In [1]:
```
import numpy as np # linear algebra
import pandas as pd # data processing, CSV file I/O (e.g. pd.read_csv)
import seaborn as sns
import itertools
import matplotlib.pyplot as plt
import string
import re
import collections
from sklearn import  preprocessing
from wordcloud import WordCloud
from sklearn.model_selection import train_test_split, KFold, cross_val_score
from xgboost import XGBClassifier
import xgboost as xgb
from sklearn.metrics import make_scorer, f1_score, accuracy_score, mean_absolute_err
import optuna
from lofo import LOFOImportance, Dataset, plot_importance
%matplotlib inline
import itertools
```

In [2]:
```
# READ DATA
train_df = pd.read_json('train.json.zip')
test_df = pd.read_json('test.json.zip')
```

In [3]:
```
train_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 49352 entries, 4 to 124009
Data columns (total 15 columns):
 #   Column           Non-Null Count  Dtype  
---  ------           --------------  -----  
 0   bathrooms        49352 non-null  float64
 1   bedrooms         49352 non-null  int64  
 2   building_id      49352 non-null  object 
 3   created          49352 non-null  object 
 4   description      49352 non-null  object 
 5   display_address  49352 non-null  object 
 6   features         49352 non-null  object 
 7   latitude         49352 non-null  float64
 8   listing_id       49352 non-null  int64  
 9   longitude        49352 non-null  float64
 10  manager_id       49352 non-null  object 
 11  photos           49352 non-null  object 
 12  price            49352 non-null  int64  
 13  street_address   49352 non-null  object 
 14  interest_level   49352 non-null  object 
dtypes: float64(3), int64(3), object(9)
memory usage: 6.0+ MB
```

**Our target 'INTEREST LEVEL' is an object as we can see above.

**Let's convert to the numeric to analyze easily

- 0 : low
- 1 : medium
- 2 : high

In [4]:
```
train_df['target'] = train_df['interest_level'].apply(lambda x: 0 if x=='low'
                                                      else 1 if x=='medium'
                                                      else 2)
# train_df['low'] = train_df['interest_level'].apply(lambda x: 1 if x=='low' else 0)
```

```
# train_df['medium'] = train_df['interest_level'].apply(lambda x: 1 if x=='medium' e
# train_df['high'] = train_df['interest_level'].apply(lambda x: 1 if x=='high' else
```

BASIC FEATURES

In [5]:
```
train_df['description'].iloc[0]
```

Out[5]:
```
'Spacious 1 Bedroom 1 Bathroom in Williamsburg!Apartment Features:- Renovated Eat in
Kitchen With Dishwasher- Renovated Bathroom- Beautiful Hardwood Floors- Lots of Sunl
ight- Great Closet Space- Freshly Painted- Heat and Hot Water Included- Live in Supe
r Nearby L, J, M & G Trains !<br /><br />Contact Information:Kenneth BeakExclusive A
gentC: 064-692-8838Email: kagglemanager@renthop.com, Text or Email to schedule a pri
vate viewing!<br /><br /><br /><br /><br /><br /><br /><br /><br /><br /><br /><br /
><br /><br /><br /><p><a  website_redacted '
```

In [6]:
```
# REMOVE UNNECESSARY WORDS FROM DESCRIPTION
train_df['description'] = train_df['description'].apply(lambda x: x.replace("<br />"
train_df['description'] = train_df['description'].apply(lambda x: x.replace("br", ""
train_df['description'] = train_df['description'].apply(lambda x: x.replace("<p><a",
```

In [7]:
```
print(train_df['description'].iloc[0])
```

```
Spacious 1 Bedroom 1 Bathroom in Williamsburg!Apartment Features:- Renovated Eat in
Kitchen With Dishwasher- Renovated Bathroom- Beautiful Hardwood Floors- Lots of Sunl
ight- Great Closet Space- Freshly Painted- Heat and Hot Water Included- Live in Supe
r Nearby L, J, M & G Trains !Contact Information:Kenneth BeakExclusive AgentC: 064-6
92-8838Email: kagglemanager@renthop.com, Text or Email to schedule a private viewin
g!  website_redacted
```

In [8]:
```
#basic features
train_df['rooms'] = train_df['bedrooms'] + train_df['bathrooms']

# count of photos #
train_df["num_photos"] = train_df["photos"].apply(len)

# count of "features" #
train_df["num_features"] = train_df["features"].apply(len)

# count of words present in description column #
train_df["num_description_words"] = train_df["description"].apply(lambda x: len(x.sp

# description contains email
regex = r'[\w\.-]+@[\w\.-]+'
train_df['has_email'] = train_df['description'].apply(lambda x: 1 if re.findall(rege

# description contains phone
# description contains phone
train_df['has_phone'] = train_df['description'].apply(lambda x:re.sub('['+string.pun
        .apply(lambda x: [s for s in x if s.isdigit()])\
        .apply(lambda x: len([s for s in x if len(str(s))==10]))\
        .apply(lambda x: 1 if x>0 else 0)

# CONVERT LOWER ALL OF WORDS
train_df[["features"]] = train_df[["features"]].apply(
    lambda _: [list(map(str.strip, map(str.lower, x))) for x in _])
```

APPLY SAME OPERATIONS TO THE TEST DATA

In [9]:
```
# REMOVE UNNECESSARY WORDS FROM DESCRIPTION
```

```
test_df['description'] = test_df['description'].apply(lambda x: x.replace("<br />",
test_df['description'] = test_df['description'].apply(lambda x: x.replace("br", ""))
test_df['description'] = test_df['description'].apply(lambda x: x.replace("<p><a", "

# FEATURE ENGINEERING
#basic features
test_df['rooms'] = test_df['bedrooms'] + test_df['bathrooms']

# count of photos #
test_df["num_photos"] = test_df["photos"].apply(len)

# count of "features" #
test_df["num_features"] = test_df["features"].apply(len)

# count of words present in description column #
test_df["num_description_words"] = test_df["description"].apply(lambda x: len(x.spli

# description contains email
regex = r'[\w\.-]+@[\w\.-]+'
test_df['has_email'] = test_df['description'].apply(lambda x: 1 if re.findall(regex,

# description contains phone
test_df['has_phone'] = test_df['description'].apply(lambda x:re.sub('['+string.punct
        .apply(lambda x: [s for s in x if s.isdigit()])\
        .apply(lambda x: len([s for s in x if len(str(s))==10]))\
        .apply(lambda x: 1 if x>0 else 0)

# CONVERT LOWER ALL OF WORDS
test_df[["features"]] = test_df[["features"]].apply(
    lambda _: [list(map(str.strip, map(str.lower, x))) for x in _])
```

MOST FREQUENT FEATURES EXTRACTION

In [10]:

```
feature_value_train = train_df['features'].tolist()
feature_value_test = test_df['features'].tolist()

feature_value_train
feature_value_test

feature_lst_train = []
feature_lst_test = []

for i in range(len(feature_value_train)):
    feature_lst_train += feature_value_train[i]

for i in range(len(feature_value_test)):
    feature_lst_test += feature_value_test[i]
# print(len(feature_lst)) # all features

uniq_feature_train = list(set(feature_lst_train))
uniq_feature_test = list(set(feature_lst_test))

# print(uniq_feature) #all unique features
len(uniq_feature_train)
len(uniq_feature_test)
```

Out[10]: 1760

In [11]:

```
# see the frequency of each feature
def most_common(lst):
    features = collections.Counter(lst)
```

```
    feature_value = features.keys()
    frequency = features.values()
    data = [('feature_value', feature_value),
            ('frequency', frequency),]
    df = pd.DataFrame.from_dict(dict(data))
    return df.sort_values(by = 'frequency', ascending = False)

df_features_train = most_common(feature_lst_train)
df_features_test = most_common(feature_lst_test)

df_features_train
df_features_test
```

Out[11]:

	feature_value	frequency
0	elevator	39560
8	cats allowed	35654
4	hardwood floors	35597
7	dogs allowed	33172
10	doorman	31538
...	...	...
879	skyline and river views	1
878	individual ac	1
877	** wicked w50s! * massive studio supreme * mr ...	1
876	** no broker fee! * sprawling 2br home * all b...	1
1759	** greenpoint giant! * oversized 2br masterpie...	1

1760 rows × 2 columns

In [12]:

```
def newColumn(name, df, series):
    feature = pd.Series(0,df.index,name = name)# data : 0
    for row,word in enumerate(series):
        if name in word:
            feature.iloc[row] = 1
    df[name] = feature # feature : series ; value in series : 1 or 0
    return df

# select features based on frequency
facilities = ['elevator', 'cats allowed', 'hardwood floors', 'dogs allowed', 'doorma
for name in facilities:
    train_df = newColumn(name, train_df, train_df['features'])
    test_df = newColumn(name, test_df, test_df['features'])
```

Features after extraction

In [13]:

```
print(train_df['features'].iloc[0])
```

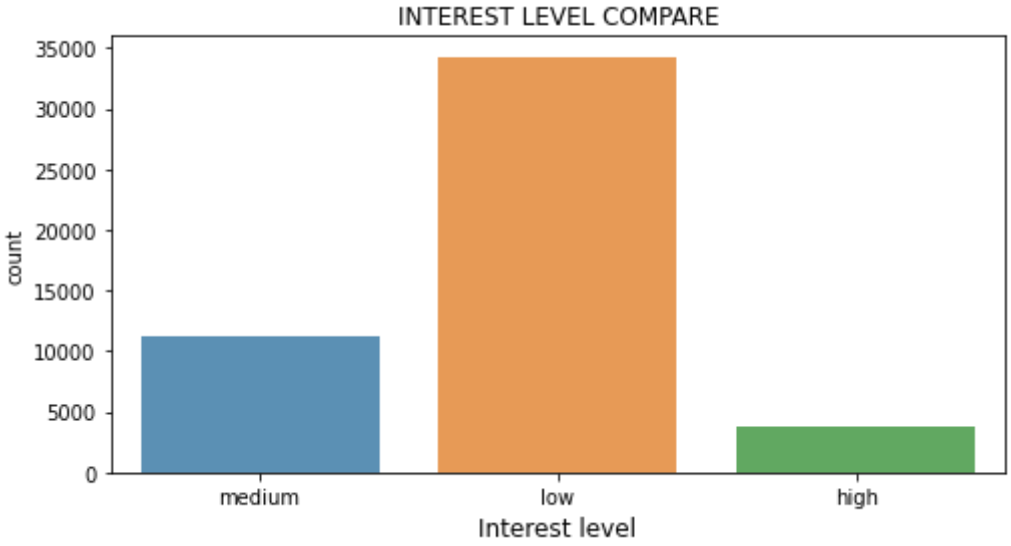
```
['dining room', 'pre-war', 'laundry in building', 'dishwasher', 'hardwood floors',
'dogs allowed', 'cats allowed']
```

DATA VISUALIZATION

In [14]:

```
plt.figure(figsize=(8,4))
colors = ['lightcoral','gold','lightblue']
sns.countplot(train_df['interest_level'], alpha=0.8)
plt.title("INTEREST LEVEL COMPARE")
plt.xlabel('Interest level', fontsize=12)
plt.show()
```

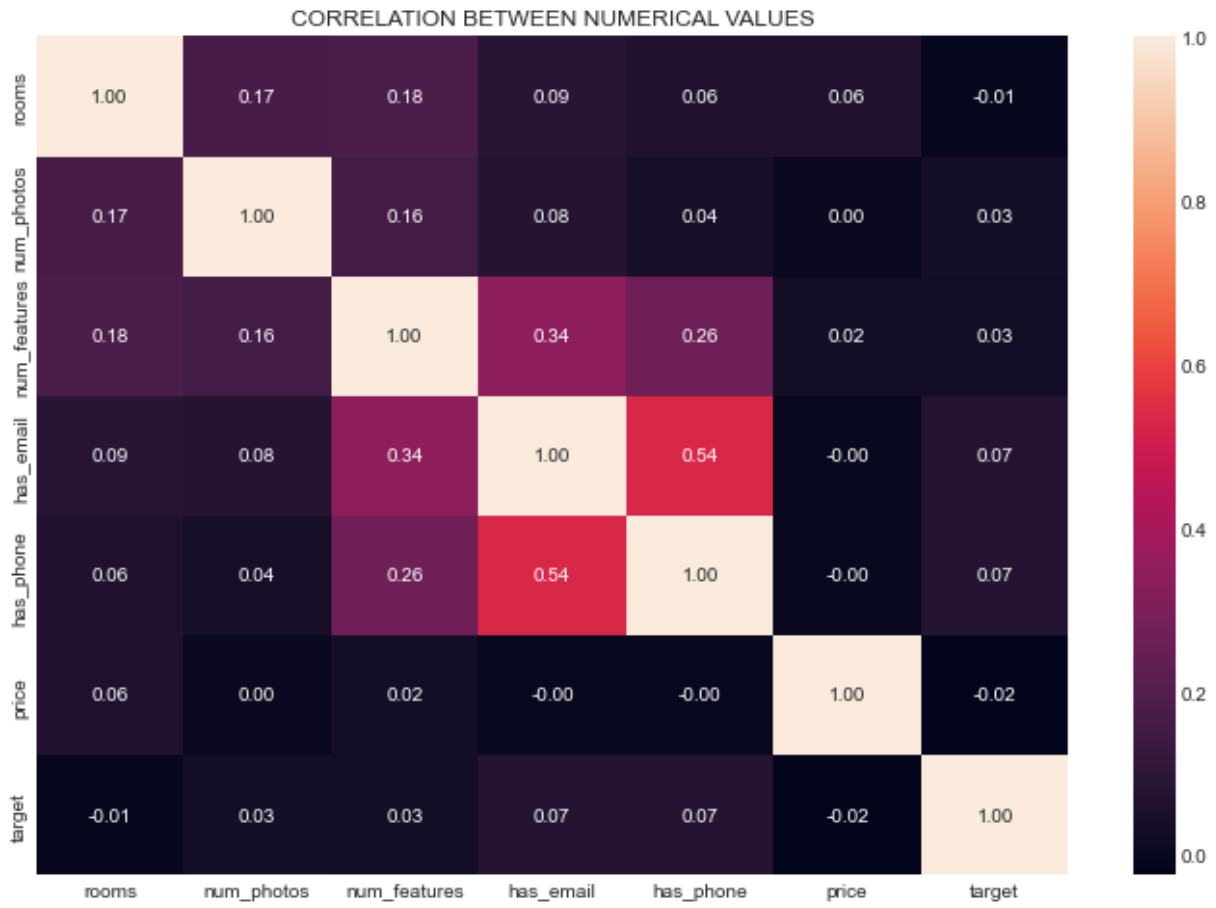
```
C:\Users\burak\AppData\Roaming\Python\Python39\site-packages\seaborn\_decorators.py:
36: FutureWarning: Pass the following variable as a keyword arg: x. From version 0.1
2, the only valid positional argument will be `data`, and passing other arguments wi
thout an explicit keyword will result in an error or misinterpretation.
  warnings.warn(
```



- As we can see low level is highly more than other interest levels

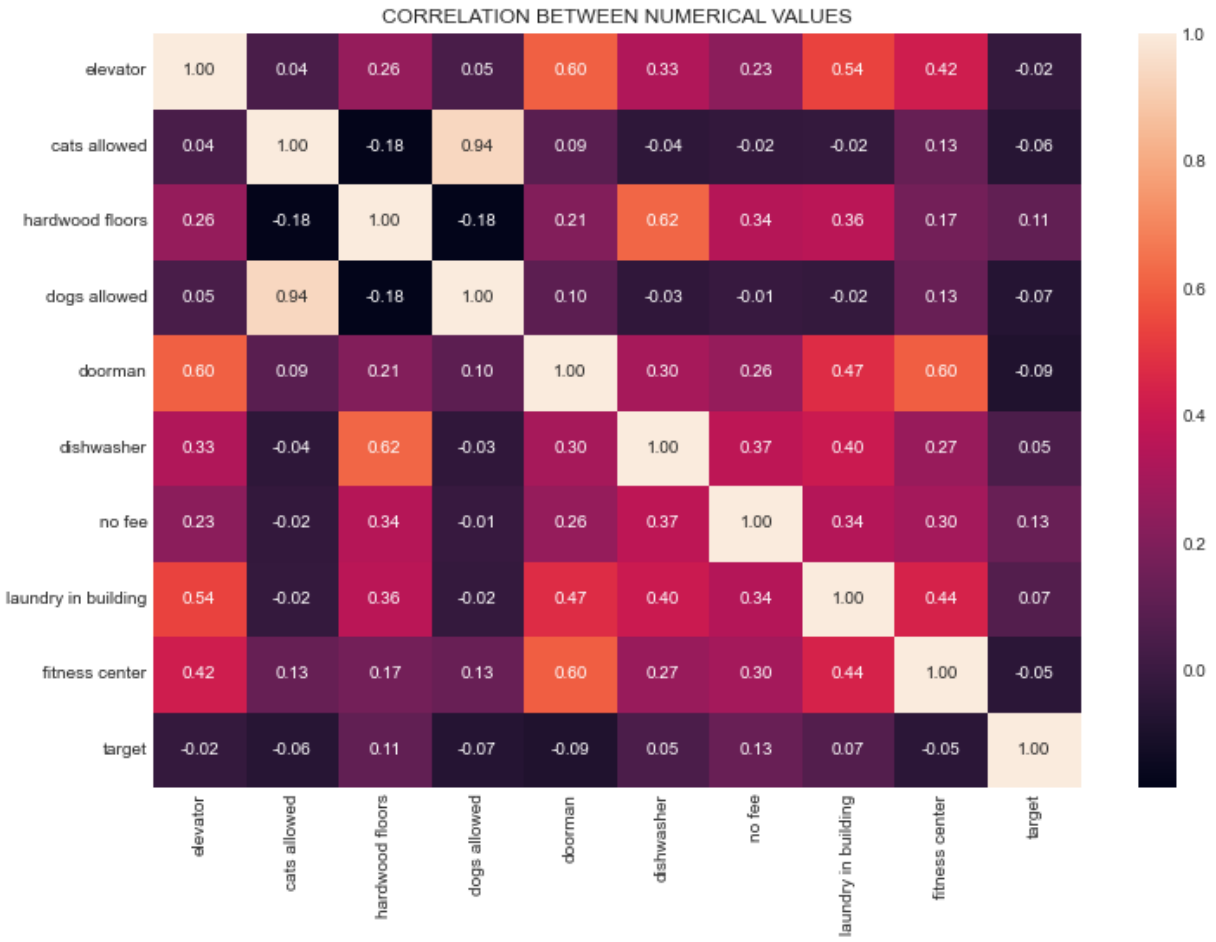
In [15]:

```
plt.style.use("seaborn-whitegrid")
plt.figure(figsize=(12,8))
plt.title("CORRELATION BETWEEN NUMERICAL VALUES")
num_col = ["rooms", "num_photos", "num_features", "has_email", "has_phone", "price",
sns.heatmap(train_df[num_col].corr(), annot = True, fmt = ".2f")
plt.show()
```



In [16]:

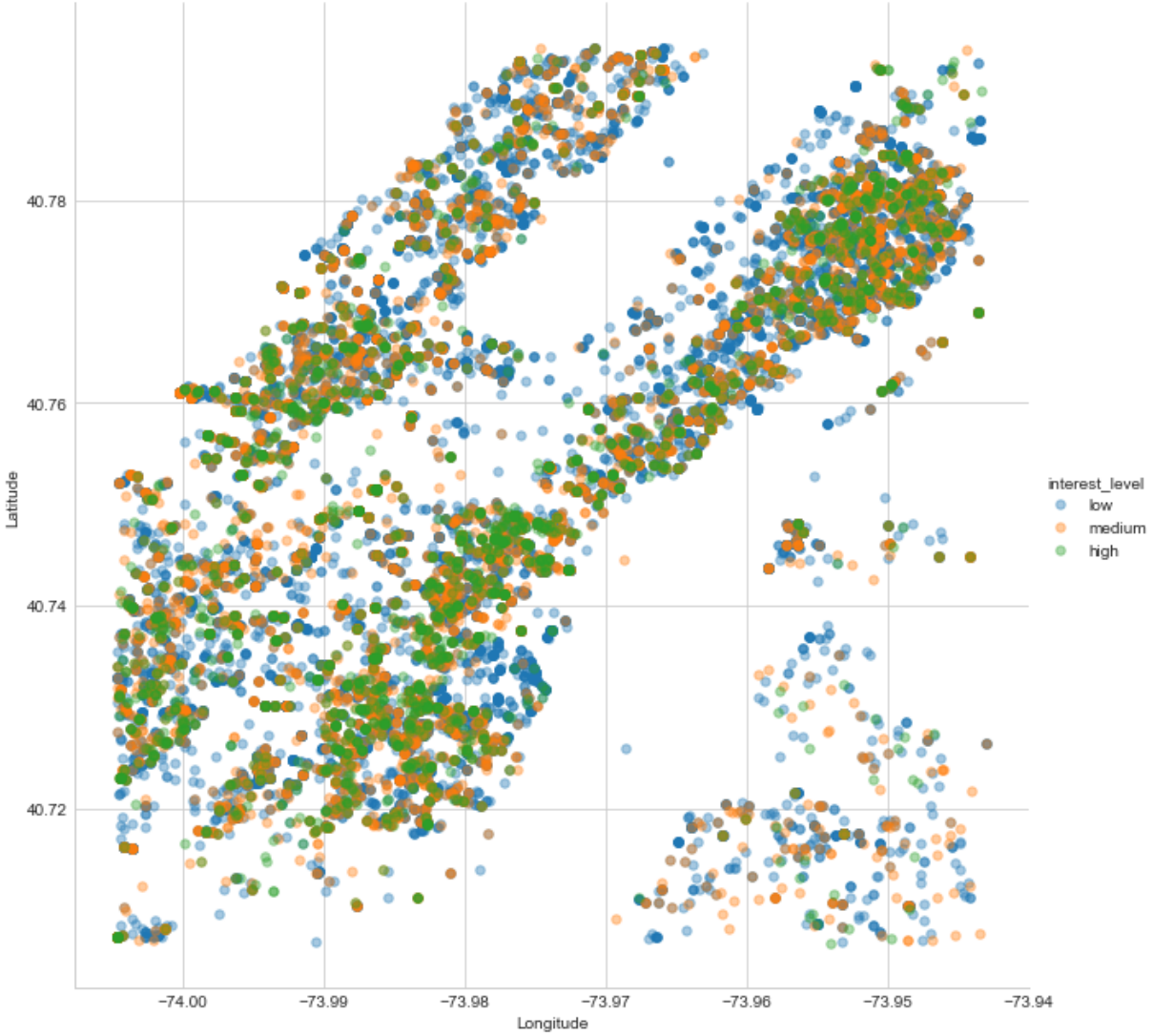
```
plt.style.use("seaborn-whitegrid")
plt.figure(figsize=(12,8))
plt.title("CORRELATION BETWEEN NUMERICAL VALUES")
num_col = ['elevator', 'cats allowed', 'hardwood floors', 'dogs allowed', 'doorman',
sns.heatmap(train_df[num_col].corr(), annot = True, fmt = ".2f")
plt.show()
```



In [17]:

```
### Rent interest graph of New-York
sns.lmplot(x="longitude", y="latitude", fit_reg=False, hue='interest_level',
           hue_order=['low', 'medium', 'high'], size=9, scatter_kws={'alpha':0.4,'s'
           data=train_df[(train_df.longitude>train_df.longitude.quantile(0.1))
                         &(train_df.longitude<train_df.longitude.quantile(0.9))
                         &(train_df.latitude>train_df.latitude.quantile(0.1))
                         &(train_df.latitude<train_df.latitude.quantile(0.9))]);
plt.xlabel('Longitude');
plt.ylabel('Latitude');
```

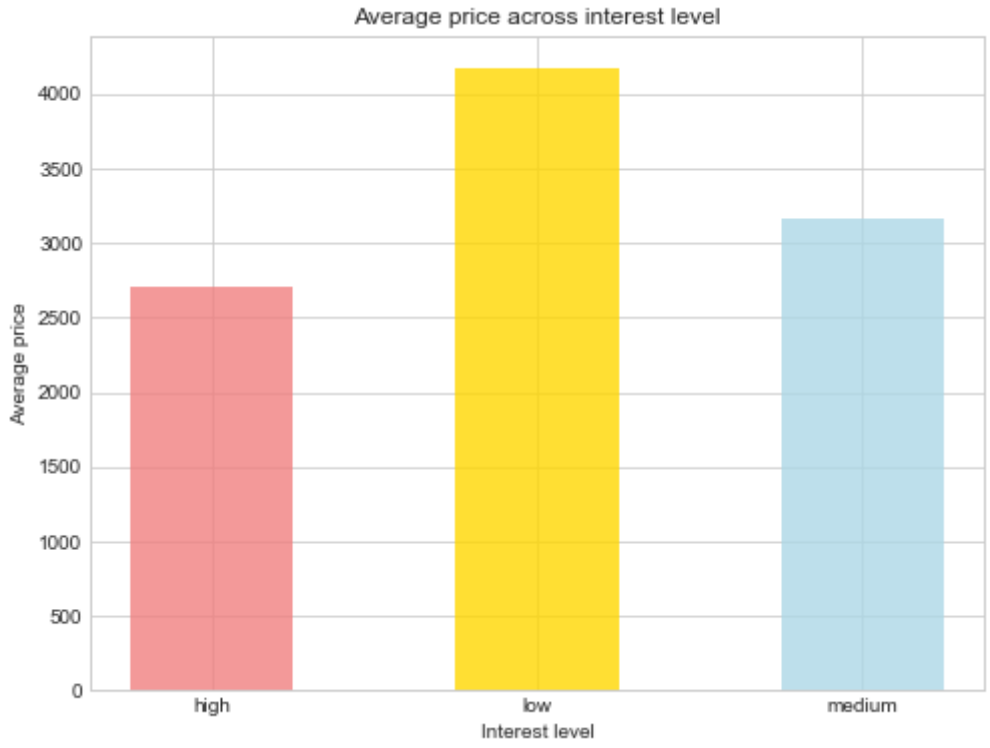
```
C:\Users\burak\AppData\Roaming\Python\Python39\site-packages\seaborn\regression.py:5
81: UserWarning: The `size` parameter has been renamed to `height`; please update yo
ur code.
  warnings.warn(msg, UserWarning)
```



In [18]:

```
### Price exploration
prices=train_df.groupby('interest_level', as_index=False)['price'].mean()
colors = ['lightcoral','gold','lightblue']

fig=plt.figure(figsize=(8,6))
plt.bar(prices.interest_level, prices.price, color=colors, width=0.5, alpha=0.8)
#set titles
plt.xlabel('Interest level')
plt.ylabel('Average price')
plt.title('Average price across interest level')
plt.show()
```



In [19]:
```
train_df.groupby(['building_id', 'manager_id', 'interest_level']).count()
```

Out[19]:

			bathrooms
building_id	**manager_id**	**interest_level**	
0	**001ce808ce1720e24a9510e014c69707**	**low**	10
	003fc4e9a70053082f131b1054966aaf	**low**	1
	00a8d77892cab18fffaa22a751f1f8eb	**low**	3
	00f526d80353a50a52bbc26919e7ed5a	**low**	1
	01287194f20de51872e81f660def4784	**low**	8
...	**...**	**...**	...
ffde4f77049b631ee532fa9e0ebdd95d	**41735645e0f8f13993c42894023f8e58**	**low**	1
	f01d80f465348a6054bd7a9004af53b4	**medium**	1
ffe55387cd931c117ee1b8446f21953b	**1a4dd24b22749ffaa3398b1b1b61c9ff**	**low**	1
fff0a02ad82421c226c6d6765a0dde57	**7efb139d6df9fc594c4db6ca96b8a1e7**	**low**	1
fff5915444b98b72a44a9456901f083c	**b944623e2af9b605eb0cba5236ee5f8e**	**low**	2

33192 rows × 28 columns

- WORDCLOUD SHOWS US MOST FREQUENT WORDS IN THE DATASET, DEPENDS ON THE FREQUENCY WORDS SIZE IS GETTING BIGGER

In [20]:
```
#WORDCLOUD FOR DESCRIPTION AND DISPLAY ADDRESS
#Preprocessing
text = ''
```

```
text_da = ''
text_desc = ''
text_str = ''
for ind, row in train_df.iterrows():
    for feature in row['features']:
        text = " ".join([text, "_".join(feature.strip().split(" "))])
    text_da = " ".join([text_da,"_".join(row['display_address'].strip().split(" "))]
    text_desc = " ".join([text_desc, row['description']])
    text_str = " ".join([text_str, row['street_address']])
text = text.strip()
text_da = text_da.strip()
text_desc = text_desc.strip()
text_str = text_str.strip()

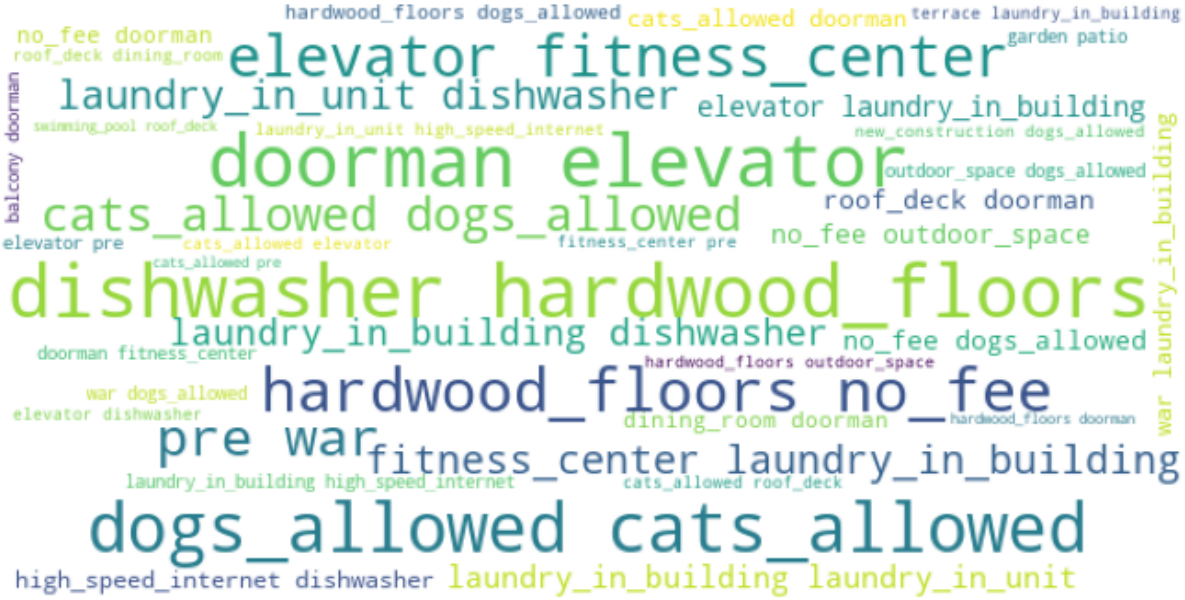

# wordcloud for features
plt.figure(figsize=(12,6))
wordcloud = WordCloud(background_color='white', width=600, height=300, max_font_size
wordcloud.recolor(random_state=0)
plt.imshow(wordcloud)
plt.title("Wordcloud for features", fontsize=30)
plt.axis("off")
plt.show()


# wordcloud for display address
plt.figure(figsize=(12,6))
wordcloud = WordCloud(background_color='white', width=600, height=300, max_font_size
wordcloud.recolor(random_state=0)
plt.imshow(wordcloud)
plt.title("Wordcloud for Display Address", fontsize=30)
plt.axis("off")
plt.show()


# wordcloud for description
plt.figure(figsize=(12,6))
wordcloud = WordCloud(background_color='white', width=600, height=300, max_font_size
wordcloud.recolor(random_state=0)
plt.imshow(wordcloud)
plt.title("Wordcloud for Description", fontsize=30)
plt.axis("off")
plt.show()

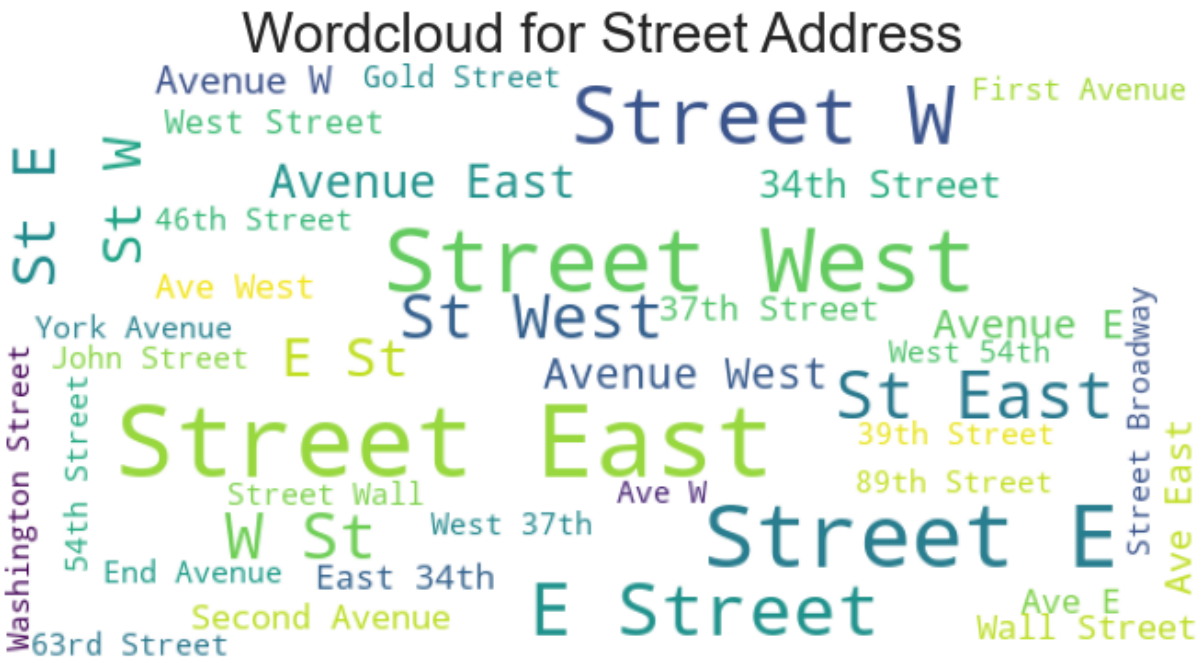
# wordcloud for street address
plt.figure(figsize=(12,6))
wordcloud = WordCloud(background_color='white', width=600, height=300, max_font_size
wordcloud.recolor(random_state=0)
plt.imshow(wordcloud)
plt.title("Wordcloud for Street Address", fontsize=30)
plt.axis("off")
plt.show()
```

Wordcloud for features



Wordcloud for Display Address

Wordcloud for Description



DROP UNNECESSARY COLUMNS

In [21]:

```
# TRAINING DATASET
train_df.drop('interest_level', axis=1, inplace=True)
train_df.drop('created', axis=1, inplace=True)
train_df.drop('description', axis=1, inplace=True)
train_df.drop('features', axis=1, inplace=True)
train_df.drop('photos', axis=1, inplace=True)

# TEST DATASET
test_df.drop('created', axis=1, inplace=True)
test_df.drop('description', axis=1, inplace=True)
test_df.drop('features', axis=1, inplace=True)
test_df.drop('photos', axis=1, inplace=True)
```

LABEL ECONDING FOR CATEGORICAL VARIABLES

In [22]:

```
categorical = ["display_address", "manager_id", "building_id", "street_address"]
for f in categorical:
        if train_df[f].dtype=='object':
            lbl = preprocessing.LabelEncoder()
            lbl.fit(list(train_df[f].values) + list(test_df[f].values))
            train_df[f] = lbl.transform(list(train_df[f].values))
            test_df[f] = lbl.transform(list(test_df[f].values))
```

XGBOOST

In [23]:

```
X = train_df.drop(['target'], axis = 1)
y = train_df.target
X_train, X_test, y_train, y_test = train_test_split(X, y,
                                                    test_size = .3,
                                                    random_state = 5,
                                                   stratify = y)

dtrain = xgb.DMatrix(X_train, label=y_train)
dvalid = xgb.DMatrix(X_test, label=y_test)
```

In [24]:
```
kf = KFold(n_splits=5, shuffle=False)

X_train = X_train.values
y_train = y_train.values
scores = []

for train, test in kf.split(X_train, y_train):
    model = XGBClassifier(n_estimators=1000, learning_rate=0.05, max_depth = 10)
    model.fit(X_train[train], y_train[train])
    scores.append(model.score(X_train[test], y_train[test]))
```

```
C:\Users\burak\AppData\Roaming\Python\Python39\site-packages\xgboost\sklearn.py:114
6: UserWarning: The use of label encoder in XGBClassifier is deprecated and will be
removed in a future release. To remove this warning, do the following: 1) Pass optio
n use_label_encoder=False when constructing XGBClassifier object; and 2) Encode your
labels (y) as integers starting with 0, i.e. 0, 1, 2, ..., [num_class - 1].
  warnings.warn(label_encoder_deprecation_msg, UserWarning)
[19:54:03] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
C:\Users\burak\AppData\Roaming\Python\Python39\site-packages\xgboost\sklearn.py:114
6: UserWarning: The use of label encoder in XGBClassifier is deprecated and will be
removed in a future release. To remove this warning, do the following: 1) Pass optio
n use_label_encoder=False when constructing XGBClassifier object; and 2) Encode your
labels (y) as integers starting with 0, i.e. 0, 1, 2, ..., [num_class - 1].
  warnings.warn(label_encoder_deprecation_msg, UserWarning)
[19:55:56] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
C:\Users\burak\AppData\Roaming\Python\Python39\site-packages\xgboost\sklearn.py:114
6: UserWarning: The use of label encoder in XGBClassifier is deprecated and will be
removed in a future release. To remove this warning, do the following: 1) Pass optio
n use_label_encoder=False when constructing XGBClassifier object; and 2) Encode your
labels (y) as integers starting with 0, i.e. 0, 1, 2, ..., [num_class - 1].
  warnings.warn(label_encoder_deprecation_msg, UserWarning)
[19:57:50] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
C:\Users\burak\AppData\Roaming\Python\Python39\site-packages\xgboost\sklearn.py:114
6: UserWarning: The use of label encoder in XGBClassifier is deprecated and will be
removed in a future release. To remove this warning, do the following: 1) Pass optio
n use_label_encoder=False when constructing XGBClassifier object; and 2) Encode your
labels (y) as integers starting with 0, i.e. 0, 1, 2, ..., [num_class - 1].
  warnings.warn(label_encoder_deprecation_msg, UserWarning)
[19:59:41] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
C:\Users\burak\AppData\Roaming\Python\Python39\site-packages\xgboost\sklearn.py:114
6: UserWarning: The use of label encoder in XGBClassifier is deprecated and will be
removed in a future release. To remove this warning, do the following: 1) Pass optio
n use_label_encoder=False when constructing XGBClassifier object; and 2) Encode your
labels (y) as integers starting with 0, i.e. 0, 1, 2, ..., [num_class - 1].
  warnings.warn(label_encoder_deprecation_msg, UserWarning)
[20:01:31] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
```

In [25]:
```
def objective(trial):
    params = {
        'booster':trial.suggest_categorical('booster', ['gbtree', 'dart', 'gblinear'
        'learning_rate':trial.suggest_loguniform("learning_rate", 0.01, 0.1),
```

```
        'max_depth':trial.suggest_int("max_depth", 3, 11),
        'subsample':trial.suggest_uniform("subsample", 0.0, 1.0),
        'colsample_bytree':trial.suggest_uniform("colsample_bytree", 0.0, 1.0),
    }

    model = XGBClassifier(**params)
    cv = KFold(n_splits=3, shuffle=True, random_state=None)
    scorer = make_scorer(f1_score, greater_is_better=True)

    bst = xgb.train(params, dtrain)
    preds = bst.predict(dvalid)
    pred_labels = np.rint(preds)
    f1_scores = f1_score(y_test, pred_labels, average='micro')
    return f1_scores
```

In [26]:

```
study = optuna.create_study(direction="maximize")
study.optimize(objective, n_trials=100, timeout=600)
```

```
[I 2021-09-28 20:03:24,539] A new study created in memory with name: no-name-daebf5a
f-b96e-4a59-b6ed-902aa132ab62
[I 2021-09-28 20:03:24,604] Trial 0 finished with value: 0.6946508172362555 and para
meters: {'booster': 'gblinear', 'learning_rate': 0.020292260641180088, 'max_depth':
 11, 'subsample': 0.9646159593651782, 'colsample_bytree': 0.26122479208661264}. Best
is trial 0 with value: 0.6946508172362555.
[I 2021-09-28 20:03:24,657] Trial 1 finished with value: 0.6948534377954884 and para
meters: {'booster': 'gblinear', 'learning_rate': 0.03971064264905856, 'max_depth':
 6, 'subsample': 0.9427153420848906, 'colsample_bytree': 0.1649452021398924}. Best i
s trial 1 with value: 0.6948534377954884.
[20:03:24] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.

  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[20:03:24] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.

  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[I 2021-09-28 20:03:25,033] Trial 2 finished with value: 0.7147102526002973 and para
meters: {'booster': 'gbtree', 'learning_rate': 0.0671745658414657, 'max_depth': 8,
 'subsample': 0.6354989062342745, 'colsample_bytree': 0.6553132346094781}. Best is t
rial 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:25,450] Trial 3 finished with value: 0.7099148993651221 and para
meters: {'booster': 'dart', 'learning_rate': 0.0169237910821856, 'max_depth': 10, 's
ubsample': 0.4069375142820816, 'colsample_bytree': 0.32822587227993383}. Best is tri
al 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:25,502] Trial 4 finished with value: 0.687221396731055 and param
eters: {'booster': 'gblinear', 'learning_rate': 0.08821518846399543, 'max_depth': 3,
'subsample': 0.2375734164074117, 'colsample_bytree': 0.9881174499320622}. Best is tr
ial 2 with value: 0.7147102526002973.
[20:03:25] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.
```

```
  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[I 2021-09-28 20:03:26,027] Trial 5 finished with value: 0.7138997703633662 and para
meters: {'booster': 'gbtree', 'learning_rate': 0.02385104822426317, 'max_depth': 10,
'subsample': 0.7450124631332764, 'colsample_bytree': 0.8659665505600008}. Best is tr
ial 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:26,144] Trial 6 finished with value: 0.6794542752937998 and para
meters: {'booster': 'gbtree', 'learning_rate': 0.08883641577400002, 'max_depth': 6,
 'subsample': 0.05337516976559675, 'colsample_bytree': 0.09281149045173487}. Best is
trial 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:26,295] Trial 7 finished with value: 0.6928947723895718 and para
meters: {'booster': 'gbtree', 'learning_rate': 0.013574350314016949, 'max_depth': 3,
'subsample': 0.42068000662224314, 'colsample_bytree': 0.6816829496135494}. Best is t
rial 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:26,546] Trial 8 finished with value: 0.7041064433337836 and para
meters: {'booster': 'dart', 'learning_rate': 0.03234096957832758, 'max_depth': 5, 's
ubsample': 0.9460704662766006, 'colsample_bytree': 0.33868535156428325}. Best is tri
al 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:26,597] Trial 9 finished with value: 0.684857490206673 and param
eters: {'booster': 'gblinear', 'learning_rate': 0.09262038725003763, 'max_depth': 1
1, 'subsample': 0.43073960277127077, 'colsample_bytree': 0.868453982191589}. Best is
trial 2 with value: 0.7147102526002973.
[20:03:26] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.

  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[I 2021-09-28 20:03:26,963] Trial 10 finished with value: 0.7116709442118059 and par
ameters: {'booster': 'gbtree', 'learning_rate': 0.050320430923254944, 'max_depth':
 8, 'subsample': 0.645510683957235, 'colsample_bytree': 0.5290571385336701}. Best is
trial 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:27,429] Trial 11 finished with value: 0.7138997703633662 and par
ameters: {'booster': 'gbtree', 'learning_rate': 0.022554773252792207, 'max_depth':
 9, 'subsample': 0.6911471222635495, 'colsample_bytree': 0.6931318662683087}. Best i
s trial 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:27,822] Trial 12 finished with value: 0.712481426448737 and para
meters: {'booster': 'gbtree', 'learning_rate': 0.05274892043099996, 'max_depth': 8,
 'subsample': 0.6809253650884115, 'colsample_bytree': 0.7610409942075269}. Best is t
rial 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:28,270] Trial 13 finished with value: 0.7137646899905444 and par
ameters: {'booster': 'gbtree', 'learning_rate': 0.02662884254569593, 'max_depth': 9,
'subsample': 0.7837224447296913, 'colsample_bytree': 0.5626004791387937}. Best is tr
ial 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:28,731] Trial 14 finished with value: 0.7083614750776712 and par
ameters: {'booster': 'gbtree', 'learning_rate': 0.011059766201976469, 'max_depth':
 9, 'subsample': 0.5665889635994922, 'colsample_bytree': 0.9887478699978333}. Best i
s trial 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:29,085] Trial 15 finished with value: 0.710928002161286 and para
meters: {'booster': 'gbtree', 'learning_rate': 0.05756558771096872, 'max_depth': 7,
 'subsample': 0.7911312284366812, 'colsample_bytree': 0.8100122440319104}. Best is t
rial 2 with value: 0.7147102526002973.
[I 2021-09-28 20:03:29,649] Trial 16 finished with value: 0.7191679049034175 and par
ameters: {'booster': 'dart', 'learning_rate': 0.035264684781289274, 'max_depth': 10,
'subsample': 0.8067133889029242, 'colsample_bytree': 0.6122244968693766}. Best is tr
ial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:30,051] Trial 17 finished with value: 0.7128866675672024 and par
ameters: {'booster': 'dart', 'learning_rate': 0.06836556532618639, 'max_depth': 8,
 'subsample': 0.8486250199709774, 'colsample_bytree': 0.4473403283188177}. Best is t
```

```
rial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:30,580] Trial 18 finished with value: 0.7159935161421046 and par
ameters: {'booster': 'dart', 'learning_rate': 0.037320689194929785, 'max_depth': 10,
'subsample': 0.5638404349998636, 'colsample_bytree': 0.6215079996642638}. Best is tr
ial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:30,964] Trial 19 finished with value: 0.7096447386194786 and par
ameters: {'booster': 'dart', 'learning_rate': 0.0371396354343268, 'max_depth': 10,
 'subsample': 0.23224921685508604, 'colsample_bytree': 0.4591261929617707}. Best is
 trial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:31,535] Trial 20 finished with value: 0.7143050114818317 and par
ameters: {'booster': 'dart', 'learning_rate': 0.04155271772780083, 'max_depth': 11,
 'subsample': 0.5348623880874096, 'colsample_bytree': 0.5590648212611942}. Best is t
rial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:32,062] Trial 21 finished with value: 0.7159935161421046 and par
ameters: {'booster': 'dart', 'learning_rate': 0.06627777083389942, 'max_depth': 10,
 'subsample': 0.5896535935142201, 'colsample_bytree': 0.6360576455659642}. Best is t
rial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:32,553] Trial 22 finished with value: 0.7097122788058896 and par
ameters: {'booster': 'dart', 'learning_rate': 0.031074603153888544, 'max_depth': 10,
'subsample': 0.29207380364473673, 'colsample_bytree': 0.6266695236990383}. Best is t
rial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:33,042] Trial 23 finished with value: 0.7136296096177226 and par
ameters: {'booster': 'dart', 'learning_rate': 0.045415529004500334, 'max_depth': 9,
 'subsample': 0.5886950833271988, 'colsample_bytree': 0.7503705986866542}. Best is t
rial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:33,634] Trial 24 finished with value: 0.7130892881264352 and par
ameters: {'booster': 'dart', 'learning_rate': 0.06807393973985171, 'max_depth': 11,
 'subsample': 0.8616114449530948, 'colsample_bytree': 0.43556067572408863}. Best is
 trial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:34,146] Trial 25 finished with value: 0.7145076320410645 and par
ameters: {'booster': 'dart', 'learning_rate': 0.03328169118527605, 'max_depth': 10,
 'subsample': 0.4832966217444564, 'colsample_bytree': 0.5891808135221773}. Best is t
rial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:34,431] Trial 26 finished with value: 0.7062001891125219 and par
ameters: {'booster': 'dart', 'learning_rate': 0.02709541586655903, 'max_depth': 7,
 'subsample': 0.3367935023455707, 'colsample_bytree': 0.3938583192493436}. Best is
 trial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:34,860] Trial 27 finished with value: 0.7125489666351479 and par
ameters: {'booster': 'dart', 'learning_rate': 0.05988756308486751, 'max_depth': 9,
 'subsample': 0.5055132308717751, 'colsample_bytree': 0.5055379249962058}. Best is t
rial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:35,560] Trial 28 finished with value: 0.7182898824800756 and par
ameters: {'booster': 'dart', 'learning_rate': 0.017133566176005623, 'max_depth': 11,
'subsample': 0.8485225692561953, 'colsample_bytree': 0.7226461493981079}. Best is tr
ial 16 with value: 0.7191679049034175.
[I 2021-09-28 20:03:36,295] Trial 29 finished with value: 0.721194110495745 and para
meters: {'booster': 'dart', 'learning_rate': 0.018811415804001412, 'max_depth': 11,
 'subsample': 0.8815985967560147, 'colsample_bytree': 0.749042232320869}. Best is tr
ial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:36,377] Trial 30 finished with value: 0.6946508172362555 and par
ameters: {'booster': 'gblinear', 'learning_rate': 0.016474307634597018, 'max_depth':
11, 'subsample': 0.9958486279158816, 'colsample_bytree': 0.8963573038976369}. Best i
s trial 29 with value: 0.721194110495745.
[20:03:36] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.

  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[I 2021-09-28 20:03:37,122] Trial 31 finished with value: 0.718019721734432 and para
meters: {'booster': 'dart', 'learning_rate': 0.0181436050865597, 'max_depth': 11, 's
ubsample': 0.8906079260823732, 'colsample_bytree': 0.7384794446675637}. Best is tria
l 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:37,816] Trial 32 finished with value: 0.7179521815480211 and par
```

```
ameters: {'booster': 'dart', 'learning_rate': 0.01882680340509867, 'max_depth': 11,
 'subsample': 0.8661220162726049, 'colsample_bytree': 0.7397357999905892}. Best is t
rial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:38,529] Trial 33 finished with value: 0.7192354450898284 and par
ameters: {'booster': 'dart', 'learning_rate': 0.013538808018023997, 'max_depth': 11,
'subsample': 0.9096978750081544, 'colsample_bytree': 0.826835748868562}. Best is tri
al 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:39,239] Trial 34 finished with value: 0.7201810076995813 and par
ameters: {'booster': 'dart', 'learning_rate': 0.014230757875599928, 'max_depth': 11,
'subsample': 0.9544959764128038, 'colsample_bytree': 0.8147672941226156}. Best is tr
ial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:39,988] Trial 35 finished with value: 0.713224368499257 and para
meters: {'booster': 'dart', 'learning_rate': 0.013822650045790318, 'max_depth': 11,
 'subsample': 0.9290873154704613, 'colsample_bytree': 0.9371405712140983}. Best is t
rial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:40,062] Trial 36 finished with value: 0.6946508172362555 and par
ameters: {'booster': 'gblinear', 'learning_rate': 0.010067746919951194, 'max_depth':
10, 'subsample': 0.9974022892826917, 'colsample_bytree': 0.8000956849039891}. Best i
s trial 29 with value: 0.721194110495745.
[20:03:40] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.

  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[I 2021-09-28 20:03:40,793] Trial 37 finished with value: 0.7169390787518574 and par
ameters: {'booster': 'dart', 'learning_rate': 0.01355911140997535, 'max_depth': 11,
 'subsample': 0.7771241734386887, 'colsample_bytree': 0.8300727501671011}. Best is t
rial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:41,113] Trial 38 finished with value: 0.6970147237606376 and par
ameters: {'booster': 'dart', 'learning_rate': 0.011906422502053116, 'max_depth': 4,
 'subsample': 0.9274409070115799, 'colsample_bytree': 0.9430271432831436}. Best is t
rial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:41,193] Trial 39 finished with value: 0.6946508172362555 and par
ameters: {'booster': 'gblinear', 'learning_rate': 0.02142601599981189, 'max_depth':
 10, 'subsample': 0.7521829934790993, 'colsample_bytree': 0.7950583896644295}. Best
 is trial 29 with value: 0.721194110495745.
[20:03:41] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.

  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[I 2021-09-28 20:03:41,407] Trial 40 finished with value: 0.6930298527623936 and par
ameters: {'booster': 'dart', 'learning_rate': 0.014738804701204717, 'max_depth': 6,
 'subsample': 0.8181107078519407, 'colsample_bytree': 0.01588622442765697}. Best is
 trial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:42,139] Trial 41 finished with value: 0.7176820208023774 and par
ameters: {'booster': 'dart', 'learning_rate': 0.016298016602411536, 'max_depth': 11,
'subsample': 0.9181864988252767, 'colsample_bytree': 0.6777726503532263}. Best is tr
ial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:42,858] Trial 42 finished with value: 0.7161961367013372 and par
ameters: {'booster': 'dart', 'learning_rate': 0.012283881973886815, 'max_depth': 11,
'subsample': 0.8376319583898734, 'colsample_bytree': 0.6991834958272862}. Best is tr
ial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:43,519] Trial 43 finished with value: 0.7131568283128461 and par
ameters: {'booster': 'dart', 'learning_rate': 0.0151500778028335, 'max_depth': 10,
 'subsample': 0.9056849499132963, 'colsample_bytree': 0.8771653449703377}. Best is t
rial 29 with value: 0.721194110495745.
```

```
[I 2021-09-28 20:03:44,206] Trial 44 finished with value: 0.718897744157774 and para
meters: {'booster': 'dart', 'learning_rate': 0.02005176020136941, 'max_depth': 11,
 'subsample': 0.705346231403215, 'colsample_bytree': 0.7252472854272886}. Best is tr
ial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:44,852] Trial 45 finished with value: 0.7163312170741591 and par
ameters: {'booster': 'dart', 'learning_rate': 0.019256851108760055, 'max_depth': 10,
'subsample': 0.7342760049214084, 'colsample_bytree': 0.843112713386392}. Best is tri
al 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:45,229] Trial 46 finished with value: 0.7103201404835877 and par
ameters: {'booster': 'dart', 'learning_rate': 0.02042733920615968, 'max_depth': 9,
 'subsample': 0.6892426288076028, 'colsample_bytree': 0.22796477375413676}. Best is
 trial 29 with value: 0.721194110495745.
[I 2021-09-28 20:03:45,307] Trial 47 finished with value: 0.6946508172362555 and par
ameters: {'booster': 'gblinear', 'learning_rate': 0.025147714537105348, 'max_depth':
5, 'subsample': 0.0028050626524913636, 'colsample_bytree': 0.9190239792096999}. Best
is trial 29 with value: 0.721194110495745.
[20:03:45] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.

  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[I 2021-09-28 20:03:46,070] Trial 48 finished with value: 0.7216668918006215 and par
ameters: {'booster': 'dart', 'learning_rate': 0.012372918087737834, 'max_depth': 11,
'subsample': 0.9655743598779992, 'colsample_bytree': 0.7652990096612262}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:46,734] Trial 49 finished with value: 0.7160610563285155 and par
ameters: {'booster': 'dart', 'learning_rate': 0.012303351988637181, 'max_depth': 10,
'subsample': 0.958911401277666, 'colsample_bytree': 0.7820791613601907}. Best is tri
al 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:47,455] Trial 50 finished with value: 0.7201810076995813 and par
ameters: {'booster': 'dart', 'learning_rate': 0.010151891782989768, 'max_depth': 11,
'subsample': 0.9649906452644258, 'colsample_bytree': 0.66182652743338}. Best is tria
l 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:48,178] Trial 51 finished with value: 0.717209239497501 and para
meters: {'booster': 'dart', 'learning_rate': 0.011307070282379946, 'max_depth': 11,
 'subsample': 0.9755655344482176, 'colsample_bytree': 0.6551215737647302}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:48,905] Trial 52 finished with value: 0.7203160880724031 and par
ameters: {'booster': 'dart', 'learning_rate': 0.010474055695772665, 'max_depth': 11,
'subsample': 0.9542306953682429, 'colsample_bytree': 0.5924487961313701}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:49,661] Trial 53 finished with value: 0.7189652843441848 and par
ameters: {'booster': 'dart', 'learning_rate': 0.010331062316638428, 'max_depth': 11,
'subsample': 0.959888569030375, 'colsample_bytree': 0.835803971246517}. Best is tria
l 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:50,368] Trial 54 finished with value: 0.7185600432257193 and par
ameters: {'booster': 'dart', 'learning_rate': 0.013021639884035334, 'max_depth': 11,
'subsample': 0.8896060723033562, 'colsample_bytree': 0.665962629167435}. Best is tri
al 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:50,944] Trial 55 finished with value: 0.7169390787518574 and par
ameters: {'booster': 'dart', 'learning_rate': 0.01084308516778214, 'max_depth': 10,
 'subsample': 0.9530968202470905, 'colsample_bytree': 0.5494958310877055}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:51,658] Trial 56 finished with value: 0.7186275834121301 and par
ameters: {'booster': 'gbtree', 'learning_rate': 0.015136326192996766, 'max_depth': 1
1, 'subsample': 0.8917466343004545, 'colsample_bytree': 0.7706153694063728}. Best is
trial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:52,312] Trial 57 finished with value: 0.718762663784952 and para
meters: {'booster': 'dart', 'learning_rate': 0.011745983900707916, 'max_depth': 10,
 'subsample': 0.9848787074282745, 'colsample_bytree': 0.7071927933069218}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:52,635] Trial 58 finished with value: 0.7106578414156423 and par
ameters: {'booster': 'dart', 'learning_rate': 0.012846900135924792, 'max_depth': 9,
```

```
 'subsample': 0.14330199478783023, 'colsample_bytree': 0.5913497292620224}. Best is
 trial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:53,406] Trial 59 finished with value: 0.7104552208564094 and par
ameters: {'booster': 'dart', 'learning_rate': 0.01455725277492492, 'max_depth': 11,
 'subsample': 0.9314834471900003, 'colsample_bytree': 0.9684848901674903}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:54,102] Trial 60 finished with value: 0.717276779683912 and para
meters: {'booster': 'gbtree', 'learning_rate': 0.010678861708340573, 'max_depth': 1
1, 'subsample': 0.8727493585619437, 'colsample_bytree': 0.8764135601270095}. Best is
trial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:54,642] Trial 61 finished with value: 0.7197757665811158 and par
ameters: {'booster': 'dart', 'learning_rate': 0.011286341663873205, 'max_depth': 10,
'subsample': 0.830295990985018, 'colsample_bytree': 0.596781608987933}. Best is tria
l 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:55,306] Trial 62 finished with value: 0.7183574226664866 and par
ameters: {'booster': 'dart', 'learning_rate': 0.010024346158224765, 'max_depth': 11,
'subsample': 0.8259038784521531, 'colsample_bytree': 0.5922723455953475}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:55,996] Trial 63 finished with value: 0.7183574226664866 and par
ameters: {'booster': 'dart', 'learning_rate': 0.011426413043885426, 'max_depth': 10,
'subsample': 0.9997344078224242, 'colsample_bytree': 0.6559447552602073}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:56,491] Trial 64 finished with value: 0.7134269890584898 and par
ameters: {'booster': 'dart', 'learning_rate': 0.01308911973031348, 'max_depth': 8,
 'subsample': 0.9507203367235719, 'colsample_bytree': 0.7688425548216874}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:57,067] Trial 65 finished with value: 0.7170741591246792 and par
ameters: {'booster': 'dart', 'learning_rate': 0.014156712721780911, 'max_depth': 10,
'subsample': 0.7977218391884293, 'colsample_bytree': 0.6916553328811582}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:57,141] Trial 66 finished with value: 0.6946508172362555 and par
ameters: {'booster': 'gblinear', 'learning_rate': 0.015879318345781386, 'max_depth':
11, 'subsample': 0.9114135822002497, 'colsample_bytree': 0.5314582032603137}. Best i
s trial 48 with value: 0.7216668918006215.
[20:03:57] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.

  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[I 2021-09-28 20:03:57,792] Trial 67 finished with value: 0.7184249628528975 and par
ameters: {'booster': 'dart', 'learning_rate': 0.017791349917217533, 'max_depth': 11,
'subsample': 0.8626376949829242, 'colsample_bytree': 0.4828850535803974}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:58,523] Trial 68 finished with value: 0.7189652843441848 and par
ameters: {'booster': 'dart', 'learning_rate': 0.011306096410324385, 'max_depth': 11,
'subsample': 0.6384818616599034, 'colsample_bytree': 0.8173956793520236}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:59,099] Trial 69 finished with value: 0.7180872619208428 and par
ameters: {'booster': 'dart', 'learning_rate': 0.01260064570356716, 'max_depth': 10,
 'subsample': 0.9674580868914424, 'colsample_bytree': 0.6229402938318169}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:03:59,669] Trial 70 finished with value: 0.7157908955828718 and par
ameters: {'booster': 'dart', 'learning_rate': 0.01070752712462521, 'max_depth': 9,
 'subsample': 0.893915085729417, 'colsample_bytree': 0.8475726160246746}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:00,248] Trial 71 finished with value: 0.7181548021072538 and par
ameters: {'booster': 'dart', 'learning_rate': 0.030216664700848193, 'max_depth': 10,
'subsample': 0.8063933463206375, 'colsample_bytree': 0.6000755710662812}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:00,856] Trial 72 finished with value: 0.7182223422936647 and par
ameters: {'booster': 'dart', 'learning_rate': 0.040394626854625616, 'max_depth': 11,
'subsample': 0.7633199889553639, 'colsample_bytree': 0.5158080144850035}. Best is tr
ial 48 with value: 0.7216668918006215.
```

```
[I 2021-09-28 20:04:01,460] Trial 73 finished with value: 0.7170066189382682 and par
ameters: {'booster': 'dart', 'learning_rate': 0.036368746862164764, 'max_depth': 10,
'subsample': 0.8305930068316546, 'colsample_bytree': 0.751084982638813}. Best is tri
al 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:02,114] Trial 74 finished with value: 0.7178171011751993 and par
ameters: {'booster': 'dart', 'learning_rate': 0.02936970644564743, 'max_depth': 11,
 'subsample': 0.9315417966738104, 'colsample_bytree': 0.5590706605419127}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:02,781] Trial 75 finished with value: 0.7190328245305957 and par
ameters: {'booster': 'dart', 'learning_rate': 0.03430264128374902, 'max_depth': 11,
 'subsample': 0.7227826736867355, 'colsample_bytree': 0.6474559518754931}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:03,357] Trial 76 finished with value: 0.7157908955828718 and par
ameters: {'booster': 'gbtree', 'learning_rate': 0.011972025493350353, 'max_depth': 1
0, 'subsample': 0.8573812263236307, 'colsample_bytree': 0.720576827385284}. Best is
 trial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:03,813] Trial 77 finished with value: 0.7091719573146021 and par
ameters: {'booster': 'dart', 'learning_rate': 0.013938185498276776, 'max_depth': 7,
 'subsample': 0.8795841450966531, 'colsample_bytree': 0.6072320984659302}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:03,905] Trial 78 finished with value: 0.6961367013372957 and par
ameters: {'booster': 'gblinear', 'learning_rate': 0.04705477528882798, 'max_depth':
 9, 'subsample': 0.9135763909649639, 'colsample_bytree': 0.4070810794721377}. Best i
s trial 48 with value: 0.7216668918006215.
[20:04:03] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.

  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[I 2021-09-28 20:04:04,776] Trial 79 finished with value: 0.7199783871403485 and par
ameters: {'booster': 'dart', 'learning_rate': 0.010913186886966556, 'max_depth': 11,
'subsample': 0.9765155569894821, 'colsample_bytree': 0.8008429505625304}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:05,565] Trial 80 finished with value: 0.718830203971363 and para
meters: {'booster': 'dart', 'learning_rate': 0.01557670217818206, 'max_depth': 11,
 'subsample': 0.9784311359480626, 'colsample_bytree': 0.8016183517419672}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:06,281] Trial 81 finished with value: 0.7174794002431447 and par
ameters: {'booster': 'dart', 'learning_rate': 0.010478721830830356, 'max_depth': 11,
'subsample': 0.9474722341024752, 'colsample_bytree': 0.6921893041484868}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:07,125] Trial 82 finished with value: 0.7174794002431447 and par
ameters: {'booster': 'dart', 'learning_rate': 0.013536126485901833, 'max_depth': 11,
'subsample': 0.9999000348910785, 'colsample_bytree': 0.8910071441332547}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:07,947] Trial 83 finished with value: 0.7201810076995813 and par
ameters: {'booster': 'dart', 'learning_rate': 0.011077130993983188, 'max_depth': 11,
'subsample': 0.927099820358151, 'colsample_bytree': 0.8557942716081728}. Best is tri
al 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:08,745] Trial 84 finished with value: 0.7194380656490612 and par
ameters: {'booster': 'dart', 'learning_rate': 0.011078087297627033, 'max_depth': 11,
'subsample': 0.9375296465879259, 'colsample_bytree': 0.7840254614407685}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:09,540] Trial 85 finished with value: 0.7197082263947049 and par
ameters: {'booster': 'dart', 'learning_rate': 0.011544035913789054, 'max_depth': 11,
'subsample': 0.9391583145316493, 'colsample_bytree': 0.8624582863442294}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:10,371] Trial 86 finished with value: 0.7176820208023774 and par
ameters: {'booster': 'dart', 'learning_rate': 0.010020077021367408, 'max_depth': 11,
'subsample': 0.9640730810674187, 'colsample_bytree': 0.9156502078807611}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:11,003] Trial 87 finished with value: 0.7166013778198028 and par
ameters: {'booster': 'dart', 'learning_rate': 0.012048605634647058, 'max_depth': 11,
```

```
'subsample': 0.36475416753586687, 'colsample_bytree': 0.745863781107261}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:11,766] Trial 88 finished with value: 0.7132919086856679 and par
ameters: {'booster': 'dart', 'learning_rate': 0.011566489404233065, 'max_depth': 10,
'subsample': 0.9072847228486199, 'colsample_bytree': 0.8587412189235812}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:12,721] Trial 89 finished with value: 0.7195056058354721 and par
ameters: {'booster': 'dart', 'learning_rate': 0.012927004470023944, 'max_depth': 11,
'subsample': 0.973012402166559, 'colsample_bytree': 0.8187632794905692}. Best is tri
al 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:13,392] Trial 90 finished with value: 0.707888693772795 and para
meters: {'booster': 'gbtree', 'learning_rate': 0.010728910620002686, 'max_depth': 1
0, 'subsample': 0.8549689908731146, 'colsample_bytree': 0.9624793481703484}. Best is
trial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:14,190] Trial 91 finished with value: 0.7207213291908686 and par
ameters: {'booster': 'dart', 'learning_rate': 0.012601114272611682, 'max_depth': 11,
'subsample': 0.976876154702135, 'colsample_bytree': 0.8158769381874732}. Best is tri
al 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:15,082] Trial 92 finished with value: 0.7174118600567337 and par
ameters: {'booster': 'dart', 'learning_rate': 0.012294412984961811, 'max_depth': 11,
'subsample': 0.9496196294640821, 'colsample_bytree': 0.9000550873532362}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:15,496] Trial 93 finished with value: 0.7079562339592058 and par
ameters: {'booster': 'dart', 'learning_rate': 0.011268334253279074, 'max_depth': 6,
 'subsample': 0.9267646452660486, 'colsample_bytree': 0.8507211332081435}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:15,803] Trial 94 finished with value: 0.696609482642172 and para
meters: {'booster': 'dart', 'learning_rate': 0.011823891214199193, 'max_depth': 3,
 'subsample': 0.9787513777651571, 'colsample_bytree': 0.7981844754626292}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:16,597] Trial 95 finished with value: 0.7180872619208428 and par
ameters: {'booster': 'dart', 'learning_rate': 0.016977644190018425, 'max_depth': 11,
'subsample': 0.8726989484903085, 'colsample_bytree': 0.7750906228719172}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:17,387] Trial 96 finished with value: 0.7208564095636903 and par
ameters: {'booster': 'dart', 'learning_rate': 0.01048803022670973, 'max_depth': 11,
 'subsample': 0.8980363252192137, 'colsample_bytree': 0.7259201370446458}. Best is t
rial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:18,176] Trial 97 finished with value: 0.7206537890044576 and par
ameters: {'booster': 'dart', 'learning_rate': 0.010417450718561778, 'max_depth': 11,
'subsample': 0.8944598229534497, 'colsample_bytree': 0.7221760100735997}. Best is tr
ial 48 with value: 0.7216668918006215.
[I 2021-09-28 20:04:18,261] Trial 98 finished with value: 0.6946508172362555 and par
ameters: {'booster': 'gblinear', 'learning_rate': 0.010398387418788381, 'max_depth':
11, 'subsample': 0.9003173884353307, 'colsample_bytree': 0.678602285997439}. Best is
trial 48 with value: 0.7216668918006215.
[20:04:18] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:573:
Parameters: { "colsample_bytree", "max_depth", "subsample" } might not be used.

  This may not be accurate due to some parameters are only used in language bindings
but
  passed down to XGBoost core.  Or some parameters are not used but slip through thi
s
  verification. Please open an issue if you find above cases.


[I 2021-09-28 20:04:18,563] Trial 99 finished with value: 0.6983655274888558 and par
ameters: {'booster': 'dart', 'learning_rate': 0.01462279862609719, 'max_depth': 4,
 'subsample': 0.8820371149015385, 'colsample_bytree': 0.7237559712045788}. Best is t
rial 48 with value: 0.7216668918006215.
```

In [27]:

```
new_params = study.best_params

new_model = XGBClassifier(**new_params)
new_model.fit(X, y)
preds = new_model.predict(X_test)
```

```
print('Optimized SuperLearner accuracy: ', accuracy_score(y_test, preds))
print('Optimized SuperLearner f1-score: ', f1_score(y_test, preds, average='micro'))
```

```
C:\Users\burak\AppData\Roaming\Python\Python39\site-packages\xgboost\sklearn.py:114
6: UserWarning: The use of label encoder in XGBClassifier is deprecated and will be
removed in a future release. To remove this warning, do the following: 1) Pass optio
n use_label_encoder=False when constructing XGBClassifier object; and 2) Encode your
labels (y) as integers starting with 0, i.e. 0, 1, 2, ..., [num_class - 1].
  warnings.warn(label_encoder_deprecation_msg, UserWarning)
[20:04:18] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
Optimized SuperLearner accuracy:  0.8114953397271376
Optimized SuperLearner f1-score:  0.8114953397271376
```

In [28]:

```
print("Number of finished trials: ", len(study.trials))
print("Best trial:")
trial = study.best_trial

print("  Value: {}".format(trial.value))
print("  Params: ")
for key, value in trial.params.items():
    print("    {}: {}".format(key, value))
```

```
Number of finished trials:  100
Best trial:
  Value: 0.7216668918006215
  Params:
    booster: dart
    learning_rate: 0.012372918087737834
    max_depth: 11
    subsample: 0.9655743598779992
    colsample_bytree: 0.7652990096612262
```

In [29]:

```
print("All of accuracies")
print(scores)

print("Mean of accuracies")
print(np.mean(scores))
```

```
All of accuracies
[0.7479015918958032, 0.7416413373860182, 0.7445361123172674, 0.7346938775510204, 0.7
344044000578955]
Mean of accuracies
0.7406354638416011
```

In [30]:

```
def plot_confusion_matrix(cm, classes,
                          normalize=False,
                          title='Confusion matrix',
                          cmap=plt.cm.Blues):
    if normalize:
        cm = cm.astype('float') / cm.sum(axis=1)[:, np.newaxis]
        print("Normalized confusion matrix")
    else:
        print('Confusion matrix, without normalization')

    print(cm)

    plt.imshow(cm, interpolation='nearest', cmap=cmap)
    plt.title(title)
    plt.colorbar()
    tick_marks = np.arange(len(classes))
    plt.xticks(tick_marks, classes, rotation=45)
```

```
    plt.yticks(tick_marks, classes)

    fmt = '.2f' if normalize else 'd'
    thresh = cm.max() / 2.
    for i, j in itertools.product(range(cm.shape[0]), range(cm.shape[1])):
        plt.text(j, i, format(cm[i, j], fmt),
                 horizontalalignment="center",
                 color="white" if cm[i, j] > thresh else "black")

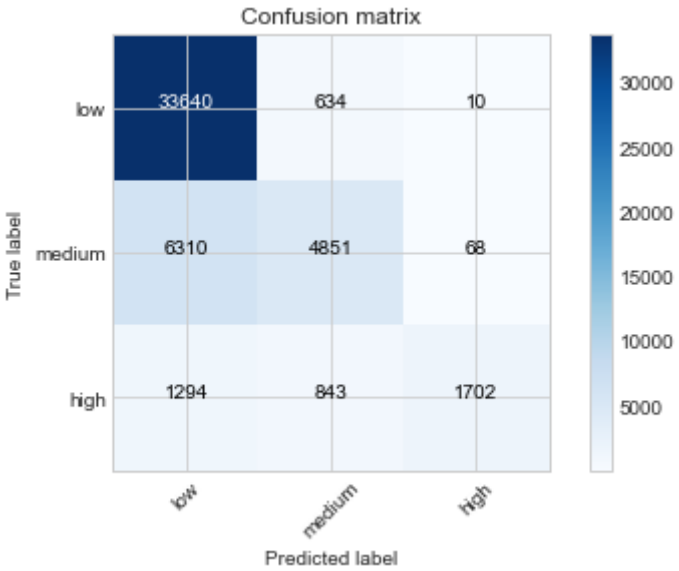
    plt.tight_layout()
    plt.ylabel('True label')
    plt.xlabel('Predicted label')
```

In [31]:

```
y_pred = new_model.predict(X)
cm = confusion_matrix(train_df['target'], y_pred)
np.set_printoptions(precision=2)

class_names = ['low', 'medium', 'high']
# Plot non-normalized confusion matrix
plt.figure()
plot_confusion_matrix(cm, classes=class_names,
                      title='Confusion matrix')
```

```
Confusion matrix, without normalization
[[33640   634    10]
 [ 6310  4851    68]
 [ 1294   843  1702]]
```



FEATURE IMPORTANCE BY LOFO

In [32]:

```
# define the validation scheme
cv = KFold(n_splits=4, shuffle=True, random_state=0)
scorer = make_scorer(mean_absolute_error, greater_is_better=False)
# define the binary target and the features
target = "target"
features = [col for col in train_df.columns if col != target]
dataset = Dataset(df=train_df, target=target, features=features)
# define the validation scheme and scorer. The default model is LightGBM
lofo_imp = LOFOImportance(dataset, scoring=scorer, model=new_model, cv=cv)

# get the mean and standard deviation of the importances in pandas format
importance_df = lofo_imp.get_importance()
```

```
# plot the means and standard deviations of the importances
plot_importance(importance_df)
```

```
[20:05:15] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:05:55] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:06:35] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:07:15] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.

[20:07:57] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:08:37] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:09:17] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:10:00] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:10:44] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:11:25] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:12:06] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:12:45] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:13:26] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:14:07] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:14:55] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:15:37] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:16:18] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/src
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c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:16:57] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:17:37] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:18:17] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:18:57] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:19:40] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:20:20] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:20:59] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:21:40] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:22:17] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:22:54] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:23:32] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:24:10] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:24:55] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:25:36] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:26:16] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:26:58] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:27:39] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
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h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:28:19] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:29:01] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:29:36] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:30:10] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:30:44] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:31:18] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:31:53] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:32:29] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:33:06] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:33:42] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:34:22] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:35:01] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:35:38] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:36:15] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:36:51] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:37:28] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:38:05] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
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set eval_metric if you'd like to restore the old behavior.
[20:38:42] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:39:19] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:39:57] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:40:33] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:41:08] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:41:43] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:42:18] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:42:52] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:43:27] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:44:02] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:44:42] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:45:17] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:45:52] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:46:27] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:47:02] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:47:36] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:48:11] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
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[20:48:46] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:49:21] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:49:56] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:50:30] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:51:05] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:51:40] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:52:14] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:52:49] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:53:25] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:53:59] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:54:38] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:55:13] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:55:48] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:56:23] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:56:57] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:57:38] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:58:17] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:58:51] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
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c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[20:59:26] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:00:01] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:00:36] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:01:11] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:01:45] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:02:20] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:02:55] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:03:29] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:04:04] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:04:42] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:05:17] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:05:51] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:06:26] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:07:01] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:07:35] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:08:10] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:08:46] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
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h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
[21:09:22] WARNING: C:/Users/Administrator/workspace/xgboost-win64_release_1.4.0/sr
c/learner.cc:1095: Starting in XGBoost 1.3.0, the default evaluation metric used wit
h the objective 'multi:softprob' was changed from 'merror' to 'mlogloss'. Explicitly
set eval_metric if you'd like to restore the old behavior.
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