BAF_xgboost_multicass28102019_0818am-Copy1

December 12, 2019

1 Predicción de existencia de penetracion de Banda Ancha fija (fibra óptica o cable coaxial) en municipios

El problema a evaluar es si dentro de los municipios hay penetracion de BAF basada en fibra óptica o cable coaxial en municipios, independientemente de su nivel.

Nota: Se empleó un modelo de regresión logística, XGBoost y Random Forest

1.0.1 Preámbulo de paquetes a utilizarse

[1]:
```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.model_selection import KFold
from sklearn.model_selection import StratifiedKFold

from sklearn.metrics import roc_auc_score



import xgboost as xgb
from sklearn.linear_model import LogisticRegression
from sklearn.ensemble import RandomForestClassifier
```

1.0.2 Carga de datos de penetracion BAF y municipios

[3]:
```
# Cargamos los datos en crudo y creamos una copia para trabajar
raw_data = pd.read_csv ('BAF_06209_P1.csv')
data = raw_data

# Elimina columnas de municipio y clases de penetracion (solo estudiaremos si␣
 ↪hay o no penetracion de F.O y Cable Coax.)
del data['K_ENTIDAD_MUNICIPIO']
del data['CLASS_PEN_BAF_HABS_COAXFO'] #
del data['NUM_OPS'] #
del data['DISP_INTERNET'] #
del data['ANALF'] #
```

```
# Renombramos una columna para que no genere problemas con Scikit Learn
data.rename(columns={"PL<5000": "PL5000"}, inplace=True)

# Renombramos una columnas para facilitar manipulacion
data.rename(columns={"ANOS_PROMEDIO_DE_ESCOLARIDAD": "AVG_ESCOLARIDAD"},␣
 ↪inplace=True)
data.rename(columns={"IS_PEN_BAF_HABS_COAXFO": "EXIST_PEN"}, inplace=True)

# Sustitumos valores de la columnas NUM_OPS (1= Hay mas de dos operadores, 0 =␣
 ↪en otro caso)
#data['NUM_OPS'] = np.where(data['NUM_OPS']>1,1,0)

# Descartamos los municipios que no poseen indicadores de ingreso anual bruto␣
 ↪per capita
data.dropna(inplace=True)
```

1.0.3 Resumen de las variables en estudio

[4]:
```
data.describe()
```

[4]:

	HOGARES	POBLACION	SUPERFICIE	DENS_HOGS
count	2446.000000	2.446000e+03	2446.000000	2446.000000
mean	12991.372036	4.860599e+04	791.321885	7916.018110
std	38143.144359	1.389142e+05	2104.590464	35001.243252
min	31.000000	8.700000e+01	2.210000	4.995331
25%	1111.750000	4.253000e+03	85.765000	521.867640
50%	3471.500000	1.340400e+04	233.485000	1387.721595
75%	8877.500000	3.439950e+04	654.895000	3462.189955
max	495665.000000	1.827868e+06	53138.790000	598127.340824

	DENS_HABS	SPRIM	AVG_ESCOLARIDAD	OVSAE	OVSEE
count	2446.000000	2446.000000	2446.000000	2446.000000	2446.000000
mean	7916.018110	29.213050	6.423426	8.651132	2.169366
std	35001.243252	11.862555	1.767869	11.487796	3.410109
min	4.995331	2.490000	1.460000	0.000000	0.000000
25%	521.867640	20.500000	5.190000	1.492500	0.490000
50%	1387.721595	29.405000	6.280000	4.060000	1.175000
75%	3462.189955	37.345000	7.520000	10.865000	2.560000
max	598127.340824	71.240000	13.830000	98.880000	57.960000

	PL5000	PO2SM	INGRESOPC_ANUAL	DISP_TV_PAGA
count	2446.000000	2446.000000	2446.000000	2446.000000
mean	71.898684	55.381063	1935.145724	31.158202
std	34.685724	16.985484	1020.473455	18.829657
min	0.000000	8.250000	185.290000	0.000000
25%	42.687500	42.930000	1198.730000	15.313693

```
50%     100.000000    57.020000      1789.905000     29.018092
75%     100.000000    68.470000      2447.497500     45.173174
max     100.000000    94.120000      9748.530000     85.097192

       DISP_TEL_CELULAR  DISP_TEL_FIJO    EXIST_PEN
count       2446.000000    2446.000000  2446.000000
mean          57.439859      20.204734     0.321341
std           25.072398      14.044259     0.467087
min            0.000000       0.000000     0.000000
25%           42.198730       9.047367     0.000000
50%           64.877177      17.645177     0.000000
75%           76.445478      29.454433     1.000000
max           95.002027      84.047612     1.000000
```

1.0.4 Variables de la base

[5]:
```
list(data.columns.values)
```

[5]:
```
['HOGARES',
 'POBLACION',
 'SUPERFICIE',
 'DENS_HOGS',
 'DENS_HABS',
 'SPRIM',
 'AVG_ESCOLARIDAD',
 'OVSAE',
 'OVSEE',
 'PL5000',
 'PO2SM',
 'INGRESOPC_ANUAL',
 'DISP_TV_PAGA',
 'DISP_TEL_CELULAR',
 'DISP_TEL_FIJO',
 'EXIST_PEN']
```

1.0.5 Dimensiones de la base

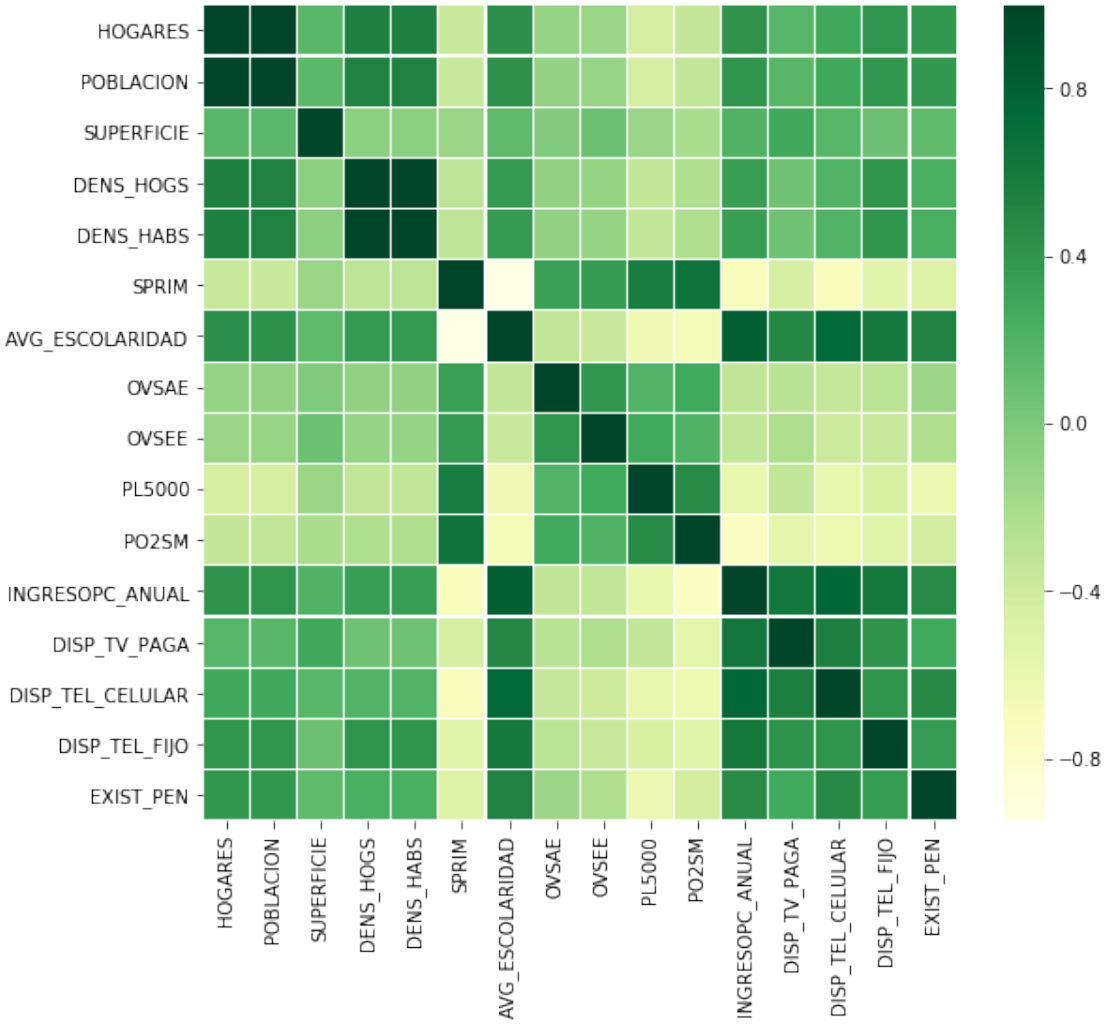
[6]:
```
m, n = data.shape
```

1.0.6 Matrices de correlación

[7]:
```
corrmat = data.corr()

f, ax = plt.subplots(figsize =(9, 8))
sns.heatmap(corrmat, ax = ax, cmap ="YlGn", linewidths = 0.1)
```

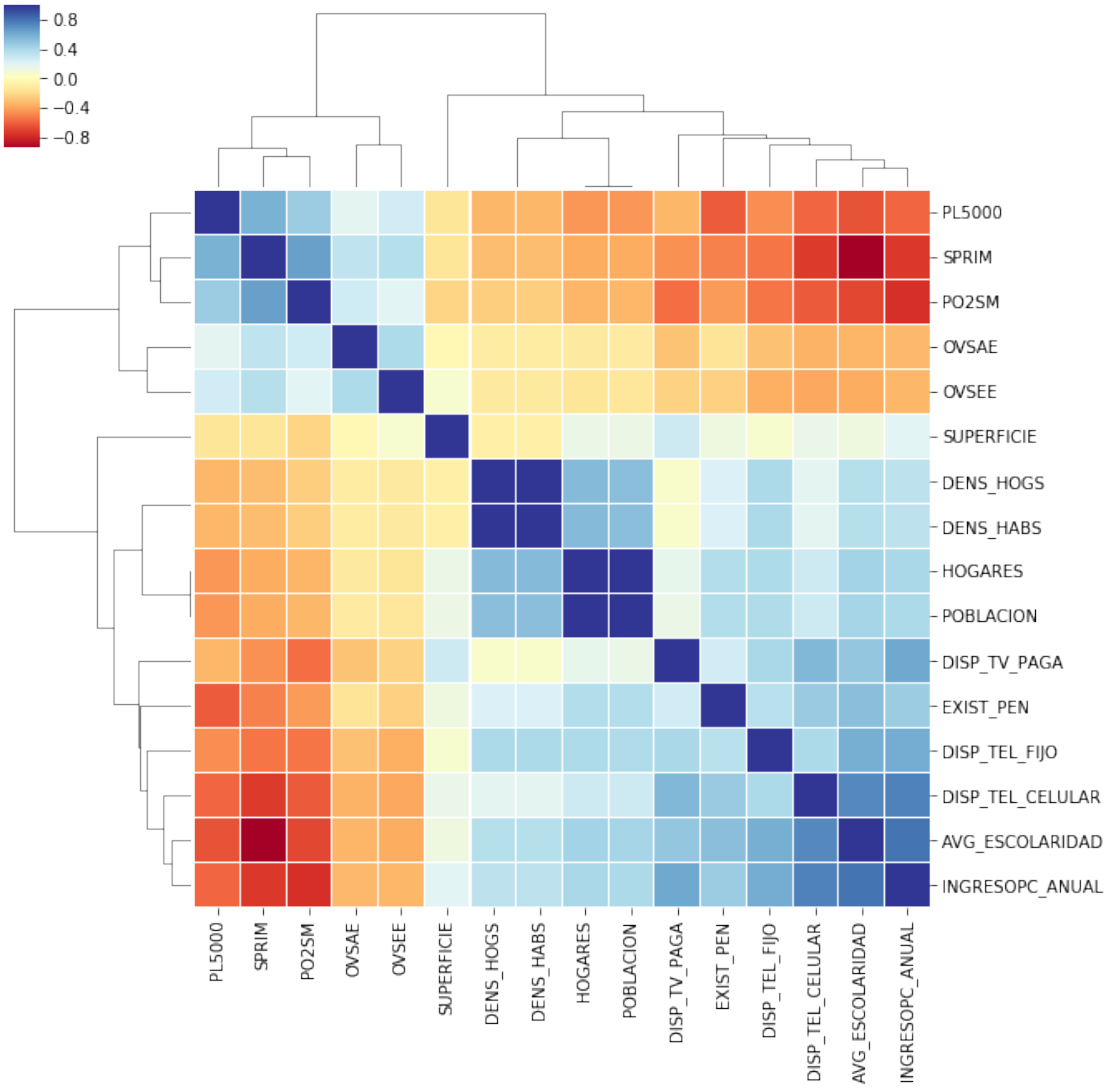
[7]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x7fadb33d6fd0>
```



[8]:
```
#corrmat = data.corr()
cg = sns.clustermap(corrmat, cmap ="RdYlBu", linewidths = 0.1);
plt.setp(cg.ax_heatmap.yaxis.get_majorticklabels(), rotation = 0)

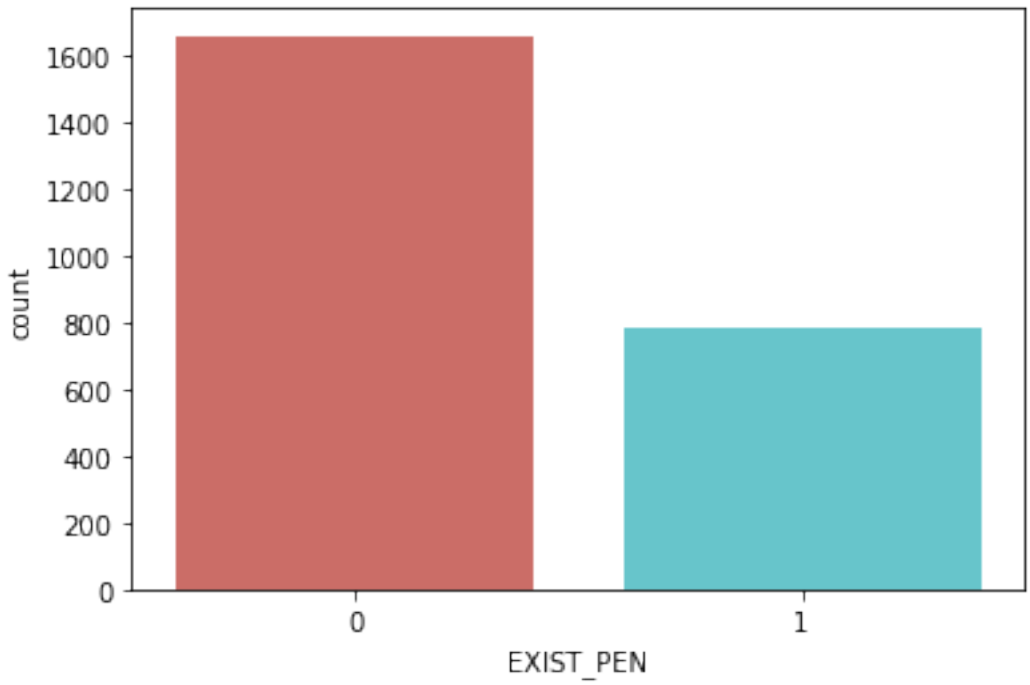
cg
```

[8]: <seaborn.matrix.ClusterGrid at 0x7fada9f976d8>



[9]:
```
sns.countplot(x='EXIST_PEN',data=data,palette='hls')
data.groupby(['EXIST_PEN']).size()
```

[9]:
```
EXIST_PEN
0    1660
1     786
dtype: int64
```



1.0.7 Preparamos los datos para entrenamiento y prueba

[10]:
```
from sklearn.model_selection import train_test_split
seed = 721 # Seed para poder replicar
X_train, X_test, y_train, y_test = train_test_split(data.iloc[:, :n-1], data.
 ↪iloc[:, n-1], random_state=seed)

xg_train = xgb.DMatrix(X_train, label=y_train)
xg_test = xgb.DMatrix(X_test, label=y_test)
```

```
/home/cesar/.local/lib/python3.7/site-packages/xgboost/core.py:587:
FutureWarning: Series.base is deprecated and will be removed in a future version
  if getattr(data, 'base', None) is not None and \
```

1.0.8 Modelo con regresion logística

[11]:
```
from sklearn.linear_model import LogisticRegression
from sklearn import preprocessing
```

[12]:
```
model_lr = LogisticRegression(random_state=seed,solver='lbfgs', max_iter=10000,␣
 ↪class_weight = "balanced").fit(preprocessing.scale(X_train), y_train)
```

[13]:
```
y_model_lr_predicted = model_lr.predict(preprocessing.scale(X_test))
```

[14]:
```
## Accuracy
from sklearn.metrics import accuracy_score
print("Accuracy: {}".format(accuracy_score(y_test, y_model_lr_predicted)))

## Métricas clasicas de Clasificadores
from sklearn import metrics
print(metrics.classification_report(y_model_lr_predicted, y_test))

## Matriz de confusión
from sklearn.metrics import confusion_matrix

mat_lr = confusion_matrix(y_test, y_model_lr_predicted)

plt.close()

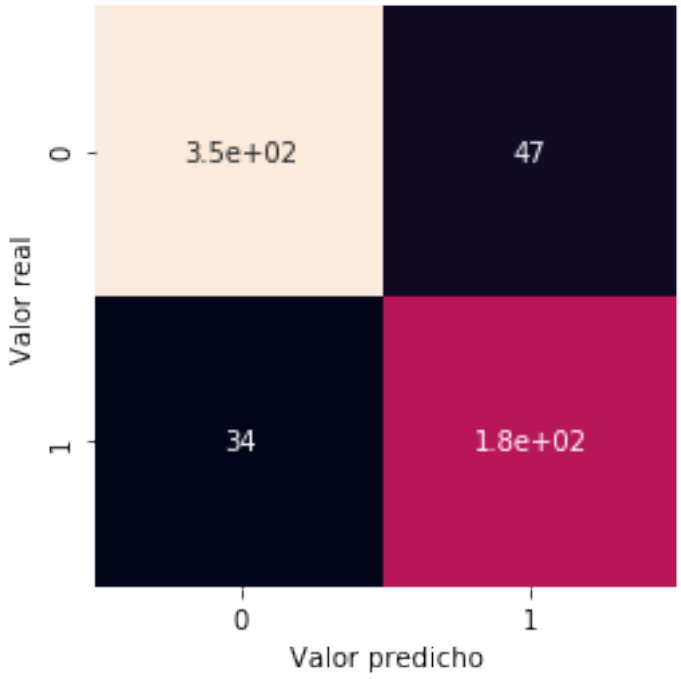
sns.heatmap(mat_lr, square = True, annot = True, cbar = False)
plt.xlabel('Valor predicho')
plt.ylabel('Valor real')
```

```
Accuracy: 0.8676470588235294
              precision    recall  f1-score   support

           0       0.88      0.91      0.90       387
           1       0.84      0.79      0.81       225

    accuracy                           0.87       612
   macro avg       0.86      0.85      0.86       612
weighted avg       0.87      0.87      0.87       612
```

[14]:
```
Text(91.68, 0.5, 'Valor real')
```



1.0.9 Modelo con XGBoost

[27]:
```
from sklearn.model_selection import GridSearchCV

# Instanciamos el clasificador
classifier_xgb = xgb.XGBClassifier()

# Hiper-parametros para hacer el grid search
hyper_param_grid = {
    'objective':['multi:softmax'],
    'eta':[0.01, 0.05,0.1], # Tasa de aprendizaje
    'gamma': [0.5],
    'max_depth':[6,7,8],
    'subsample':[0.8],
    'silent':[1],
    'nthread':[10],
    'num_class':[2],
    'subsample':[0.5],
    'colsample_bytree':[1.0],
    'n_estimators': [10, 100, 100], #number of trees, change it to 1000 for␣
 ↪better results
    'seed':[27]
    }
```

```
model_gsearch_xgb = GridSearchCV(classifier_xgb, hyper_param_grid, cv = 6,␣
 ↪verbose = 2)

model_gsearch_xgb.fit(X_train, y_train, eval_metric='auc')
```

```
Fitting 6 folds for each of 27 candidates, totalling 162 fits
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5

[Parallel(n_jobs=1)]: Using backend SequentialBackend with 1 concurrent workers.

[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.3s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5

[Parallel(n_jobs=1)]: Done   1 out of   1 | elapsed:    0.3s remaining:    0.0s

[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.5s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.3s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
```

```
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.9s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.4s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.5s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.9s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.9s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
```

```
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.9s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
```

```
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.5s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.9s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.5s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.3s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   2.0s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   2.7s
```

```
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.6s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.5s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.4s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.3s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.5s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   2.1s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
```

```
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.5s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.4s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   2.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.6s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.5s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
```

```
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   2.3s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   2.4s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   2.0s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.5s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   2.2s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.01, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.8s
```

```
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.3s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.4s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.4s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
```

```
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.9s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.9s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.9s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.9s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.9s
```

```
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.9s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
```

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[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
```

```
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.4s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
```

```
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.9s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   2.1s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   3.5s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   2.1s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.4s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
```

```
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.4s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.05, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
```

```
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
```

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[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.4s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.0s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=6, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
```

```
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
```

```
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
```

```
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=7, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=10,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   0.3s
```

```
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
```

```
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.1s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   1.2s
[CV] colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5
[CV]  colsample_bytree=1.0, eta=0.1, gamma=0.5, max_depth=8, n_estimators=100,
nthread=10, num_class=2, objective=multi:softmax, seed=27, silent=1,
subsample=0.5, total=   3.4s

[Parallel(n_jobs=1)]: Done 162 out of 162 | elapsed:  2.5min finished
```

[27]:
```
GridSearchCV(cv=6, error_score='raise-deprecating',
             estimator=XGBClassifier(base_score=0.5, booster='gbtree',
                                     colsample_bylevel=1, colsample_bynode=1,
                                     colsample_bytree=1, gamma=0,
                                     learning_rate=0.1, max_delta_step=0,
                                     max_depth=3, min_child_weight=1,
                                     missing=None, n_estimators=100, n_jobs=1,
                                     nthread=None, objective='binary:logistic',
                                     random_state=0, reg_alpha=0, reg_l...
                                     subsample=1, verbosity=1),
             iid='warn', n_jobs=None,
             param_grid={'colsample_bytree': [1.0], 'eta': [0.01, 0.05, 0.1],
                         'gamma': [0.5], 'max_depth': [6, 7, 8],
                         'n_estimators': [10, 100, 100], 'nthread': [10],
                         'num_class': [2], 'objective': ['multi:softmax'],
                         'seed': [27], 'silent': [1], 'subsample': [0.5]},
             pre_dispatch='2*n_jobs', refit=True, return_train_score=False,
             scoring=None, verbose=2)
```

[28]:
```
model_gsearch_xgb.best_params_
```

[28]:
```
{'colsample_bytree': 1.0,
 'eta': 0.01,
 'gamma': 0.5,
 'max_depth': 6,
 'n_estimators': 100,
 'nthread': 10,
 'num_class': 2,
 'objective': 'multi:softmax',
 'seed': 27,
 'silent': 1,
 'subsample': 0.5}
```

[29]:
```
model_gsearch_xgb.best_score_
```

[29]:
```
0.8816793893129771
```

[ ]:
```
```

[30]:
```
y_model_xgb = model_gsearch_xgb.predict(X_test)
## Accuracy
from sklearn.metrics import accuracy_score
print("Accuracy: {}".format(accuracy_score(y_test, y_model_xgb)))

## Métricas clasicas de Clasificadores
from sklearn import metrics
print(metrics.classification_report(y_model_xgb, y_test))

## Matriz de confusión
from sklearn.metrics import confusion_matrix

mat = confusion_matrix(y_test, y_model_xgb)

plt.close()

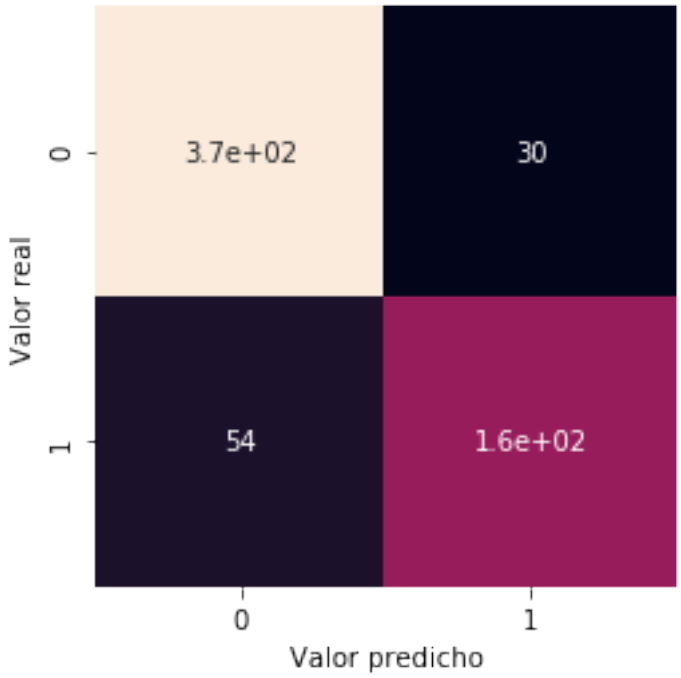
sns.heatmap(mat, square = True, annot = True, cbar = False)
plt.xlabel('Valor predicho')
plt.ylabel('Valor real')
```

```
Accuracy: 0.8627450980392157
              precision    recall  f1-score   support

           0       0.93      0.87      0.90       424
           1       0.75      0.84      0.79       188

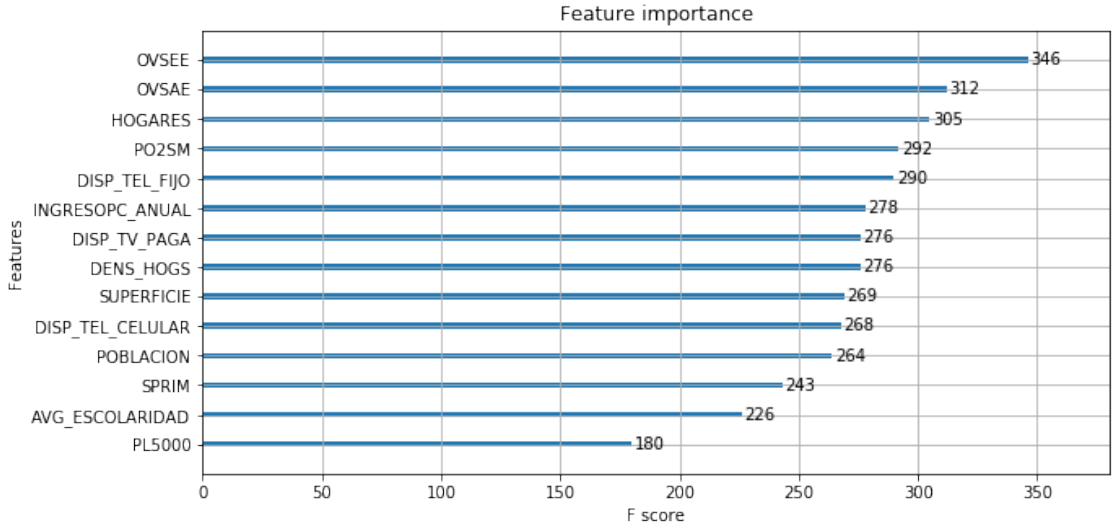
    accuracy                           0.86       612
   macro avg       0.84      0.86      0.84       612
weighted avg       0.87      0.86      0.86       612
```

[30]: `Text(91.68, 0.5, 'Valor real')`



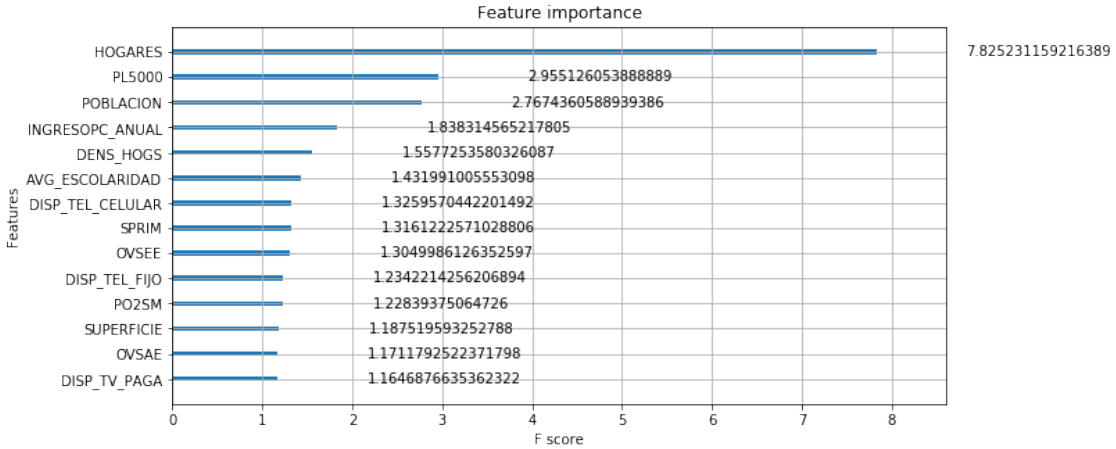
[31]:
```
# How the importance is calculated: either "weight", "gain", or "cover"
#    "weight" is the number of times a feature appears in a tree
#    "gain" is the average"gain"of splits which use the feature
#    "cover" is the average coverage of splits which use the feature
#      where coverage is defined as the number of samples affected by the split

fig, ax = plt.subplots(figsize=(10,5))
xgb.plot_importance(model_gsearch_xgb.best_estimator_, ax=ax,␣
 ↪importance_type='weight')
plt.show()
```



[32]:
```
# How the importance is calculated: either "weight", "gain", or "cover"
#    "weight" is the number of times a feature appears in a tree
#    "gain" is the average"gain"of splits which use the feature
#    "cover" is the average coverage of splits which use the feature
#      where coverage is defined as the number of samples affected by the split

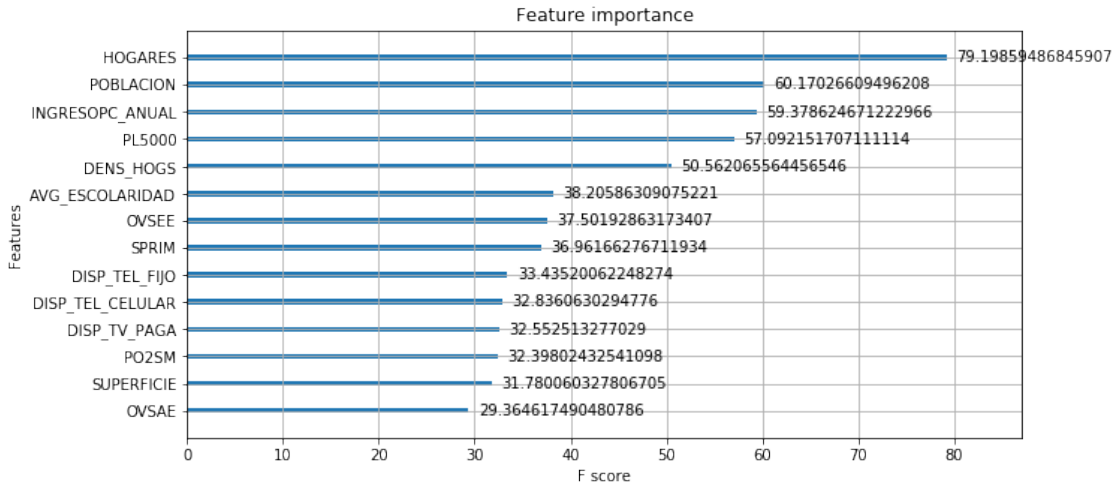
fig, ax = plt.subplots(figsize=(10,5))
xgb.plot_importance(model_gsearch_xgb.best_estimator_, ax=ax,␣
 ↪importance_type='gain')
plt.show()
```



[33]:
```
# How the importance is calculated: either "weight", "gain", or "cover"
#    "weight" is the number of times a feature appears in a tree
#    "gain" is the average"gain"of splits which use the feature
```

```
#    "cover" is the average coverage of splits which use the feature
#      where coverage is defined as the number of samples affected by the split

fig, ax = plt.subplots(figsize=(10,5))
xgb.plot_importance(model_gsearch_xgb.best_estimator_, ax=ax,␣
 ↪importance_type='cover')
plt.show()
```

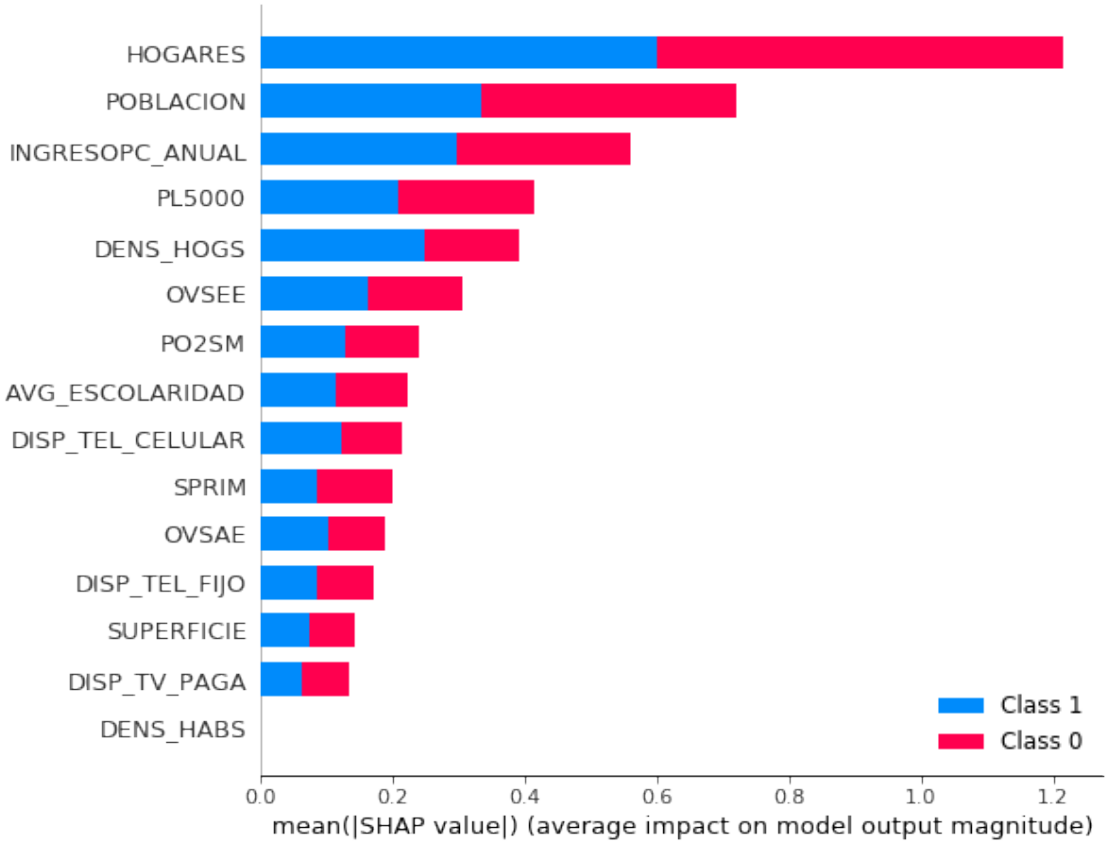


[34]:
```
import shap

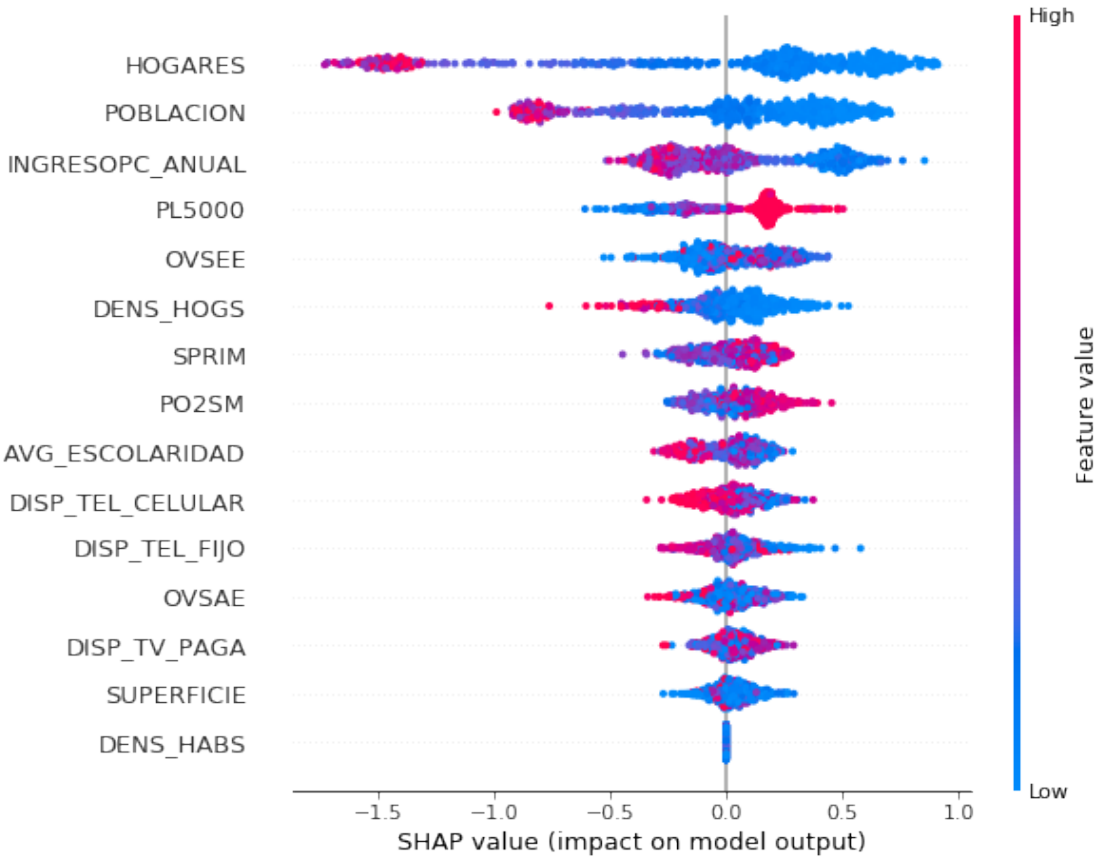
# Create object that can calculate shap values
explainer = shap.TreeExplainer(model_gsearch_xgb.best_estimator_)

# Calculate shap_values for all of val_X rather than a single row, to have more␣
 ↪data for plot.
shap_values = explainer.shap_values(X_test)
```

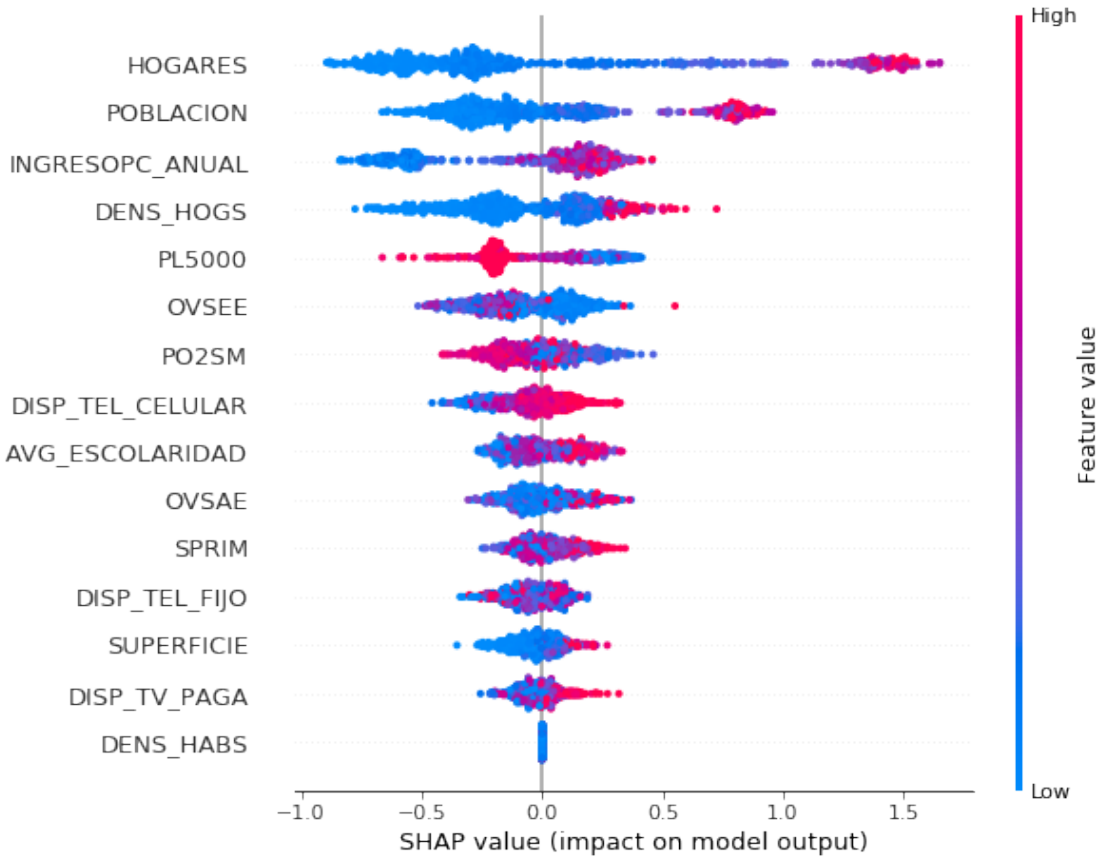
[35]:
```
shap.summary_plot(shap_values, X_test) # Plot de los que no tienen conectividad␣
 ↪de BAF (f.o. + coaxial)
```



[36]:
```
# Make plot. Index of [0] is explained in text below.
shap.summary_plot(shap_values[0], X_test) # Plot de los que no tienen␣
 ↪conectividad de BAF (f.o. + coaxial)
```

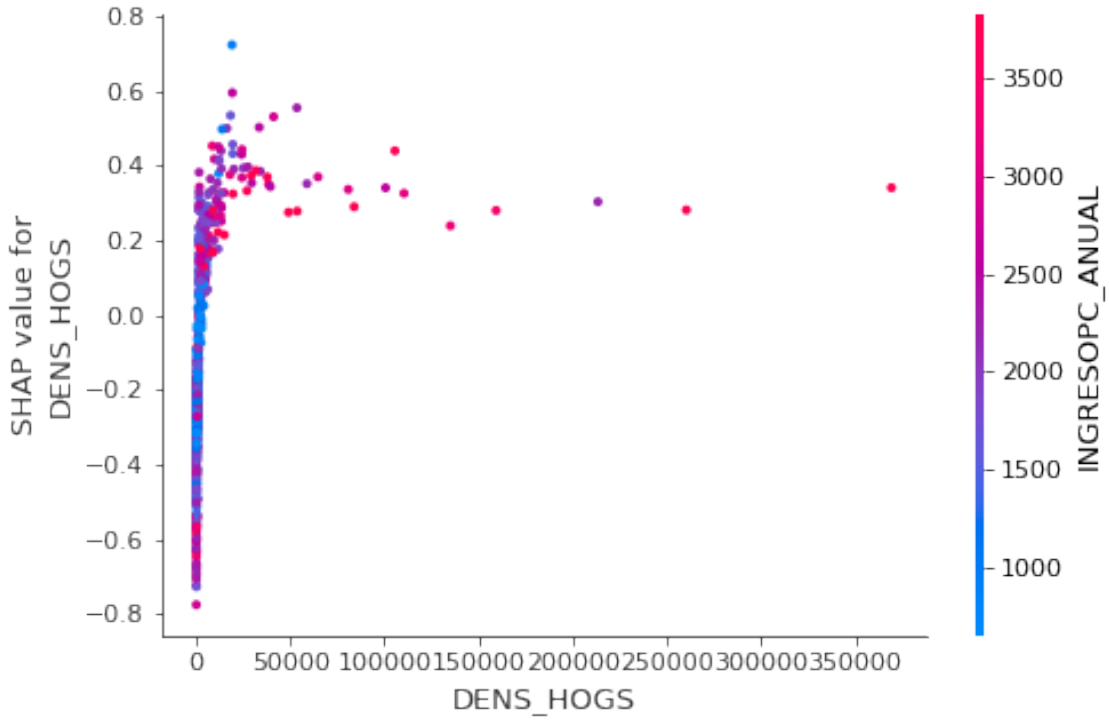


[37]:
```
shap.summary_plot(shap_values[1], X_test) # Plot de los que si tienen␣
↪conectividad de BAF (f.o. + coaxial)
```



[38]:
```
# https://www.kaggle.com/dansbecker/advanced-uses-of-shap-values

shap.dependence_plot('DENS_HOGS', shap_values[1], X_test,␣
 ↪interaction_index="INGRESOPC_ANUAL")
```



1.0.10 Random forests

[39]:
```
from sklearn.model_selection import GridSearchCV

rf_classifier = RandomForestClassifier()
hyper_param_grid = {'n_estimators': [1,10,100],#[1,10,100,1000,10000],
                    'max_depth': [5,10,20,50,100],#5,10,20,50,100],
                    'max_features': ['sqrt','log2'],
                    'min_samples_split': [2,5,10],
                    'criterion':['entropy'],
                    #'class_weight':['balanced'],
                    'warm_start' :['TRUE'],
                    'random_state':[712]
                   },


model_RF_gsearch = GridSearchCV(rf_classifier, hyper_param_grid, cv = 6,␣
 ↪verbose = 3)

model_RF_gsearch.fit(X_train, y_train)

y_model_forest = model_RF_gsearch.predict(X_test)
```

```
Fitting 6 folds for each of 90 candidates, totalling 540 fits
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.1s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.863, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.905, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.823, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.849, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE

[Parallel(n_jobs=1)]: Using backend SequentialBackend with 1 concurrent workers.
[Parallel(n_jobs=1)]: Done   1 out of   1 | elapsed:    0.1s remaining:    0.0s
[Parallel(n_jobs=1)]: Done   2 out of   2 | elapsed:    0.2s remaining:    0.0s

[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.853, total=   0.1s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.908, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
```

```
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.872, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.5s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.925, total=   0.5s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.872, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.824, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.863, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.905, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
```

```
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.826, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.856, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.895, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.908, total=   0.1s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.875, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.863, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.925, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
```

```
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.872, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.872, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.824, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.866, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.905, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.826, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.853, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.886, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.918, total=   0.1s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
```

```
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.863, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.922, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.872, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.863, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.905, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.823, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.849, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.853, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.908, total=   0.1s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.872, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.925, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.872, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.824, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.863, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.905, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.826, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.856, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.895, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.908, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.875, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.863, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.925, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.872, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.872, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.824, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.866, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.905, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.826, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.853, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.886, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.918, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.0s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.863, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.922, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.4s
[CV] criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=5, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.872, total=   0.4s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.817, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.863, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.830, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.859, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.922, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.885, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.925, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.885, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.801, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
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[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.810, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.863, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.830, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.823, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
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[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.859, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.925, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.6s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.882, total=   0.7s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.863, total=   0.7s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.918, total=   0.7s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.7s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.895, total=   0.7s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.837, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.889, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.820, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.886, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.846, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.915, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.872, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.7s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.7s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.6s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.925, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.882, total=   0.6s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
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n_estimators=1, random_state=712, warm_start=TRUE, score=0.817, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.863, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.830, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.859, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.922, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.885, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.866, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.925, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.885, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.801, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.810, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.863, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.830, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.823, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.859, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.925, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
```

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[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.882, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.863, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.918, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.895, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.837, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.889, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.820, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.886, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.846, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.915, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.879, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.872, total=   0.1s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.925, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=10, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.882, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.824, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.830, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.889, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.856, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.935, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.931, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.892, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.892, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.863, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.908, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.875, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.7s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.925, total=   0.7s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.7s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.895, total=   0.7s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.817, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.793, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.823, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.863, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.918, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.885, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.7s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.915, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.882, total=   0.7s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.824, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.830, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.889, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.856, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.935, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.931, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.892, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.892, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.863, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.908, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.875, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.925, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.895, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.817, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.793, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.823, total=   0.0s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.863, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.918, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.885, total=   0.1s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.7s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.6s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.915, total=   0.7s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.5s
[CV] criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=20, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.882, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.824, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.830, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.889, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.859, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.935, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.931, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.892, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.807, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.876, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.908, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.875, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.928, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.895, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.817, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.793, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.823, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.863, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.918, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.885, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.915, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.882, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.824, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.830, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.889, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.859, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.935, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.931, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
```

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[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.892, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.807, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.876, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.908, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.875, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.7s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.7s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.7s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.928, total=   0.7s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.6s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.895, total=   0.7s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.817, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.793, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.823, total=   0.0s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.863, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.918, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.885, total=   0.1s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.6s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.6s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.915, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.5s
[CV] criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=50, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.882, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.824, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.830, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.889, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.859, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.935, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.7s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.931, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.892, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.807, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.876, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.908, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.875, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.928, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.7s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.895, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.843, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.817, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.793, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.823, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
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[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.863, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.918, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
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[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.7s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.915, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=sqrt, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.882, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.824, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.830, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.889, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.836, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.859, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.935, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.882, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.931, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=2,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.892, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
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n_estimators=1, random_state=712, warm_start=TRUE, score=0.827, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
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n_estimators=1, random_state=712, warm_start=TRUE, score=0.807, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.876, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.852, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.873, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.866, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.908, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
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[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.875, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
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[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.6s
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[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.859, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.928, total=   0.7s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
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[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.875, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=5,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.895, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.833, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
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[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.817, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.846, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
```

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[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.793, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=1, random_state=712, warm_start=TRUE, score=0.823, total=   0.0s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.863, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.876, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.869, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.918, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.889, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=10, random_state=712, warm_start=TRUE, score=0.885, total=   0.1s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.869, total=   0.7s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.876, total=   0.6s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.873, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.915, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
```

```
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.879, total=   0.5s
[CV] criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE
[CV]  criterion=entropy, max_depth=100, max_features=log2, min_samples_split=10,
n_estimators=100, random_state=712, warm_start=TRUE, score=0.882, total=   0.5s

[Parallel(n_jobs=1)]: Done 540 out of 540 | elapsed:  1.8min finished
```

[40]:
```
model_RF_gsearch.best_params_
```

[40]:
```
{'criterion': 'entropy',
 'max_depth': 10,
 'max_features': 'sqrt',
 'min_samples_split': 2,
 'n_estimators': 10,
 'random_state': 712,
 'warm_start': 'TRUE'}
```

[41]:
```
model_RF_gsearch.best_score_
```

[41]:
```
0.8865866957470011
```

[42]:
```
## Accuracy
from sklearn.metrics import accuracy_score
print("Accuracy: {}".format(accuracy_score(y_test, y_model_forest)))

## Métricas clasicas de Clasificadores
from sklearn import metrics
print(metrics.classification_report(y_model_forest, y_test))

## Matriz de confusión
from sklearn.metrics import confusion_matrix

mat = confusion_matrix(y_test, y_model_forest)

plt.close()

sns.heatmap(mat, square = True, annot = True, cbar = False)
plt.xlabel('Valor predicho')
plt.ylabel('Valor real')
```

```
Accuracy: 0.8643790849673203
              precision    recall  f1-score   support

           0       0.93      0.87      0.90       425
           1       0.75      0.84      0.79       187

    accuracy                           0.86       612
   macro avg       0.84      0.86      0.85       612
```

```
weighted avg       0.87      0.86      0.87       612
```

[42]: `Text(91.68, 0.5, 'Valor real')`