415654771,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=7.021071415654771
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=2100, min_child_samples=99 will be
ignored. Current value: min_data_in_leaf=2100
[LightGBM] [Warning] min_gain_to_split is set=7.021071415654771,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=7.021071415654771
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
Trial 9 finished with best value: 0.4865454666110588 and parameters:
{'n_estimators': 10000, 'learning_rate': 0.22818072575661935,
'min_child_samples': 99, 'num_leaves': 80, 'max_depth': 10, 'min_data_in_leaf':
2100, 'max_bin': 275, 'lambda_l1': 0, 'lambda_l2': 25, 'min_gain_to_split':
7.021071415654771, 'feature_fraction': 0.9, 'bagging_fraction': 0.7,
'bagging_freq': 2}.
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=8 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=5.013961945792454,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=5.013961945792454
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
```

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Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=75, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=75
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=8 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=5.013961945792454,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=5.013961945792454
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=75, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=75
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=8 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=5.013961945792454,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=5.013961945792454
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=75, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=75
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=8 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=5.013961945792454,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=5.013961945792454
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
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[LightGBM] [Warning] lambda_l2 is set=75, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=75
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=8 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=5.013961945792454,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=5.013961945792454
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=75, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=75
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=3000, min_child_samples=70 will be
ignored. Current value: min_data_in_leaf=3000
[LightGBM] [Warning] min_gain_to_split is set=4.124599039076207,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=4.124599039076207
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=35, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=35
[LightGBM] [Warning] lambda_l2 is set=55, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=55
[LightGBM] [Warning] bagging_freq is set=1, subsample_freq=0 will be ignored.
Current value: bagging_freq=1
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=2600, min_child_samples=98 will be
ignored. Current value: min_data_in_leaf=2600
[LightGBM] [Warning] min_gain_to_split is set=10.083560363420457,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=10.083560363420457
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
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Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=2600, min_child_samples=98 will be
ignored. Current value: min_data_in_leaf=2600
[LightGBM] [Warning] min_gain_to_split is set=10.083560363420457,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=10.083560363420457
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=2600, min_child_samples=98 will be
ignored. Current value: min_data_in_leaf=2600
[LightGBM] [Warning] min_gain_to_split is set=10.083560363420457,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=10.083560363420457
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=2600, min_child_samples=98 will be
ignored. Current value: min_data_in_leaf=2600
[LightGBM] [Warning] min_gain_to_split is set=10.083560363420457,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=10.083560363420457
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
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[LightGBM] [Warning] min_data_in_leaf is set=4800, min_child_samples=71 will be
ignored. Current value: min_data_in_leaf=4800
[LightGBM] [Warning] min_gain_to_split is set=4.295026062880277,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=4.295026062880277
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=60, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=60
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1400, min_child_samples=99 will be
ignored. Current value: min_data_in_leaf=1400
[LightGBM] [Warning] min_gain_to_split is set=2.7751442586526904,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.7751442586526904
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1400, min_child_samples=99 will be
ignored. Current value: min_data_in_leaf=1400
[LightGBM] [Warning] min_gain_to_split is set=2.7751442586526904,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.7751442586526904
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1400, min_child_samples=99 will be
ignored. Current value: min_data_in_leaf=1400
[LightGBM] [Warning] min_gain_to_split is set=2.7751442586526904,
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min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.7751442586526904
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1400, min_child_samples=99 will be
ignored. Current value: min_data_in_leaf=1400
[LightGBM] [Warning] min_gain_to_split is set=2.7751442586526904,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.7751442586526904
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
Trial 14 finished with best value: 0.37381848024244224 and parameters:
{'n_estimators': 10000, 'learning_rate': 0.17914419187950947,
'min_child_samples': 99, 'num_leaves': 2680, 'max_depth': 12,
'min_data_in_leaf': 1400, 'max_bin': 240, 'lambda_l1': 0, 'lambda_l2': 35,
'min_gain_to_split': 2.7751442586526904, 'feature_fraction': 0.8,
'bagging_fraction': 0.6, 'bagging_freq': 2}.
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=1700, min_child_samples=68 will be
ignored. Current value: min_data_in_leaf=1700
[LightGBM] [Warning] min_gain_to_split is set=8.994548163954732,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=8.994548163954732
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=65, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=65
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
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[LightGBM] [Warning] min_data_in_leaf is set=1700, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=1700
[LightGBM] [Warning] min_gain_to_split is set=2.860221393913041,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.860221393913041
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=15, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=15
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1700, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=1700
[LightGBM] [Warning] min_gain_to_split is set=2.860221393913041,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.860221393913041
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=15, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=15
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1700, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=1700
[LightGBM] [Warning] min_gain_to_split is set=2.860221393913041,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.860221393913041
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=15, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=15
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1700, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=1700
[LightGBM] [Warning] min_gain_to_split is set=2.860221393913041,
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min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.860221393913041
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=15, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=15
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=4600, min_child_samples=8 will be
ignored. Current value: min_data_in_leaf=4600
[LightGBM] [Warning] min_gain_to_split is set=3.012857810577267,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=3.012857810577267
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=10, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=10
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.9, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.9
[LightGBM] [Warning] min_data_in_leaf is set=1700, min_child_samples=64 will be
ignored. Current value: min_data_in_leaf=1700
[LightGBM] [Warning] min_gain_to_split is set=8.707963251874126,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=8.707963251874126
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=10, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=10
[LightGBM] [Warning] lambda_l2 is set=10, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=10
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=2200, min_child_samples=80 will be
ignored. Current value: min_data_in_leaf=2200
[LightGBM] [Warning] min_gain_to_split is set=1.5904690898639426,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.5904690898639426
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
```

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Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=10, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=10
[LightGBM] [Warning] lambda_l2 is set=15, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=15
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=2200, min_child_samples=80 will be
ignored. Current value: min_data_in_leaf=2200
[LightGBM] [Warning] min_gain_to_split is set=1.5904690898639426,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.5904690898639426
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=10, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=10
[LightGBM] [Warning] lambda_l2 is set=15, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=15
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=2200, min_child_samples=80 will be
ignored. Current value: min_data_in_leaf=2200
[LightGBM] [Warning] min_gain_to_split is set=1.5904690898639426,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.5904690898639426
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=10, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=10
[LightGBM] [Warning] lambda_l2 is set=15, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=15
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=2200, min_child_samples=80 will be
ignored. Current value: min_data_in_leaf=2200
[LightGBM] [Warning] min_gain_to_split is set=1.5904690898639426,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.5904690898639426
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=10, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=10
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[LightGBM] [Warning] lambda_l2 is set=15, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=15
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=5600, min_child_samples=82 will be
ignored. Current value: min_data_in_leaf=5600
[LightGBM] [Warning] min_gain_to_split is set=1.5054848732894015,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.5054848732894015
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=15, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=15
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1100, min_child_samples=27 will be
ignored. Current value: min_data_in_leaf=1100
[LightGBM] [Warning] min_gain_to_split is set=2.5336911115759806,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.5336911115759806
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=10, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=10
[LightGBM] [Warning] lambda_l2 is set=5, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=5
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1100, min_child_samples=27 will be
ignored. Current value: min_data_in_leaf=1100
[LightGBM] [Warning] min_gain_to_split is set=2.5336911115759806,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.5336911115759806
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=10, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=10
[LightGBM] [Warning] lambda_l2 is set=5, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=5
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
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Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1100, min_child_samples=27 will be
ignored. Current value: min_data_in_leaf=1100
[LightGBM] [Warning] min_gain_to_split is set=2.5336911115759806,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.5336911115759806
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=10, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=10
[LightGBM] [Warning] lambda_l2 is set=5, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=5
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1100, min_child_samples=27 will be
ignored. Current value: min_data_in_leaf=1100
[LightGBM] [Warning] min_gain_to_split is set=2.5336911115759806,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.5336911115759806
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=10, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=10
[LightGBM] [Warning] lambda_l2 is set=5, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=5
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=1100, min_child_samples=22 will be
ignored. Current value: min_data_in_leaf=1100
[LightGBM] [Warning] min_gain_to_split is set=4.241509266377996,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=4.241509266377996
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=5, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=5
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
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[LightGBM] [Warning] min_data_in_leaf is set=1000, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=1000
[LightGBM] [Warning] min_gain_to_split is set=1.2727292239088555,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.2727292239088555
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=10, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=10
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1000, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=1000
[LightGBM] [Warning] min_gain_to_split is set=1.2727292239088555,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.2727292239088555
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=10, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=10
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1000, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=1000
[LightGBM] [Warning] min_gain_to_split is set=1.2727292239088555,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.2727292239088555
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=10, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=10
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1000, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=1000
[LightGBM] [Warning] min_gain_to_split is set=1.2727292239088555,
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min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.2727292239088555
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=10, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=10
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
Trial 32 finished with best value: 0.3715661213217834 and parameters:
{'n_estimators': 10000, 'learning_rate': 0.25330783973384935,
'min_child_samples': 5, 'num_leaves': 1100, 'max_depth': 9, 'min_data_in_leaf':
1000, 'max_bin': 233, 'lambda_l1': 15, 'lambda_l2': 10, 'min_gain_to_split':
1.2727292239088555, 'feature_fraction': 0.8, 'bagging_fraction': 0.6,
'bagging_freq': 3}.
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=0.1643516793441413,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.1643516793441413
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=5, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=5
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=0.1643516793441413,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.1643516793441413
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=5, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=5
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
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[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=0.1643516793441413,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.1643516793441413
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=5, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=5
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=0.1643516793441413,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.1643516793441413
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=5, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=5
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=0.1643516793441413,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.1643516793441413
[LightGBM] [Warning] bagging_fraction is set=0.5, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.5
[LightGBM] [Warning] lambda_l1 is set=20, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=20
[LightGBM] [Warning] lambda_l2 is set=5, reg_lambda=0.0 will be ignored. Current
value: lambda_l2=5
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=13 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=0.230697971486308,
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min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.230697971486308
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=13 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=0.230697971486308,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.230697971486308
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=13 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=0.230697971486308,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.230697971486308
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=13 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=0.230697971486308,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.230697971486308
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
```

```
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=13 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=0.230697971486308,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.230697971486308
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=0.4315647256794347,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.4315647256794347
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=0.4315647256794347,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.4315647256794347
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
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[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=0.4315647256794347,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.4315647256794347
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=0.4315647256794347,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.4315647256794347
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=0.4315647256794347,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.4315647256794347
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
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Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=10 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=1.0038350665439006,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.0038350665439006
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=10 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=1.0038350665439006,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.0038350665439006
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=10 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=1.0038350665439006,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.0038350665439006
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
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[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=10 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=1.0038350665439006,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.0038350665439006
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=10 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=1.0038350665439006,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.0038350665439006
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=9800, min_child_samples=17 will be
ignored. Current value: min_data_in_leaf=9800
[LightGBM] [Warning] min_gain_to_split is set=0.8773223607903242,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.8773223607903242
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=35, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=35
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=47 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=1.4642660021774014,
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min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.4642660021774014
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=55, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=55
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=0.8868485511671036,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.8868485511671036
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=0.8868485511671036,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.8868485511671036
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=0.8868485511671036,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.8868485511671036
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
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Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=0.8868485511671036,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.8868485511671036
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=45, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=45
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=600, min_child_samples=14 will be
ignored. Current value: min_data_in_leaf=600
[LightGBM] [Warning] min_gain_to_split is set=0.9865512246397292,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.9865512246397292
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=70, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=70
[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=600, min_child_samples=14 will be
ignored. Current value: min_data_in_leaf=600
[LightGBM] [Warning] min_gain_to_split is set=0.9865512246397292,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.9865512246397292
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=70, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=70
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[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=1400, min_child_samples=58 will be
ignored. Current value: min_data_in_leaf=1400
[LightGBM] [Warning] min_gain_to_split is set=1.5894023095099483,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.5894023095099483
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=30, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=30
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=1400, min_child_samples=58 will be
ignored. Current value: min_data_in_leaf=1400
[LightGBM] [Warning] min_gain_to_split is set=1.5894023095099483,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.5894023095099483
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=30, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=30
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=1400, min_child_samples=58 will be
ignored. Current value: min_data_in_leaf=1400
[LightGBM] [Warning] min_gain_to_split is set=1.5894023095099483,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.5894023095099483
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=30, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=30
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
```

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Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=1400, min_child_samples=58 will be
ignored. Current value: min_data_in_leaf=1400
[LightGBM] [Warning] min_gain_to_split is set=1.5894023095099483,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.5894023095099483
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=30, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=30
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=7, subsample_freq=0 will be ignored.
Current value: bagging_freq=7
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=25 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=0.758601104049948,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.758601104049948
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=25 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=0.758601104049948,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.758601104049948
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
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[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=25 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=0.758601104049948,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.758601104049948
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=25 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=0.758601104049948,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.758601104049948
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=200, min_child_samples=25 will be
ignored. Current value: min_data_in_leaf=200
[LightGBM] [Warning] min_gain_to_split is set=0.758601104049948,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.758601104049948
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=2400, min_child_samples=26 will be
ignored. Current value: min_data_in_leaf=2400
[LightGBM] [Warning] min_gain_to_split is set=2.040447817167925,
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min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.040447817167925
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=55, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=55
[LightGBM] [Warning] lambda_l2 is set=25, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=25
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=600, min_child_samples=35 will be
ignored. Current value: min_data_in_leaf=600
[LightGBM] [Warning] min_gain_to_split is set=0.7489291775130485,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.7489291775130485
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=600, min_child_samples=35 will be
ignored. Current value: min_data_in_leaf=600
[LightGBM] [Warning] min_gain_to_split is set=0.7489291775130485,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.7489291775130485
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=600, min_child_samples=35 will be
ignored. Current value: min_data_in_leaf=600
[LightGBM] [Warning] min_gain_to_split is set=0.7489291775130485,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.7489291775130485
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
```

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Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.6, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.6
[LightGBM] [Warning] min_data_in_leaf is set=600, min_child_samples=35 will be
ignored. Current value: min_data_in_leaf=600
[LightGBM] [Warning] min_gain_to_split is set=0.7489291775130485,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.7489291775130485
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=30, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=30
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=9200, min_child_samples=5 will be
ignored. Current value: min_data_in_leaf=9200
[LightGBM] [Warning] min_gain_to_split is set=3.549194291411161,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=3.549194291411161
[LightGBM] [Warning] bagging_fraction is set=0.7, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.7
[LightGBM] [Warning] lambda_l1 is set=70, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=70
[LightGBM] [Warning] lambda_l2 is set=20, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=20
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=1.1831859845771082,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.1831859845771082
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
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[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=1.1831859845771082,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.1831859845771082
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=1.1831859845771082,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.1831859845771082
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=12 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=1.1831859845771082,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.1831859845771082
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=50, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=50
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=6, subsample_freq=0 will be ignored.
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Current value: bagging_freq=6
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=20 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=0.592306714558016,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.592306714558016
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=20 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=0.592306714558016,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.592306714558016
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=20 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=0.592306714558016,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.592306714558016
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
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[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=20 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=0.592306714558016,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.592306714558016
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=300, min_child_samples=20 will be
ignored. Current value: min_data_in_leaf=300
[LightGBM] [Warning] min_gain_to_split is set=0.592306714558016,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.592306714558016
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=800, min_child_samples=20 will be
ignored. Current value: min_data_in_leaf=800
[LightGBM] [Warning] min_gain_to_split is set=0.44465163789055173,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.44465163789055173
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=800, min_child_samples=20 will be
ignored. Current value: min_data_in_leaf=800
[LightGBM] [Warning] min_gain_to_split is set=0.44465163789055173,
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```
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.44465163789055173
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=800, min_child_samples=20 will be
ignored. Current value: min_data_in_leaf=800
[LightGBM] [Warning] min_gain_to_split is set=0.44465163789055173,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.44465163789055173
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=800, min_child_samples=20 will be
ignored. Current value: min_data_in_leaf=800
[LightGBM] [Warning] min_gain_to_split is set=0.44465163789055173,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.44465163789055173
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=800, min_child_samples=20 will be
ignored. Current value: min_data_in_leaf=800
[LightGBM] [Warning] min_gain_to_split is set=0.44465163789055173,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.44465163789055173
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
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Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=2700, min_child_samples=19 will be
ignored. Current value: min_data_in_leaf=2700
[LightGBM] [Warning] min_gain_to_split is set=0.37703235747080266,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.37703235747080266
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=25, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=25
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=5, subsample_freq=0 will be ignored.
Current value: bagging_freq=5
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=800, min_child_samples=30 will be
ignored. Current value: min_data_in_leaf=800
[LightGBM] [Warning] min_gain_to_split is set=1.7882073987547527,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.7882073987547527
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=60, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=60
[LightGBM] [Warning] bagging_freq is set=1, subsample_freq=0 will be ignored.
Current value: bagging_freq=1
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=800, min_child_samples=30 will be
ignored. Current value: min_data_in_leaf=800
[LightGBM] [Warning] min_gain_to_split is set=1.7882073987547527,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.7882073987547527
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
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[LightGBM] [Warning] lambda_l2 is set=60, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=60
[LightGBM] [Warning] bagging_freq is set=1, subsample_freq=0 will be ignored.
Current value: bagging_freq=1
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=800, min_child_samples=30 will be
ignored. Current value: min_data_in_leaf=800
[LightGBM] [Warning] min_gain_to_split is set=1.7882073987547527,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.7882073987547527
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=60, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=60
[LightGBM] [Warning] bagging_freq is set=1, subsample_freq=0 will be ignored.
Current value: bagging_freq=1
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=800, min_child_samples=30 will be
ignored. Current value: min_data_in_leaf=800
[LightGBM] [Warning] min_gain_to_split is set=1.7882073987547527,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.7882073987547527
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=60, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=60
[LightGBM] [Warning] bagging_freq is set=1, subsample_freq=0 will be ignored.
Current value: bagging_freq=1
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1300, min_child_samples=31 will be
ignored. Current value: min_data_in_leaf=1300
[LightGBM] [Warning] min_gain_to_split is set=1.9506006044282032,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.9506006044282032
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=60, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=60
[LightGBM] [Warning] bagging_freq is set=1, subsample_freq=0 will be ignored.
```

```
Current value: bagging_freq=1
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=38 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=2.530808931510477,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.530808931510477
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=4, subsample_freq=0 will be ignored.
Current value: bagging_freq=4
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=38 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=2.530808931510477,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.530808931510477
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=4, subsample_freq=0 will be ignored.
Current value: bagging_freq=4
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=38 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=2.530808931510477,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.530808931510477
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=4, subsample_freq=0 will be ignored.
Current value: bagging_freq=4
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
```

```
[LightGBM] [Warning] min_data_in_leaf is set=900, min_child_samples=38 will be
ignored. Current value: min_data_in_leaf=900
[LightGBM] [Warning] min_gain_to_split is set=2.530808931510477,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=2.530808931510477
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=15, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=15
[LightGBM] [Warning] lambda_l2 is set=50, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=50
[LightGBM] [Warning] bagging_freq is set=4, subsample_freq=0 will be ignored.
Current value: bagging_freq=4
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=14 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=0.424200668693492,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.424200668693492
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=14 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=0.424200668693492,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.424200668693492
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=14 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=0.424200668693492,
```

```
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.424200668693492
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=14 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=0.424200668693492,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.424200668693492
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=700, min_child_samples=14 will be
ignored. Current value: min_data_in_leaf=700
[LightGBM] [Warning] min_gain_to_split is set=0.424200668693492,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=0.424200668693492
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=40, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=40
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=1700, min_child_samples=19 will be
ignored. Current value: min_data_in_leaf=1700
[LightGBM] [Warning] min_gain_to_split is set=1.2630324348050062,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.2630324348050062
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
```

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Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=30, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=30
[LightGBM] [Warning] lambda_l2 is set=40, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=40
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=500, min_child_samples=23 will be
ignored. Current value: min_data_in_leaf=500
[LightGBM] [Warning] min_gain_to_split is set=1.7921437338679456,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.7921437338679456
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=55, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=55
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=500, min_child_samples=23 will be
ignored. Current value: min_data_in_leaf=500
[LightGBM] [Warning] min_gain_to_split is set=1.7921437338679456,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.7921437338679456
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=55, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=55
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=500, min_child_samples=23 will be
ignored. Current value: min_data_in_leaf=500
[LightGBM] [Warning] min_gain_to_split is set=1.7921437338679456,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.7921437338679456
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
```

```
[LightGBM] [Warning] lambda_l2 is set=55, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=55
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
[LightGBM] [Warning] feature_fraction is set=0.7, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.7
[LightGBM] [Warning] min_data_in_leaf is set=500, min_child_samples=23 will be
ignored. Current value: min_data_in_leaf=500
[LightGBM] [Warning] min_gain_to_split is set=1.7921437338679456,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=1.7921437338679456
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=55, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=55
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
Trial 67 finished with best value: 0.3309580199465209 and parameters:
{'n_estimators': 10000, 'learning_rate': 0.2726951856436256,
'min_child_samples': 23, 'num_leaves': 240, 'max_depth': 11, 'min_data_in_leaf':
500, 'max_bin': 237, 'lambda_l1': 0, 'lambda_l2': 55, 'min_gain_to_split':
1.7921437338679456, 'feature_fraction': 0.7, 'bagging_fraction': 0.6,
'bagging_freq': 2}.
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=1900, min_child_samples=24 will be
ignored. Current value: min_data_in_leaf=1900
[LightGBM] [Warning] min_gain_to_split is set=4.763572762498631,
min_split_gain=0.0 will be ignored. Current value:
min_gain_to_split=4.763572762498631
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l1 is set=0, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=0
[LightGBM] [Warning] lambda_l2 is set=55, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=55
[LightGBM] [Warning] bagging_freq is set=2, subsample_freq=0 will be ignored.
Current value: bagging_freq=2
```

[14]:
```
print(f"\tBest value (rmse): {study.best_value:.5f}")
print(f"\tBest params:")

for key, value in study.best_params.items():
    print(f"\t\t{key}: {value}")
```

```
        Best value (rmse): 0.33096
```

```
Best params:
        n_estimators: 10000
        learning_rate: 0.2726951856436256
        min_child_samples: 23
        num_leaves: 240
        max_depth: 11
        min_data_in_leaf: 500
        max_bin: 237
        lambda_l1: 0
        lambda_l2: 55
        min_gain_to_split: 1.7921437338679456
        feature_fraction: 0.7
        bagging_fraction: 0.6
        bagging_freq: 2
```

[15]:
```python
def batch_predict(clf, data):
    # roc_auc_score(y_true, y_score) the 2nd parameter should be probability␣
 ↪estimates of the positive class
    # not the predicted outputs
    y_data_pred = []
    tr_loop = data.shape[0] - data.shape[0]%1000
    # consider you X_tr shape is 49041, then your tr_loop will be 49041 -␣
 ↪49041%1000 = 49000
    # in this for loop we will iterate unti the last 1000 multiplier
    for i in range(0, tr_loop, 1000):
        y_data_pred.extend(clf.predict_proba(data[i:i+1000])[:,1])
    # we will be predicting for the last data points
    if data.shape[0]%1000 !=0:
        y_data_pred.extend(clf.predict_proba(data[tr_loop:])[:,1])
    return y_data_pred
```

[16]:
```python
#https://stackoverflow.com/questions/61748441/
 ↪how-to-fix-the-values-displayed-in-a-confusion-matrix-in-exponential-form-to-nor
def plot_confusionmatrix(y_tr,y_trpred,y_te,y_tepred):
    from sklearn.metrics import confusion_matrix
    tn, fp, fn, tp = confusion_matrix(y_tr, np.round(y_trpred)).ravel()
    print('Traiing data tn-> {}, fp-> {}, fn-> {}, tp-> {}'.format(tn, fp, fn,␣
 ↪tp), end=" ")
    #confusion matrix on training data
    plt.figure(figsize=(10, 10))
    ax_tr = plt.subplot(221)
    cm_tr = confusion_matrix(y_tr, np.round(y_trpred))
    plt.title("Training data - Confusion Matrix")
    sns.heatmap(cm_tr, ax=ax_tr, fmt='d',cmap='YlGnBu',annot=True)
    # labels, title and ticks
    ax_tr.set_xlabel('Predicted labels');
    ax_tr.set_ylabel('True labels');
```

```
    ax_tr.set_ylim(2.0, 0)
    ax_tr.xaxis.set_ticklabels(['No','Yes']);
    ax_tr.yaxis.set_ticklabels(['No','Yes']);

    #Confusion matrix on test data
    tn, fp, fn, tp = confusion_matrix(y_te, np.round(y_tepred)).ravel()
    print('Training data tn-> {}, fp-> {}, fn-> {}, tp-> {}'.format(tn, fp, fn,␣
↪tp), end=" ")

    ax_te = plt.subplot(222)
    cm_te = confusion_matrix(y_te, np.round(y_tepred))
    plt.title("Test data - Confusion Matrix")
    sns.heatmap(cm_te, ax=ax_te, fmt='d',cmap='YlGnBu',annot=True)
    # labels, title and ticks
    ax_te.set_xlabel('Predicted labels');
    ax_te.set_ylabel('True labels');
    ax_te.set_ylim(2.0, 0)
    ax_te.xaxis.set_ticklabels(['No','Yes']);
    ax_te.yaxis.set_ticklabels(['No','Yes']);

    plt.show()
    return
```

[17]:
```
def draw_roccurve(y_tr,y_tr_pred,y_te,y_te_pred):
    #fpr,tpr,thresholds
    fpr, tpr, thresholds = roc_curve(y_tr, np.array(y_tr_pred))
    #auc score train score
    auc_train = round(auc(fpr, tpr),5)
    plt.plot(fpr, tpr, label=" AUC train ="+str(auc_train))
    plt.plot([0, 1], [0, 1],'r--')

    fpr, tpr, thresholds = roc_curve(y_te, np.array(y_te_pred))
    #auc score test score
    auc_test = round(auc(fpr, tpr),5)
    plt.plot(fpr, tpr, label=" AUC test ="+str(auc_test))
    plt.plot([0, 1], [0, 1],'b--')

    plt.legend()
    plt.xlabel("FPR")
    plt.ylabel("TPR")
    plt.title("ROC" )
    plt.grid()
    plt.show()
    return auc_train,auc_test
```

[18]:
```
from sklearn.utils import class_weight
```

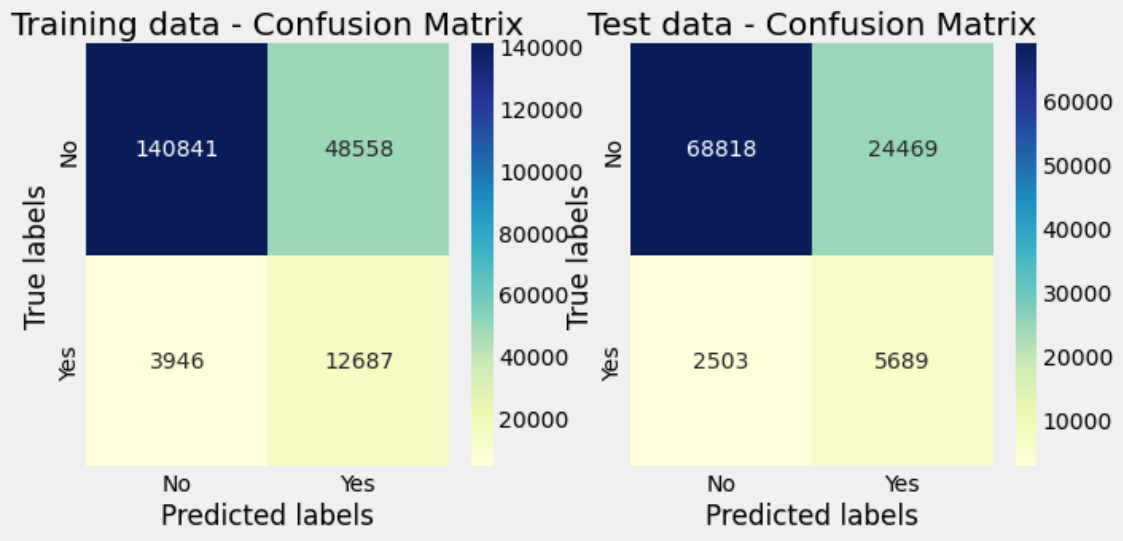
```
#class_weights = class_weight.compute_class_weight('balanced', np.
 ↪unique(y_train),y_train)
#class_weights = dict(zip(np.unique(y_train), class_weight.
 ↪compute_class_weight('balanced', np.unique(y_train),y_train)))
#y_integers = np.argmax(y_train, axis=1)
class_weights = class_weight.compute_class_weight(class_weight='balanced',␣
 ↪classes=[0,1], y=y_train)
d_class_weights = dict(enumerate(class_weights))
d_class_weights
```

[18]:
```
{0: 0.5439099467262235, 1: 6.193470811038297}
```

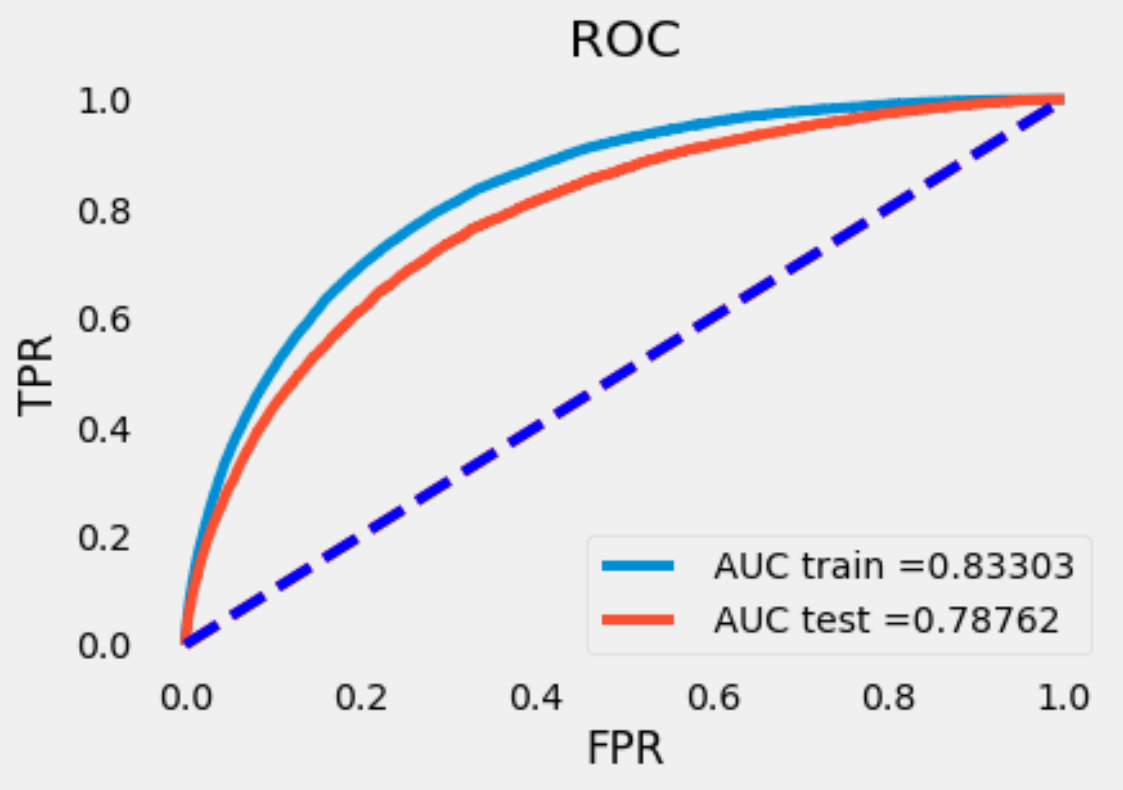
[51]:
```
#based on the best parameters, predict values and plot AUC  and return the model
#def measure_accuracy(study,X_tr,X_te,y_tr,y_te):
def measure_accuracy(X_tr,X_te,y_tr,y_te):
    #clf = lgb.LGBMClassifier(**study.best_params)

    clf = lgb.LGBMClassifier(
                              n_estimators=10000,learning_rate=0.
 ↪001756951856436256,
                              min_child_samples=45,num_leaves=1500,max_depth=7,
                              min_data_in_leaf=2500,max_bin=230,lambda_l1=␣
 ↪5,lambda_l2=45,
                              min_gain_to_split=4.25,
                              feature_fraction=0.8,bagging_fraction=0.
 ↪6,bagging_freq= 3,
                              class_weight=d_class_weights
                             )
    params={'verbose':-1,'verbose_eval':False}
    clf.set_params(**params)

    clf.fit(X=X_tr, y=y_train)

    y_tr_pred = batch_predict(clf, X_tr)
    y_te_pred = batch_predict(clf, X_te)

    plot_confusionmatrix(y_tr,y_tr_pred,y_te,y_te_pred)
    print('='*70)
    auc_train,auc_test=draw_roccurve(y_tr,y_tr_pred,y_te,y_te_pred)
    print('='*70)
    return clf, auc_train,auc_test
```

[52]:
```
#lgb_model,auc_tr_lgb_model,auc_te_lgb_model =␣
 ↪measure_accuracy(study,X_train,X_test,y_train,y_test)
lgb_model,auc_tr_lgb_model,auc_te_lgb_model =␣
 ↪measure_accuracy(X_train,X_test,y_train,y_test)
```

```
[LightGBM] [Warning] Unknown parameter: verbose_eval
[LightGBM] [Warning] feature_fraction is set=0.8, colsample_bytree=1.0 will be
ignored. Current value: feature_fraction=0.8
[LightGBM] [Warning] min_data_in_leaf is set=2500, min_child_samples=45 will be
ignored. Current value: min_data_in_leaf=2500
[LightGBM] [Warning] min_gain_to_split is set=4.25, min_split_gain=0.0 will be
ignored. Current value: min_gain_to_split=4.25
[LightGBM] [Warning] lambda_l1 is set=5, reg_alpha=0.0 will be ignored. Current
value: lambda_l1=5
[LightGBM] [Warning] bagging_fraction is set=0.6, subsample=1.0 will be ignored.
Current value: bagging_fraction=0.6
[LightGBM] [Warning] lambda_l2 is set=45, reg_lambda=0.0 will be ignored.
Current value: lambda_l2=45
[LightGBM] [Warning] bagging_freq is set=3, subsample_freq=0 will be ignored.
Current value: bagging_freq=3
Traiing data tn-> 140841, fp-> 48558, fn-> 3946, tp-> 12687 Training data tn->
68818, fp-> 24469, fn-> 2503, tp-> 5689
```

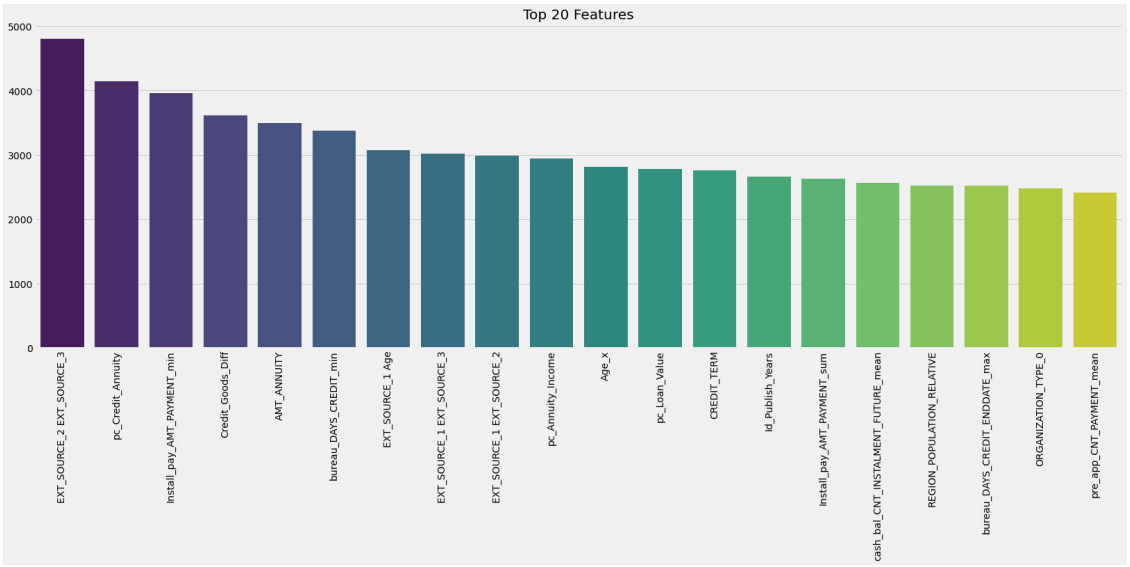


==========



==========

[53]:
```
top20_feature_names=[]
feature_importance = lgb_model.feature_importances_
feature_importances = (lgb_model.feature_importances_ / sum(lgb_model.
 ↪feature_importances_+0.000001)) * 100
indices = feature_importance.argsort()[::-1][:20]
for i in indices:
    top20_feature_names.append(feature_names[i])

#Plot bar plot for top 20 features
plt.close()
column =top20_feature_names
score = feature_importance[indices]
plt.figure(figsize =(25, 8))
sns.barplot(x=column, y=score, palette="viridis")
plt.xticks(rotation=90)
plt.title('Top 20 Features')
plt.show()
```



[54]:
```
# http://zetcode.com/python/prettytable/
from prettytable import PrettyTable

x = PrettyTable()
x.field_names = ["Feature","Score"]
for val in zip(column,score):
    x.add_row([val[0],val[1]])

x.sortby = "Score"
x.reversesort = True

x.align["Feature"] = "l"
x.align["Score"] = "r"

print(x)
```

```
+-------------------------------------+-------+
| Feature                             | Score |
+-------------------------------------+-------+
| EXT_SOURCE_2 EXT_SOURCE_3           |  4808 |
| pc_Credit_Annuity                   |  4139 |
| Install_pay_AMT_PAYMENT_min         |  3963 |
| Credit_Goods_Diff                   |  3614 |
| AMT_ANNUITY                         |  3491 |
| bureau_DAYS_CREDIT_min              |  3376 |
| EXT_SOURCE_1 Age                    |  3069 |
| EXT_SOURCE_1 EXT_SOURCE_3           |  3015 |
| EXT_SOURCE_1 EXT_SOURCE_2           |  2981 |
| pc_Annuity_Income                   |  2940 |
```

```
| Age_x                                |  2816 |
| pc_Loan_Value                        |  2777 |
| CREDIT_TERM                          |  2760 |
| Id_Publish_Years                     |  2661 |
| Install_pay_AMT_PAYMENT_sum          |  2629 |
| cash_bal_CNT_INSTALMENT_FUTURE_mean |  2559 |
| REGION_POPULATION_RELATIVE           |  2523 |
| bureau_DAYS_CREDIT_ENDDATE_max       |  2519 |
| ORGANIZATION_TYPE_0                  |  2482 |
| pre_app_CNT_PAYMENT_mean             |  2410 |
+--------------------------------------+-------+
```

[55]:
```
import joblib
# save model
joblib.dump(lgb_model, './results/model_lgb.pkl')
```

[55]:
```
['./results/model_lgb.pkl']
```