In [1]:

```
pip install catboost
```

Requirement already satisfied: catboost in /usr/local/lib/python3.7/
dist-packages (0.26.1)
Requirement already satisfied: scipy in /usr/local/lib/python3.7/dis
t-packages (from catboost) (1.4.1)
Requirement already satisfied: six in /usr/local/lib/python3.7/dist-
packages (from catboost) (1.15.0)
Requirement already satisfied: pandas>=0.24.0 in /usr/local/lib/pyth
on3.7/dist-packages (from catboost) (1.1.5)
Requirement already satisfied: matplotlib in /usr/local/lib/python3.
7/dist-packages (from catboost) (3.2.2)
Requirement already satisfied: plotly in /usr/local/lib/python3.7/di
st-packages (from catboost) (4.4.1)
Requirement already satisfied: numpy>=1.16.0 in /usr/local/lib/pytho
n3.7/dist-packages (from catboost) (1.19.5)
Requirement already satisfied: graphviz in /usr/local/lib/python3.7/
dist-packages (from catboost) (0.10.1)
Requirement already satisfied: pytz>=2017.2 in /usr/local/lib/python
3.7/dist-packages (from pandas>=0.24.0->catboost) (2018.9)
Requirement already satisfied: python-dateutil>=2.7.3 in /usr/local/
lib/python3.7/dist-packages (from pandas>=0.24.0->catboost) (2.8.2)
Requirement already satisfied: cycler>=0.10 in /usr/local/lib/python
3.7/dist-packages (from matplotlib->catboost) (0.10.0)
Requirement already satisfied: kiwisolver>=1.0.1 in /usr/local/lib/p
ython3.7/dist-packages (from matplotlib->catboost) (1.3.2)
Requirement already satisfied: pyparsing!=2.0.4,!=2.1.2,!=2.1.6,>=2.
0.1 in /usr/local/lib/python3.7/dist-packages (from matplotlib->catb
oost) (2.4.7)
Requirement already satisfied: retrying>=1.3.3 in /usr/local/lib/pyt
hon3.7/dist-packages (from plotly->catboost) (1.3.3)

In [1]:

```python
import numpy as np
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from catboost import CatBoostClassifier
from sklearn.tree import DecisionTreeClassifier
from xgboost import XGBClassifier
from sklearn.linear_model import LogisticRegression
from sklearn.ensemble import ExtraTreesClassifier
from sklearn.ensemble import GradientBoostingClassifier
from sklearn.model_selection import StratifiedKFold
from sklearn.ensemble import AdaBoostClassifier
import lightgbm as lgb
from sklearn.metrics import roc_auc_score
```

In [2]:

```python
train = pd.read_csv('/content/drive/MyDrive/Semester-V/Competitions/Classroom/tr
ain.csv')

test = pd.read_csv('/content/drive/MyDrive/Semester-V/Competitions/Classroom/tes
t.csv')
```

In [3]:

```
train.head(10)
```

Out[3]:

	id	Mean of the integrated profile	Standard deviation of the integrated profile	Excess kurtosis of the integrated profile	Skewness of the integrated profile	Mean of the DM-SNR curve	Standard deviation of the DM-SNR curve	Excess kurtosis of the DM-SNR curve	Sk of SN
0	16330	138.835938	45.453922	-0.096961	0.086516	3.082776	18.529846	7.179262	60
1	5999	130.296875	51.969546	-0.005585	-0.295680	4.299331	23.557530	6.883942	52
2	10228	127.328125	55.471714	0.090976	-0.444422	69.913880	73.240545	0.434744	-1
3	2980	102.453125	44.412987	0.652927	1.101361	2.425585	15.501871	9.213629	106
4	2472	104.921875	41.629431	0.189677	0.725700	3.275084	18.661805	7.389537	65
5	9491	123.914062	49.306286	0.058630	0.255576	14.983278	56.100928	3.497040	10
6	5274	96.617188	49.176042	0.539350	0.470347	0.562709	10.827096	20.937929	453
7	13581	131.406250	53.508241	-0.125222	-0.184864	6.304348	30.230182	5.459737	31
8	11984	137.945312	58.241323	-0.004645	-0.676629	4.801839	26.189399	6.370659	42
9	17494	113.656250	42.059006	0.392402	0.638596	9.760033	36.338525	3.867539	14

In [4]:

```
test.head(10)
```

Out[4]:

	id	Mean of the integrated profile	Standard deviation of the integrated profile	Excess kurtosis of the integrated profile	Skewness of the integrated profile	Mean of the DM-SNR curve	Standard deviation of the DM-SNR curve	Excess kurtosis of the DM-SNR curve	Skev of the SNR
0	15	130.960938	51.285872	0.072242	-0.584550	1.940635	13.092250	10.481509	147.7:
1	28	23.703125	41.677774	4.112599	16.687125	12.272575	39.323386	3.710673	14.1
2	30	113.882812	45.562907	0.064720	0.243603	2.101171	13.008511	10.184925	145.21
3	35	101.882812	44.301633	0.584880	0.722995	2.645485	19.539765	9.101964	90.4
4	48	96.335938	43.957060	0.302221	0.693381	1.807692	16.216959	11.322476	144.3
5	49	101.031250	41.848487	0.424008	0.905820	1.258361	14.716245	12.787493	172.5:
6	51	117.765625	42.016084	0.138450	0.694804	1.589465	15.623695	11.745828	153.3:
7	60	106.179688	48.586976	0.057190	-0.142287	1.576087	12.382966	11.755978	181.7(
8	65	98.570312	45.069509	0.349157	0.853319	1.815217	13.492664	10.800264	146.3:
9	70	117.242188	55.248126	0.274790	-0.433701	162.786789	42.191598	-1.199483	1.4(

```
In [5]:
```

```python
train.shape, test.shape
```

```
Out[5]:
```

```
((14318, 10), (3580, 9))
```

```
In [6]:
```

```python
train['target_class'].value_counts()
```

```
Out[6]:
```

```
0    13003
1     1315
Name: target_class, dtype: int64
```

```
In [7]:
```

```python
test['target_class'] = -1

test_ID = test['id']

df = pd.concat([train, test], axis=0)

df.drop('id', axis=1, inplace=True)
```

```
In [8]:
```

```python
df.head(10)
```

```
Out[8]:
```

	Mean of the integrated profile	Standard deviation of the integrated profile	Excess kurtosis of the integrated profile	Skewness of the integrated profile	Mean of the DM-SNR curve	Standard deviation of the DM-SNR curve	Excess kurtosis of the DM-SNR curve	Skewness of the DM-SNR curve
0	138.835938	45.453922	-0.096961	0.086516	3.082776	18.529846	7.179262	60.660346
1	130.296875	51.969546	-0.005585	-0.295680	4.299331	23.557530	6.883942	52.337106
2	127.328125	55.471714	0.090976	-0.444422	69.913880	73.240545	0.434744	-1.249027
3	102.453125	44.412987	0.652927	1.101361	2.425585	15.501871	9.213629	106.097405
4	104.921875	41.629431	0.189677	0.725700	3.275084	18.661805	7.389537	65.169692
5	123.914062	49.306286	0.058630	0.255576	14.983278	56.100928	3.497040	10.309213
6	96.617188	49.176042	0.539350	0.470347	0.562709	10.827096	20.937929	453.459566
7	131.406250	53.508241	-0.125222	-0.184864	6.304348	30.230182	5.459737	31.094668
8	137.945312	58.241323	-0.004645	-0.676629	4.801839	26.189399	6.370659	42.819915
9	113.656250	42.059006	0.392402	0.638596	9.760033	36.338525	3.867539	14.783672

In [9]:

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 17898 entries, 0 to 3579
Data columns (total 9 columns):
 #   Column                                        Non-Null Count  D
type
---  ------                                        --------------  -
----
 0   Mean of the integrated profile                17898 non-null  f
loat64
 1   Standard deviation of the integrated profile  17898 non-null  f
loat64
 2   Excess kurtosis of the integrated profile     17898 non-null  f
loat64
 3   Skewness of the integrated profile            17898 non-null  f
loat64
 4   Mean of the DM-SNR curve                      17898 non-null  f
loat64
 5   Standard deviation of the DM-SNR curve        17898 non-null  f
loat64
 6   Excess kurtosis of the DM-SNR curve           17898 non-null  f
loat64
 7   Skewness of the DM-SNR curve                  17898 non-null  f
loat64
 8   target_class                                  17898 non-null  i
nt64
dtypes: float64(8), int64(1)
memory usage: 1.4 MB
```

In [10]:

```
df.var()
```

Out[10]:

```
Mean of the integrated profile                 658.073093
Standard deviation of the integrated profile    46.829241
Excess kurtosis of the integrated profile        1.132181
Skewness of the integrated profile              38.043154
Mean of the DM-SNR curve                        868.651666
Standard deviation of the DM-SNR curve          379.103187
Excess kurtosis of the DM-SNR curve              20.304864
Skewness of the DM-SNR curve                  11345.347132
target_class                                      0.257494
dtype: float64
```

In [11]:

```
df['Skewness of the DM-SNR curve'].describe()
```

Out[11]:

```
count    17898.000000
mean       104.857709
std        106.514540
min         -1.976976
25%         34.960504
50%         83.064556
75%        139.309331
max       1191.000837
Name: Skewness of the DM-SNR curve, dtype: float64
```

In [12]:

```
df['Skewness of the DM-SNR curve'] = np.abs(df['Skewness of the DM-SNR curve'])
```

In [13]:

```
df['Skewness of the DM-SNR curve'] = np.log(df['Skewness of the DM-SNR curve'])
```

In [14]:

```
df['Ratio1'] = df['Excess kurtosis of the integrated profile'] / df['Skewness of
the integrated profile']
df['Ratio2'] = df['Excess kurtosis of the DM-SNR curve'] / df['Skewness of the D
M-SNR curve']
```

In [15]:

```
df.isna().sum()
```

Out[15]:

```
Mean of the integrated profile                   0
Standard deviation of the integrated profile     0
Excess kurtosis of the integrated profile        0
Skewness of the integrated profile               0
Mean of the DM-SNR curve                          0
Standard deviation of the DM-SNR curve            0
Excess kurtosis of the DM-SNR curve               0
Skewness of the DM-SNR curve                      0
target_class                                      0
Ratio1                                            0
Ratio2                                            0
dtype: int64
```

In [16]:

```
test = df[df['target_class'] == -1]
test = test.drop('target_class', axis=1)

train = df[df['target_class'] != -1]
```

```python
X = train.drop('target_class', axis=1).values

y = train['target_class'].values
```

```python
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=22, shuffle=True, stratify=y)
```

```
model = CatBoostClassifier()

model.fit(X_train, y_train)

y_pred = model.predict_proba(X_test)[:, 1]
```

```
Learning rate set to 0.029182
0:      learn: 0.6344532      total: 59.9ms    remaining: 59.9s
1:      learn: 0.5769084      total: 78.7ms    remaining: 39.3s
2:      learn: 0.5262013      total: 88.9ms    remaining: 29.6s
3:      learn: 0.4838241      total: 100ms     remaining: 25s
4:      learn: 0.4462013      total: 113ms     remaining: 22.5s
5:      learn: 0.4092826      total: 128ms     remaining: 21.2s
6:      learn: 0.3797483      total: 138ms     remaining: 19.6s
7:      learn: 0.3508000      total: 148ms     remaining: 18.4s
8:      learn: 0.3251426      total: 158ms     remaining: 17.4s
9:      learn: 0.3022781      total: 167ms     remaining: 16.6s
10:     learn: 0.2809835      total: 178ms     remaining: 16s
11:     learn: 0.2599741      total: 187ms     remaining: 15.4s
12:     learn: 0.2434501      total: 201ms     remaining: 15.3s
13:     learn: 0.2291920      total: 211ms     remaining: 14.9s
14:     learn: 0.2175696      total: 221ms     remaining: 14.5s
15:     learn: 0.2035244      total: 230ms     remaining: 14.2s
16:     learn: 0.1921825      total: 240ms     remaining: 13.9s
17:     learn: 0.1819052      total: 249ms     remaining: 13.6s
18:     learn: 0.1727691      total: 259ms     remaining: 13.4s
19:     learn: 0.1648323      total: 276ms     remaining: 13.5s
20:     learn: 0.1575498      total: 286ms     remaining: 13.3s
21:     learn: 0.1507753      total: 296ms     remaining: 13.1s
22:     learn: 0.1436076      total: 306ms     remaining: 13s
23:     learn: 0.1383857      total: 315ms     remaining: 12.8s
24:     learn: 0.1332852      total: 324ms     remaining: 12.7s
25:     learn: 0.1287154      total: 334ms     remaining: 12.5s
26:     learn: 0.1244871      total: 345ms     remaining: 12.4s
27:     learn: 0.1206324      total: 355ms     remaining: 12.3s
28:     learn: 0.1170192      total: 365ms     remaining: 12.2s
29:     learn: 0.1139620      total: 375ms     remaining: 12.1s
30:     learn: 0.1109812      total: 384ms     remaining: 12s
31:     learn: 0.1081465      total: 394ms     remaining: 11.9s
32:     learn: 0.1051942      total: 407ms     remaining: 11.9s
33:     learn: 0.1030297      total: 416ms     remaining: 11.8s
34:     learn: 0.1012031      total: 429ms     remaining: 11.8s
35:     learn: 0.0990471      total: 441ms     remaining: 11.8s
36:     learn: 0.0969794      total: 451ms     remaining: 11.7s
37:     learn: 0.0950204      total: 460ms     remaining: 11.7s
38:     learn: 0.0933950      total: 470ms     remaining: 11.6s
39:     learn: 0.0921137      total: 480ms     remaining: 11.5s
40:     learn: 0.0908764      total: 489ms     remaining: 11.4s
41:     learn: 0.0894899      total: 499ms     remaining: 11.4s
42:     learn: 0.0881622      total: 508ms     remaining: 11.3s
43:     learn: 0.0873450      total: 517ms     remaining: 11.2s
44:     learn: 0.0863365      total: 527ms     remaining: 11.2s
45:     learn: 0.0851648      total: 537ms     remaining: 11.1s
46:     learn: 0.0841195      total: 546ms     remaining: 11.1s
47:     learn: 0.0831981      total: 555ms     remaining: 11s
48:     learn: 0.0822207      total: 565ms     remaining: 11s
49:     learn: 0.0816393      total: 574ms     remaining: 10.9s
50:     learn: 0.0808131      total: 584ms     remaining: 10.9s
51:     learn: 0.0801771      total: 594ms     remaining: 10.8s
52:     learn: 0.0793151      total: 603ms     remaining: 10.8s
53:     learn: 0.0786654      total: 616ms     remaining: 10.8s
54:     learn: 0.0781901      total: 625ms     remaining: 10.7s
55:     learn: 0.0776783      total: 639ms     remaining: 10.8s
56:     learn: 0.0772756      total: 648ms     remaining: 10.7s
57:     learn: 0.0767277      total: 658ms     remaining: 10.7s
58:     learn: 0.0761852      total: 668ms     remaining: 10.6s
59:     learn: 0.0756694      total: 677ms     remaining: 10.6s
```

```
60:     learn: 0.0753743       total: 687ms    remaining: 10.6s
61:     learn: 0.0750238       total: 696ms    remaining: 10.5s
62:     learn: 0.0747341       total: 705ms    remaining: 10.5s
63:     learn: 0.0741863       total: 715ms    remaining: 10.5s
64:     learn: 0.0737303       total: 724ms    remaining: 10.4s
65:     learn: 0.0734265       total: 734ms    remaining: 10.4s
66:     learn: 0.0730022       total: 743ms    remaining: 10.4s
67:     learn: 0.0727623       total: 753ms    remaining: 10.3s
68:     learn: 0.0723803       total: 762ms    remaining: 10.3s
69:     learn: 0.0721426       total: 772ms    remaining: 10.3s
70:     learn: 0.0719018       total: 782ms    remaining: 10.2s
71:     learn: 0.0715911       total: 791ms    remaining: 10.2s
72:     learn: 0.0713077       total: 801ms    remaining: 10.2s
73:     learn: 0.0709718       total: 811ms    remaining: 10.1s
74:     learn: 0.0706910       total: 824ms    remaining: 10.2s
75:     learn: 0.0703572       total: 833ms    remaining: 10.1s
76:     learn: 0.0700951       total: 842ms    remaining: 10.1s
77:     learn: 0.0698175       total: 853ms    remaining: 10.1s
78:     learn: 0.0695610       total: 863ms    remaining: 10.1s
79:     learn: 0.0693418       total: 873ms    remaining: 10s
80:     learn: 0.0691057       total: 886ms    remaining: 10.1s
81:     learn: 0.0689113       total: 906ms    remaining: 10.1s
82:     learn: 0.0688005       total: 924ms    remaining: 10.2s
83:     learn: 0.0686165       total: 938ms    remaining: 10.2s
84:     learn: 0.0684439       total: 947ms    remaining: 10.2s
85:     learn: 0.0682443       total: 958ms    remaining: 10.2s
86:     learn: 0.0681094       total: 968ms    remaining: 10.2s
87:     learn: 0.0678779       total: 978ms    remaining: 10.1s
88:     learn: 0.0676426       total: 988ms    remaining: 10.1s
89:     learn: 0.0674270       total: 999ms    remaining: 10.1s
90:     learn: 0.0672771       total: 1.01s    remaining: 10.1s
91:     learn: 0.0671212       total: 1.03s    remaining: 10.2s
92:     learn: 0.0670322       total: 1.04s    remaining: 10.2s
93:     learn: 0.0668413       total: 1.05s    remaining: 10.1s
94:     learn: 0.0667053       total: 1.06s    remaining: 10.1s
95:     learn: 0.0665190       total: 1.08s    remaining: 10.1s
96:     learn: 0.0663895       total: 1.09s    remaining: 10.1s
97:     learn: 0.0662235       total: 1.1s     remaining: 10.1s
98:     learn: 0.0660811       total: 1.11s    remaining: 10.1s
99:     learn: 0.0659247       total: 1.12s    remaining: 10.1s
100:    learn: 0.0658061       total: 1.13s    remaining: 10.1s
101:    learn: 0.0656658       total: 1.14s    remaining: 10s
102:    learn: 0.0655726       total: 1.15s    remaining: 10s
103:    learn: 0.0653917       total: 1.16s    remaining: 9.97s
104:    learn: 0.0652847       total: 1.17s    remaining: 9.95s
105:    learn: 0.0651985       total: 1.18s    remaining: 9.92s
106:    learn: 0.0650969       total: 1.19s    remaining: 9.9s
107:    learn: 0.0649276       total: 1.2s     remaining: 9.88s
108:    learn: 0.0647871       total: 1.21s    remaining: 9.86s
109:    learn: 0.0646790       total: 1.22s    remaining: 9.84s
110:    learn: 0.0645804       total: 1.23s    remaining: 9.82s
111:    learn: 0.0644642       total: 1.24s    remaining: 9.83s
112:    learn: 0.0643291       total: 1.25s    remaining: 9.81s
113:    learn: 0.0642391       total: 1.26s    remaining: 9.79s
114:    learn: 0.0641321       total: 1.27s    remaining: 9.77s
115:    learn: 0.0640467       total: 1.28s    remaining: 9.74s
116:    learn: 0.0639810       total: 1.29s    remaining: 9.72s
117:    learn: 0.0638739       total: 1.3s     remaining: 9.71s
118:    learn: 0.0637463       total: 1.31s    remaining: 9.69s
119:    learn: 0.0636425       total: 1.32s    remaining: 9.66s
120:    learn: 0.0635513       total: 1.33s    remaining: 9.64s
```

```
121:    learn: 0.0634697    total: 1.34s    remaining: 9.62s
122:    learn: 0.0634138    total: 1.34s    remaining: 9.59s
123:    learn: 0.0633815    total: 1.35s    remaining: 9.57s
124:    learn: 0.0632858    total: 1.36s    remaining: 9.55s
125:    learn: 0.0631813    total: 1.37s    remaining: 9.53s
126:    learn: 0.0630655    total: 1.38s    remaining: 9.51s
127:    learn: 0.0629783    total: 1.39s    remaining: 9.49s
128:    learn: 0.0629210    total: 1.4s     remaining: 9.47s
129:    learn: 0.0628231    total: 1.41s    remaining: 9.45s
130:    learn: 0.0627454    total: 1.42s    remaining: 9.42s
131:    learn: 0.0626356    total: 1.43s    remaining: 9.41s
132:    learn: 0.0625288    total: 1.44s    remaining: 9.4s
133:    learn: 0.0624639    total: 1.45s    remaining: 9.38s
134:    learn: 0.0624212    total: 1.46s    remaining: 9.38s
135:    learn: 0.0623792    total: 1.47s    remaining: 9.36s
136:    learn: 0.0623147    total: 1.49s    remaining: 9.36s
137:    learn: 0.0621999    total: 1.5s     remaining: 9.37s
138:    learn: 0.0621319    total: 1.51s    remaining: 9.35s
139:    learn: 0.0620635    total: 1.52s    remaining: 9.34s
140:    learn: 0.0620176    total: 1.53s    remaining: 9.32s
141:    learn: 0.0619435    total: 1.54s    remaining: 9.31s
142:    learn: 0.0618405    total: 1.55s    remaining: 9.29s
143:    learn: 0.0617437    total: 1.56s    remaining: 9.27s
144:    learn: 0.0616501    total: 1.57s    remaining: 9.26s
145:    learn: 0.0615787    total: 1.58s    remaining: 9.24s
146:    learn: 0.0614925    total: 1.59s    remaining: 9.22s
147:    learn: 0.0613719    total: 1.6s     remaining: 9.21s
148:    learn: 0.0612863    total: 1.61s    remaining: 9.19s
149:    learn: 0.0612090    total: 1.62s    remaining: 9.17s
150:    learn: 0.0611375    total: 1.63s    remaining: 9.15s
151:    learn: 0.0610869    total: 1.64s    remaining: 9.13s
152:    learn: 0.0610468    total: 1.65s    remaining: 9.14s
153:    learn: 0.0609677    total: 1.66s    remaining: 9.12s
154:    learn: 0.0608472    total: 1.67s    remaining: 9.1s
155:    learn: 0.0607711    total: 1.68s    remaining: 9.09s
156:    learn: 0.0607071    total: 1.69s    remaining: 9.07s
157:    learn: 0.0606509    total: 1.7s     remaining: 9.05s
158:    learn: 0.0605775    total: 1.71s    remaining: 9.03s
159:    learn: 0.0605095    total: 1.72s    remaining: 9.01s
160:    learn: 0.0604524    total: 1.73s    remaining: 8.99s
161:    learn: 0.0603600    total: 1.74s    remaining: 8.97s
162:    learn: 0.0602416    total: 1.74s    remaining: 8.96s
163:    learn: 0.0601565    total: 1.76s    remaining: 8.97s
164:    learn: 0.0600737    total: 1.77s    remaining: 8.96s
165:    learn: 0.0599757    total: 1.78s    remaining: 8.96s
166:    learn: 0.0598774    total: 1.8s     remaining: 8.98s
167:    learn: 0.0598090    total: 1.81s    remaining: 8.97s
168:    learn: 0.0597292    total: 1.82s    remaining: 8.95s
169:    learn: 0.0597048    total: 1.83s    remaining: 8.94s
170:    learn: 0.0596417    total: 1.84s    remaining: 8.92s
171:    learn: 0.0595230    total: 1.85s    remaining: 8.9s
172:    learn: 0.0594493    total: 1.86s    remaining: 8.9s
173:    learn: 0.0593647    total: 1.87s    remaining: 8.89s
174:    learn: 0.0592992    total: 1.88s    remaining: 8.87s
175:    learn: 0.0592184    total: 1.89s    remaining: 8.86s
176:    learn: 0.0591575    total: 1.9s     remaining: 8.84s
177:    learn: 0.0590396    total: 1.91s    remaining: 8.82s
178:    learn: 0.0590012    total: 1.92s    remaining: 8.8s
179:    learn: 0.0589431    total: 1.93s    remaining: 8.79s
180:    learn: 0.0588748    total: 1.94s    remaining: 8.77s
181:    learn: 0.0588191    total: 1.95s    remaining: 8.75s
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182:    learn: 0.0587697       total: 1.96s     remaining: 8.74s
183:    learn: 0.0587017       total: 1.97s     remaining: 8.72s
184:    learn: 0.0586149       total: 1.98s     remaining: 8.71s
185:    learn: 0.0585651       total: 1.98s     remaining: 8.69s
186:    learn: 0.0584982       total: 1.99s     remaining: 8.67s
187:    learn: 0.0584506       total: 2s        remaining: 8.65s
188:    learn: 0.0583928       total: 2.01s     remaining: 8.64s
189:    learn: 0.0583153       total: 2.02s     remaining: 8.62s
190:    learn: 0.0582791       total: 2.03s     remaining: 8.61s
191:    learn: 0.0582036       total: 2.04s     remaining: 8.59s
192:    learn: 0.0581398       total: 2.05s     remaining: 8.58s
193:    learn: 0.0580931       total: 2.07s     remaining: 8.59s
194:    learn: 0.0580537       total: 2.08s     remaining: 8.59s
195:    learn: 0.0579962       total: 2.1s      remaining: 8.59s
196:    learn: 0.0579248       total: 2.11s     remaining: 8.59s
197:    learn: 0.0578413       total: 2.12s     remaining: 8.57s
198:    learn: 0.0577983       total: 2.13s     remaining: 8.56s
199:    learn: 0.0577662       total: 2.14s     remaining: 8.54s
200:    learn: 0.0577006       total: 2.15s     remaining: 8.53s
201:    learn: 0.0576344       total: 2.15s     remaining: 8.51s
202:    learn: 0.0574890       total: 2.16s     remaining: 8.49s
203:    learn: 0.0574331       total: 2.17s     remaining: 8.48s
204:    learn: 0.0573965       total: 2.18s     remaining: 8.46s
205:    learn: 0.0573401       total: 2.19s     remaining: 8.45s
206:    learn: 0.0572865       total: 2.2s      remaining: 8.44s
207:    learn: 0.0572123       total: 2.21s     remaining: 8.43s
208:    learn: 0.0571316       total: 2.22s     remaining: 8.41s
209:    learn: 0.0571002       total: 2.23s     remaining: 8.4s
210:    learn: 0.0570155       total: 2.24s     remaining: 8.38s
211:    learn: 0.0569335       total: 2.25s     remaining: 8.37s
212:    learn: 0.0568750       total: 2.26s     remaining: 8.35s
213:    learn: 0.0568209       total: 2.27s     remaining: 8.35s
214:    learn: 0.0567788       total: 2.28s     remaining: 8.33s
215:    learn: 0.0567422       total: 2.29s     remaining: 8.32s
216:    learn: 0.0566924       total: 2.3s      remaining: 8.3s
217:    learn: 0.0566677       total: 2.31s     remaining: 8.29s
218:    learn: 0.0566126       total: 2.32s     remaining: 8.28s
219:    learn: 0.0565245       total: 2.33s     remaining: 8.26s
220:    learn: 0.0564503       total: 2.34s     remaining: 8.26s
221:    learn: 0.0564027       total: 2.36s     remaining: 8.27s
222:    learn: 0.0563400       total: 2.37s     remaining: 8.25s
223:    learn: 0.0562759       total: 2.38s     remaining: 8.24s
224:    learn: 0.0561628       total: 2.39s     remaining: 8.23s
225:    learn: 0.0561138       total: 2.4s      remaining: 8.21s
226:    learn: 0.0560414       total: 2.41s     remaining: 8.2s
227:    learn: 0.0559774       total: 2.42s     remaining: 8.19s
228:    learn: 0.0559042       total: 2.43s     remaining: 8.17s
229:    learn: 0.0558038       total: 2.44s     remaining: 8.17s
230:    learn: 0.0557489       total: 2.45s     remaining: 8.15s
231:    learn: 0.0556579       total: 2.46s     remaining: 8.14s
232:    learn: 0.0555848       total: 2.47s     remaining: 8.13s
233:    learn: 0.0555132       total: 2.48s     remaining: 8.12s
234:    learn: 0.0554620       total: 2.49s     remaining: 8.11s
235:    learn: 0.0553805       total: 2.5s      remaining: 8.1s
236:    learn: 0.0553218       total: 2.51s     remaining: 8.08s
237:    learn: 0.0552413       total: 2.52s     remaining: 8.06s
238:    learn: 0.0551815       total: 2.53s     remaining: 8.05s
239:    learn: 0.0551285       total: 2.54s     remaining: 8.04s
240:    learn: 0.0550769       total: 2.55s     remaining: 8.02s
241:    learn: 0.0550375       total: 2.56s     remaining: 8.01s
242:    learn: 0.0549879       total: 2.56s     remaining: 7.99s
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243:    learn: 0.0549289    total: 2.58s    remaining: 7.98s
244:    learn: 0.0548667    total: 2.58s    remaining: 7.96s
245:    learn: 0.0547957    total: 2.59s    remaining: 7.95s
246:    learn: 0.0547550    total: 2.6s     remaining: 7.94s
247:    learn: 0.0547195    total: 2.61s    remaining: 7.92s
248:    learn: 0.0546618    total: 2.62s    remaining: 7.91s
249:    learn: 0.0545892    total: 2.63s    remaining: 7.9s
250:    learn: 0.0545383    total: 2.64s    remaining: 7.88s
251:    learn: 0.0544980    total: 2.65s    remaining: 7.87s
252:    learn: 0.0544452    total: 2.66s    remaining: 7.86s
253:    learn: 0.0544019    total: 2.67s    remaining: 7.84s
254:    learn: 0.0543697    total: 2.68s    remaining: 7.83s
255:    learn: 0.0542957    total: 2.69s    remaining: 7.82s
256:    learn: 0.0542681    total: 2.7s     remaining: 7.81s
257:    learn: 0.0542166    total: 2.71s    remaining: 7.79s
258:    learn: 0.0541624    total: 2.72s    remaining: 7.78s
259:    learn: 0.0540806    total: 2.73s    remaining: 7.76s
260:    learn: 0.0540259    total: 2.74s    remaining: 7.76s
261:    learn: 0.0539593    total: 2.75s    remaining: 7.75s
262:    learn: 0.0538859    total: 2.76s    remaining: 7.74s
263:    learn: 0.0538409    total: 2.77s    remaining: 7.73s
264:    learn: 0.0538043    total: 2.78s    remaining: 7.71s
265:    learn: 0.0537686    total: 2.79s    remaining: 7.7s
266:    learn: 0.0537351    total: 2.8s     remaining: 7.68s
267:    learn: 0.0537085    total: 2.81s    remaining: 7.67s
268:    learn: 0.0535994    total: 2.82s    remaining: 7.66s
269:    learn: 0.0535478    total: 2.83s    remaining: 7.64s
270:    learn: 0.0535053    total: 2.84s    remaining: 7.63s
271:    learn: 0.0534566    total: 2.85s    remaining: 7.62s
272:    learn: 0.0534085    total: 2.85s    remaining: 7.6s
273:    learn: 0.0533704    total: 2.86s    remaining: 7.59s
274:    learn: 0.0533148    total: 2.87s    remaining: 7.58s
275:    learn: 0.0532497    total: 2.88s    remaining: 7.56s
276:    learn: 0.0531711    total: 2.9s     remaining: 7.56s
277:    learn: 0.0531398    total: 2.9s     remaining: 7.55s
278:    learn: 0.0530959    total: 2.91s    remaining: 7.53s
279:    learn: 0.0530590    total: 2.92s    remaining: 7.52s
280:    learn: 0.0530283    total: 2.94s    remaining: 7.51s
281:    learn: 0.0529663    total: 2.94s    remaining: 7.5s
282:    learn: 0.0529415    total: 2.95s    remaining: 7.49s
283:    learn: 0.0528893    total: 2.96s    remaining: 7.47s
284:    learn: 0.0528374    total: 2.97s    remaining: 7.46s
285:    learn: 0.0527902    total: 2.98s    remaining: 7.45s
286:    learn: 0.0527186    total: 2.99s    remaining: 7.44s
287:    learn: 0.0526566    total: 3s       remaining: 7.42s
288:    learn: 0.0526044    total: 3.02s    remaining: 7.42s
289:    learn: 0.0525635    total: 3.02s    remaining: 7.41s
290:    learn: 0.0525241    total: 3.04s    remaining: 7.4s
291:    learn: 0.0524968    total: 3.05s    remaining: 7.39s
292:    learn: 0.0524646    total: 3.06s    remaining: 7.37s
293:    learn: 0.0523916    total: 3.06s    remaining: 7.36s
294:    learn: 0.0523176    total: 3.08s    remaining: 7.36s
295:    learn: 0.0522541    total: 3.09s    remaining: 7.35s
296:    learn: 0.0522267    total: 3.1s     remaining: 7.35s
297:    learn: 0.0522080    total: 3.11s    remaining: 7.34s
298:    learn: 0.0521435    total: 3.12s    remaining: 7.33s
299:    learn: 0.0521167    total: 3.13s    remaining: 7.31s
300:    learn: 0.0520657    total: 3.14s    remaining: 7.3s
301:    learn: 0.0520229    total: 3.15s    remaining: 7.29s
302:    learn: 0.0519741    total: 3.16s    remaining: 7.28s
303:    learn: 0.0519264    total: 3.17s    remaining: 7.26s
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304:     learn: 0.0518555       total: 3.18s     remaining: 7.25s
305:     learn: 0.0518352       total: 3.19s     remaining: 7.24s
306:     learn: 0.0517798       total: 3.2s      remaining: 7.22s
307:     learn: 0.0517155       total: 3.21s     remaining: 7.21s
308:     learn: 0.0516636       total: 3.22s     remaining: 7.2s
309:     learn: 0.0515413       total: 3.23s     remaining: 7.19s
310:     learn: 0.0514867       total: 3.24s     remaining: 7.17s
311:     learn: 0.0514464       total: 3.25s     remaining: 7.16s
312:     learn: 0.0513974       total: 3.26s     remaining: 7.15s
313:     learn: 0.0513688       total: 3.27s     remaining: 7.14s
314:     learn: 0.0513186       total: 3.28s     remaining: 7.13s
315:     learn: 0.0512734       total: 3.29s     remaining: 7.12s
316:     learn: 0.0512336       total: 3.3s      remaining: 7.11s
317:     learn: 0.0512015       total: 3.32s     remaining: 7.12s
318:     learn: 0.0511821       total: 3.33s     remaining: 7.1s
319:     learn: 0.0511012       total: 3.34s     remaining: 7.09s
320:     learn: 0.0510441       total: 3.35s     remaining: 7.08s
321:     learn: 0.0510222       total: 3.36s     remaining: 7.07s
322:     learn: 0.0509727       total: 3.37s     remaining: 7.06s
323:     learn: 0.0509448       total: 3.38s     remaining: 7.05s
324:     learn: 0.0508937       total: 3.39s     remaining: 7.04s
325:     learn: 0.0508539       total: 3.4s      remaining: 7.03s
326:     learn: 0.0508184       total: 3.41s     remaining: 7.02s
327:     learn: 0.0507719       total: 3.42s     remaining: 7s
328:     learn: 0.0506982       total: 3.43s     remaining: 6.99s
329:     learn: 0.0506580       total: 3.44s     remaining: 6.98s
330:     learn: 0.0505939       total: 3.45s     remaining: 6.97s
331:     learn: 0.0505615       total: 3.46s     remaining: 6.96s
332:     learn: 0.0505037       total: 3.47s     remaining: 6.95s
333:     learn: 0.0504644       total: 3.48s     remaining: 6.93s
334:     learn: 0.0504239       total: 3.49s     remaining: 6.92s
335:     learn: 0.0503776       total: 3.5s      remaining: 6.91s
336:     learn: 0.0503321       total: 3.51s     remaining: 6.9s
337:     learn: 0.0502975       total: 3.52s     remaining: 6.89s
338:     learn: 0.0502435       total: 3.53s     remaining: 6.89s
339:     learn: 0.0502010       total: 3.55s     remaining: 6.89s
340:     learn: 0.0501572       total: 3.56s     remaining: 6.88s
341:     learn: 0.0501261       total: 3.57s     remaining: 6.87s
342:     learn: 0.0500680       total: 3.58s     remaining: 6.85s
343:     learn: 0.0500403       total: 3.59s     remaining: 6.84s
344:     learn: 0.0500084       total: 3.6s      remaining: 6.83s
345:     learn: 0.0499835       total: 3.61s     remaining: 6.82s
346:     learn: 0.0499484       total: 3.62s     remaining: 6.81s
347:     learn: 0.0498737       total: 3.63s     remaining: 6.8s
348:     learn: 0.0498447       total: 3.64s     remaining: 6.79s
349:     learn: 0.0497929       total: 3.65s     remaining: 6.78s
350:     learn: 0.0497730       total: 3.66s     remaining: 6.77s
351:     learn: 0.0497612       total: 3.67s     remaining: 6.76s
352:     learn: 0.0497336       total: 3.68s     remaining: 6.75s
353:     learn: 0.0496942       total: 3.69s     remaining: 6.74s
354:     learn: 0.0496459       total: 3.7s      remaining: 6.72s
355:     learn: 0.0495931       total: 3.71s     remaining: 6.71s
356:     learn: 0.0495296       total: 3.72s     remaining: 6.71s
357:     learn: 0.0495076       total: 3.73s     remaining: 6.7s
358:     learn: 0.0494786       total: 3.74s     remaining: 6.68s
359:     learn: 0.0494582       total: 3.75s     remaining: 6.67s
360:     learn: 0.0494178       total: 3.76s     remaining: 6.66s
361:     learn: 0.0493803       total: 3.77s     remaining: 6.65s
362:     learn: 0.0493510       total: 3.78s     remaining: 6.64s
363:     learn: 0.0492889       total: 3.79s     remaining: 6.63s
364:     learn: 0.0492731       total: 3.8s      remaining: 6.62s
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365:    learn: 0.0492361      total: 3.81s     remaining: 6.6s
366:    learn: 0.0492117      total: 3.82s     remaining: 6.59s
367:    learn: 0.0491694      total: 3.83s     remaining: 6.58s
368:    learn: 0.0491517      total: 3.84s     remaining: 6.57s
369:    learn: 0.0491246      total: 3.85s     remaining: 6.55s
370:    learn: 0.0490991      total: 3.86s     remaining: 6.54s
371:    learn: 0.0490656      total: 3.87s     remaining: 6.53s
372:    learn: 0.0490170      total: 3.88s     remaining: 6.52s
373:    learn: 0.0490036      total: 3.89s     remaining: 6.51s
374:    learn: 0.0489760      total: 3.9s      remaining: 6.5s
375:    learn: 0.0489419      total: 3.91s     remaining: 6.49s
376:    learn: 0.0489203      total: 3.92s     remaining: 6.48s
377:    learn: 0.0488714      total: 3.93s     remaining: 6.47s
378:    learn: 0.0488235      total: 3.94s     remaining: 6.46s
379:    learn: 0.0487990      total: 3.95s     remaining: 6.45s
380:    learn: 0.0487750      total: 3.96s     remaining: 6.44s
381:    learn: 0.0486893      total: 3.97s     remaining: 6.42s
382:    learn: 0.0486492      total: 3.98s     remaining: 6.41s
383:    learn: 0.0486300      total: 3.99s     remaining: 6.4s
384:    learn: 0.0485556      total: 4s        remaining: 6.39s
385:    learn: 0.0485139      total: 4.01s     remaining: 6.38s
386:    learn: 0.0485023      total: 4.02s     remaining: 6.37s
387:    learn: 0.0484675      total: 4.03s     remaining: 6.36s
388:    learn: 0.0484497      total: 4.04s     remaining: 6.34s
389:    learn: 0.0484025      total: 4.05s     remaining: 6.33s
390:    learn: 0.0483769      total: 4.06s     remaining: 6.32s
391:    learn: 0.0483509      total: 4.07s     remaining: 6.32s
392:    learn: 0.0482870      total: 4.09s     remaining: 6.31s
393:    learn: 0.0482572      total: 4.1s      remaining: 6.3s
394:    learn: 0.0482328      total: 4.11s     remaining: 6.29s
395:    learn: 0.0481951      total: 4.12s     remaining: 6.28s
396:    learn: 0.0481768      total: 4.14s     remaining: 6.28s
397:    learn: 0.0481639      total: 4.14s     remaining: 6.27s
398:    learn: 0.0481334      total: 4.16s     remaining: 6.26s
399:    learn: 0.0481172      total: 4.17s     remaining: 6.25s
400:    learn: 0.0480701      total: 4.18s     remaining: 6.24s
401:    learn: 0.0479996      total: 4.19s     remaining: 6.23s
402:    learn: 0.0479818      total: 4.2s      remaining: 6.22s
403:    learn: 0.0479549      total: 4.21s     remaining: 6.2s
404:    learn: 0.0479102      total: 4.21s     remaining: 6.19s
405:    learn: 0.0478902      total: 4.22s     remaining: 6.18s
406:    learn: 0.0478269      total: 4.23s     remaining: 6.17s
407:    learn: 0.0478167      total: 4.24s     remaining: 6.16s
408:    learn: 0.0478022      total: 4.25s     remaining: 6.14s
409:    learn: 0.0477702      total: 4.26s     remaining: 6.13s
410:    learn: 0.0477580      total: 4.27s     remaining: 6.12s
411:    learn: 0.0477131      total: 4.28s     remaining: 6.11s
412:    learn: 0.0476976      total: 4.29s     remaining: 6.1s
413:    learn: 0.0476543      total: 4.3s      remaining: 6.09s
414:    learn: 0.0476077      total: 4.31s     remaining: 6.08s
415:    learn: 0.0475902      total: 4.32s     remaining: 6.07s
416:    learn: 0.0475753      total: 4.33s     remaining: 6.05s
417:    learn: 0.0475357      total: 4.34s     remaining: 6.05s
418:    learn: 0.0475254      total: 4.35s     remaining: 6.04s
419:    learn: 0.0474783      total: 4.36s     remaining: 6.02s
420:    learn: 0.0474359      total: 4.37s     remaining: 6.01s
421:    learn: 0.0474159      total: 4.38s     remaining: 6s
422:    learn: 0.0473640      total: 4.39s     remaining: 5.99s
423:    learn: 0.0473257      total: 4.4s      remaining: 5.98s
424:    learn: 0.0473071      total: 4.41s     remaining: 5.97s
425:    learn: 0.0472927      total: 4.42s     remaining: 5.95s
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426:    learn: 0.0472768      total: 4.43s    remaining: 5.94s
427:    learn: 0.0472329      total: 4.44s    remaining: 5.93s
428:    learn: 0.0472049      total: 4.45s    remaining: 5.92s
429:    learn: 0.0471629      total: 4.46s    remaining: 5.91s
430:    learn: 0.0471205      total: 4.47s    remaining: 5.9s
431:    learn: 0.0470996      total: 4.47s    remaining: 5.88s
432:    learn: 0.0470727      total: 4.48s    remaining: 5.87s
433:    learn: 0.0470451      total: 4.49s    remaining: 5.86s
434:    learn: 0.0470000      total: 4.5s     remaining: 5.85s
435:    learn: 0.0469769      total: 4.51s    remaining: 5.84s
436:    learn: 0.0469268      total: 4.52s    remaining: 5.83s
437:    learn: 0.0469125      total: 4.53s    remaining: 5.81s
438:    learn: 0.0468862      total: 4.54s    remaining: 5.8s
439:    learn: 0.0468674      total: 4.55s    remaining: 5.8s
440:    learn: 0.0468340      total: 4.56s    remaining: 5.79s
441:    learn: 0.0467587      total: 4.57s    remaining: 5.77s
442:    learn: 0.0467351      total: 4.58s    remaining: 5.76s
443:    learn: 0.0466631      total: 4.59s    remaining: 5.75s
444:    learn: 0.0466529      total: 4.6s     remaining: 5.74s
445:    learn: 0.0466308      total: 4.61s    remaining: 5.73s
446:    learn: 0.0466210      total: 4.62s    remaining: 5.71s
447:    learn: 0.0465495      total: 4.63s    remaining: 5.7s
448:    learn: 0.0465012      total: 4.64s    remaining: 5.69s
449:    learn: 0.0464855      total: 4.65s    remaining: 5.68s
450:    learn: 0.0464466      total: 4.66s    remaining: 5.67s
451:    learn: 0.0464168      total: 4.67s    remaining: 5.66s
452:    learn: 0.0464039      total: 4.67s    remaining: 5.64s
453:    learn: 0.0463803      total: 4.68s    remaining: 5.63s
454:    learn: 0.0463428      total: 4.69s    remaining: 5.62s
455:    learn: 0.0463292      total: 4.7s     remaining: 5.61s
456:    learn: 0.0462700      total: 4.72s    remaining: 5.61s
457:    learn: 0.0462608      total: 4.73s    remaining: 5.6s
458:    learn: 0.0462090      total: 4.74s    remaining: 5.58s
459:    learn: 0.0461543      total: 4.75s    remaining: 5.57s
460:    learn: 0.0461301      total: 4.76s    remaining: 5.57s
461:    learn: 0.0460811      total: 4.77s    remaining: 5.55s
462:    learn: 0.0460184      total: 4.78s    remaining: 5.54s
463:    learn: 0.0459436      total: 4.79s    remaining: 5.53s
464:    learn: 0.0459017      total: 4.8s     remaining: 5.52s
465:    learn: 0.0458912      total: 4.81s    remaining: 5.51s
466:    learn: 0.0458404      total: 4.82s    remaining: 5.5s
467:    learn: 0.0458039      total: 4.83s    remaining: 5.49s
468:    learn: 0.0457589      total: 4.84s    remaining: 5.47s
469:    learn: 0.0457018      total: 4.84s    remaining: 5.46s
470:    learn: 0.0456789      total: 4.85s    remaining: 5.45s
471:    learn: 0.0456525      total: 4.86s    remaining: 5.44s
472:    learn: 0.0456170      total: 4.87s    remaining: 5.43s
473:    learn: 0.0455265      total: 4.88s    remaining: 5.42s
474:    learn: 0.0455171      total: 4.89s    remaining: 5.41s
475:    learn: 0.0454897      total: 4.9s     remaining: 5.4s
476:    learn: 0.0454444      total: 4.91s    remaining: 5.38s
477:    learn: 0.0453613      total: 4.92s    remaining: 5.37s
478:    learn: 0.0453534      total: 4.93s    remaining: 5.36s
479:    learn: 0.0453316      total: 4.94s    remaining: 5.35s
480:    learn: 0.0453111      total: 4.95s    remaining: 5.34s
481:    learn: 0.0452450      total: 4.96s    remaining: 5.33s
482:    learn: 0.0451962      total: 4.97s    remaining: 5.32s
483:    learn: 0.0451535      total: 4.98s    remaining: 5.31s
484:    learn: 0.0451017      total: 4.99s    remaining: 5.3s
485:    learn: 0.0450807      total: 5s       remaining: 5.29s
486:    learn: 0.0449881      total: 5.01s    remaining: 5.28s
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487:    learn: 0.0449357        total: 5.02s    remaining: 5.27s
488:    learn: 0.0449156        total: 5.03s    remaining: 5.26s
489:    learn: 0.0448749        total: 5.04s    remaining: 5.25s
490:    learn: 0.0448101        total: 5.05s    remaining: 5.24s
491:    learn: 0.0447867        total: 5.06s    remaining: 5.22s
492:    learn: 0.0447403        total: 5.07s    remaining: 5.22s
493:    learn: 0.0446931        total: 5.09s    remaining: 5.21s
494:    learn: 0.0446489        total: 5.1s     remaining: 5.2s
495:    learn: 0.0445934        total: 5.11s    remaining: 5.19s
496:    learn: 0.0445670        total: 5.12s    remaining: 5.18s
497:    learn: 0.0445376        total: 5.12s    remaining: 5.17s
498:    learn: 0.0444904        total: 5.13s    remaining: 5.15s
499:    learn: 0.0444288        total: 5.14s    remaining: 5.14s
500:    learn: 0.0443941        total: 5.15s    remaining: 5.13s
501:    learn: 0.0443717        total: 5.16s    remaining: 5.12s
502:    learn: 0.0443217        total: 5.17s    remaining: 5.11s
503:    learn: 0.0443132        total: 5.18s    remaining: 5.1s
504:    learn: 0.0443044        total: 5.19s    remaining: 5.09s
505:    learn: 0.0442827        total: 5.2s     remaining: 5.08s
506:    learn: 0.0442630        total: 5.21s    remaining: 5.07s
507:    learn: 0.0442214        total: 5.22s    remaining: 5.06s
508:    learn: 0.0441889        total: 5.23s    remaining: 5.04s
509:    learn: 0.0441471        total: 5.24s    remaining: 5.03s
510:    learn: 0.0441280        total: 5.25s    remaining: 5.02s
511:    learn: 0.0441071        total: 5.26s    remaining: 5.01s
512:    learn: 0.0440576        total: 5.27s    remaining: 5s
513:    learn: 0.0440378        total: 5.28s    remaining: 4.99s
514:    learn: 0.0440044        total: 5.29s    remaining: 4.98s
515:    learn: 0.0439523        total: 5.29s    remaining: 4.97s
516:    learn: 0.0439103        total: 5.3s     remaining: 4.96s
517:    learn: 0.0438849        total: 5.31s    remaining: 4.95s
518:    learn: 0.0438546        total: 5.32s    remaining: 4.93s
519:    learn: 0.0437840        total: 5.33s    remaining: 4.92s
520:    learn: 0.0437353        total: 5.34s    remaining: 4.91s
521:    learn: 0.0436782        total: 5.35s    remaining: 4.9s
522:    learn: 0.0436540        total: 5.36s    remaining: 4.89s
523:    learn: 0.0436383        total: 5.37s    remaining: 4.88s
524:    learn: 0.0435980        total: 5.39s    remaining: 4.87s
525:    learn: 0.0435797        total: 5.4s     remaining: 4.86s
526:    learn: 0.0435478        total: 5.41s    remaining: 4.85s
527:    learn: 0.0435246        total: 5.42s    remaining: 4.84s
528:    learn: 0.0434973        total: 5.42s    remaining: 4.83s
529:    learn: 0.0434760        total: 5.43s    remaining: 4.82s
530:    learn: 0.0434393        total: 5.44s    remaining: 4.81s
531:    learn: 0.0434217        total: 5.45s    remaining: 4.8s
532:    learn: 0.0433905        total: 5.46s    remaining: 4.79s
533:    learn: 0.0433432        total: 5.47s    remaining: 4.77s
534:    learn: 0.0433112        total: 5.48s    remaining: 4.76s
535:    learn: 0.0432631        total: 5.49s    remaining: 4.75s
536:    learn: 0.0432373        total: 5.5s     remaining: 4.74s
537:    learn: 0.0431839        total: 5.51s    remaining: 4.73s
538:    learn: 0.0431333        total: 5.52s    remaining: 4.72s
539:    learn: 0.0431253        total: 5.53s    remaining: 4.71s
540:    learn: 0.0430951        total: 5.54s    remaining: 4.7s
541:    learn: 0.0430603        total: 5.55s    remaining: 4.69s
542:    learn: 0.0430500        total: 5.55s    remaining: 4.67s
543:    learn: 0.0430167        total: 5.56s    remaining: 4.66s
544:    learn: 0.0429911        total: 5.57s    remaining: 4.65s
545:    learn: 0.0429833        total: 5.58s    remaining: 4.64s
546:    learn: 0.0429316        total: 5.59s    remaining: 4.63s
547:    learn: 0.0429141        total: 5.61s    remaining: 4.62s
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548:    learn: 0.0428861        total: 5.61s    remaining: 4.61s
549:    learn: 0.0428648        total: 5.62s    remaining: 4.6s
550:    learn: 0.0428274        total: 5.63s    remaining: 4.59s
551:    learn: 0.0427956        total: 5.64s    remaining: 4.58s
552:    learn: 0.0427594        total: 5.65s    remaining: 4.57s
553:    learn: 0.0427518        total: 5.66s    remaining: 4.56s
554:    learn: 0.0427473        total: 5.67s    remaining: 4.54s
555:    learn: 0.0427039        total: 5.68s    remaining: 4.54s
556:    learn: 0.0426560        total: 5.69s    remaining: 4.52s
557:    learn: 0.0426336        total: 5.7s     remaining: 4.51s
558:    learn: 0.0426262        total: 5.71s    remaining: 4.5s
559:    learn: 0.0426062        total: 5.72s    remaining: 4.49s
560:    learn: 0.0425773        total: 5.73s    remaining: 4.48s
561:    learn: 0.0425022        total: 5.74s    remaining: 4.47s
562:    learn: 0.0424500        total: 5.75s    remaining: 4.46s
563:    learn: 0.0424206        total: 5.75s    remaining: 4.45s
564:    learn: 0.0423940        total: 5.76s    remaining: 4.44s
565:    learn: 0.0423592        total: 5.77s    remaining: 4.43s
566:    learn: 0.0423209        total: 5.78s    remaining: 4.42s
567:    learn: 0.0422779        total: 5.79s    remaining: 4.41s
568:    learn: 0.0422477        total: 5.81s    remaining: 4.4s
569:    learn: 0.0422357        total: 5.82s    remaining: 4.39s
570:    learn: 0.0421990        total: 5.83s    remaining: 4.38s
571:    learn: 0.0421751        total: 5.84s    remaining: 4.37s
572:    learn: 0.0421324        total: 5.85s    remaining: 4.36s
573:    learn: 0.0420954        total: 5.86s    remaining: 4.35s
574:    learn: 0.0420729        total: 5.87s    remaining: 4.33s
575:    learn: 0.0420468        total: 5.87s    remaining: 4.32s
576:    learn: 0.0420279        total: 5.88s    remaining: 4.31s
577:    learn: 0.0419641        total: 5.9s     remaining: 4.31s
578:    learn: 0.0419393        total: 5.91s    remaining: 4.29s
579:    learn: 0.0419050        total: 5.92s    remaining: 4.28s
580:    learn: 0.0418860        total: 5.92s    remaining: 4.27s
581:    learn: 0.0418553        total: 5.93s    remaining: 4.26s
582:    learn: 0.0418109        total: 5.94s    remaining: 4.25s
583:    learn: 0.0417302        total: 5.95s    remaining: 4.24s
584:    learn: 0.0416996        total: 5.96s    remaining: 4.23s
585:    learn: 0.0416671        total: 5.97s    remaining: 4.22s
586:    learn: 0.0416494        total: 5.98s    remaining: 4.21s
587:    learn: 0.0415898        total: 5.99s    remaining: 4.2s
588:    learn: 0.0415783        total: 6s       remaining: 4.19s
589:    learn: 0.0415686        total: 6.01s    remaining: 4.18s
590:    learn: 0.0415362        total: 6.02s    remaining: 4.17s
591:    learn: 0.0415239        total: 6.03s    remaining: 4.16s
592:    learn: 0.0414850        total: 6.04s    remaining: 4.15s
593:    learn: 0.0414573        total: 6.05s    remaining: 4.14s
594:    learn: 0.0414373        total: 6.06s    remaining: 4.13s
595:    learn: 0.0414169        total: 6.08s    remaining: 4.12s
596:    learn: 0.0414084        total: 6.09s    remaining: 4.11s
597:    learn: 0.0413864        total: 6.1s     remaining: 4.1s
598:    learn: 0.0413547        total: 6.11s    remaining: 4.09s
599:    learn: 0.0413485        total: 6.11s    remaining: 4.08s
600:    learn: 0.0412918        total: 6.12s    remaining: 4.07s
601:    learn: 0.0412267        total: 6.13s    remaining: 4.05s
602:    learn: 0.0411794        total: 6.14s    remaining: 4.04s
603:    learn: 0.0411577        total: 6.15s    remaining: 4.03s
604:    learn: 0.0411443        total: 6.16s    remaining: 4.02s
605:    learn: 0.0411383        total: 6.17s    remaining: 4.01s
606:    learn: 0.0411067        total: 6.18s    remaining: 4s
607:    learn: 0.0410928        total: 6.19s    remaining: 3.99s
608:    learn: 0.0410475        total: 6.2s     remaining: 3.98s
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609:    learn: 0.0410058         total: 6.21s     remaining: 3.97s
610:    learn: 0.0409233         total: 6.22s     remaining: 3.96s
611:    learn: 0.0409076         total: 6.23s     remaining: 3.95s
612:    learn: 0.0408685         total: 6.24s     remaining: 3.94s
613:    learn: 0.0408437         total: 6.25s     remaining: 3.93s
614:    learn: 0.0408053         total: 6.26s     remaining: 3.92s
615:    learn: 0.0407959         total: 6.27s     remaining: 3.91s
616:    learn: 0.0407901         total: 6.28s     remaining: 3.9s
617:    learn: 0.0407471         total: 6.29s     remaining: 3.89s
618:    learn: 0.0407227         total: 6.3s      remaining: 3.88s
619:    learn: 0.0406946         total: 6.31s     remaining: 3.87s
620:    learn: 0.0406579         total: 6.32s     remaining: 3.86s
621:    learn: 0.0406179         total: 6.33s     remaining: 3.85s
622:    learn: 0.0405814         total: 6.34s     remaining: 3.83s
623:    learn: 0.0405482         total: 6.35s     remaining: 3.82s
624:    learn: 0.0405062         total: 6.36s     remaining: 3.81s
625:    learn: 0.0404416         total: 6.37s     remaining: 3.8s
626:    learn: 0.0404052         total: 6.38s     remaining: 3.79s
627:    learn: 0.0403461         total: 6.38s     remaining: 3.78s
628:    learn: 0.0403141         total: 6.39s     remaining: 3.77s
629:    learn: 0.0402734         total: 6.4s      remaining: 3.76s
630:    learn: 0.0402251         total: 6.41s     remaining: 3.75s
631:    learn: 0.0401760         total: 6.42s     remaining: 3.74s
632:    learn: 0.0401718         total: 6.44s     remaining: 3.73s
633:    learn: 0.0401316         total: 6.45s     remaining: 3.72s
634:    learn: 0.0400921         total: 6.46s     remaining: 3.71s
635:    learn: 0.0400526         total: 6.47s     remaining: 3.7s
636:    learn: 0.0399855         total: 6.48s     remaining: 3.69s
637:    learn: 0.0399094         total: 6.49s     remaining: 3.68s
638:    learn: 0.0398811         total: 6.5s      remaining: 3.67s
639:    learn: 0.0398504         total: 6.51s     remaining: 3.66s
640:    learn: 0.0398227         total: 6.52s     remaining: 3.65s
641:    learn: 0.0398007         total: 6.53s     remaining: 3.64s
642:    learn: 0.0397663         total: 6.54s     remaining: 3.63s
643:    learn: 0.0397408         total: 6.55s     remaining: 3.62s
644:    learn: 0.0397114         total: 6.56s     remaining: 3.61s
645:    learn: 0.0396842         total: 6.57s     remaining: 3.6s
646:    learn: 0.0396712         total: 6.57s     remaining: 3.59s
647:    learn: 0.0396322         total: 6.58s     remaining: 3.58s
648:    learn: 0.0395498         total: 6.59s     remaining: 3.56s
649:    learn: 0.0395029         total: 6.6s      remaining: 3.56s
650:    learn: 0.0394803         total: 6.61s     remaining: 3.54s
651:    learn: 0.0394539         total: 6.62s     remaining: 3.53s
652:    learn: 0.0394029         total: 6.63s     remaining: 3.52s
653:    learn: 0.0393693         total: 6.64s     remaining: 3.51s
654:    learn: 0.0393138         total: 6.65s     remaining: 3.5s
655:    learn: 0.0392592         total: 6.66s     remaining: 3.49s
656:    learn: 0.0392232         total: 6.67s     remaining: 3.48s
657:    learn: 0.0391923         total: 6.68s     remaining: 3.47s
658:    learn: 0.0391869         total: 6.69s     remaining: 3.46s
659:    learn: 0.0391369         total: 6.7s      remaining: 3.45s
660:    learn: 0.0391136         total: 6.71s     remaining: 3.44s
661:    learn: 0.0390606         total: 6.72s     remaining: 3.43s
662:    learn: 0.0390506         total: 6.73s     remaining: 3.42s
663:    learn: 0.0390243         total: 6.74s     remaining: 3.41s
664:    learn: 0.0389909         total: 6.75s     remaining: 3.4s
665:    learn: 0.0389466         total: 6.76s     remaining: 3.39s
666:    learn: 0.0389110         total: 6.77s     remaining: 3.38s
667:    learn: 0.0388755         total: 6.78s     remaining: 3.37s
668:    learn: 0.0388384         total: 6.79s     remaining: 3.36s
669:    learn: 0.0388187         total: 6.8s      remaining: 3.35s
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670:    learn: 0.0387877        total: 6.8s     remaining: 3.34s
671:    learn: 0.0387580        total: 6.82s    remaining: 3.33s
672:    learn: 0.0387342        total: 6.82s    remaining: 3.31s
673:    learn: 0.0387101        total: 6.84s    remaining: 3.31s
674:    learn: 0.0386723        total: 6.85s    remaining: 3.3s
675:    learn: 0.0386397        total: 6.86s    remaining: 3.29s
676:    learn: 0.0386214        total: 6.87s    remaining: 3.28s
677:    learn: 0.0385615        total: 6.88s    remaining: 3.27s
678:    learn: 0.0385360        total: 6.88s    remaining: 3.25s
679:    learn: 0.0385146        total: 6.89s    remaining: 3.24s
680:    learn: 0.0384802        total: 6.9s     remaining: 3.23s
681:    learn: 0.0384266        total: 6.91s    remaining: 3.22s
682:    learn: 0.0383935        total: 6.92s    remaining: 3.21s
683:    learn: 0.0383558        total: 6.93s    remaining: 3.2s
684:    learn: 0.0383327        total: 6.94s    remaining: 3.19s
685:    learn: 0.0382824        total: 6.95s    remaining: 3.18s
686:    learn: 0.0382347        total: 6.96s    remaining: 3.17s
687:    learn: 0.0381881        total: 6.97s    remaining: 3.16s
688:    learn: 0.0381633        total: 6.98s    remaining: 3.15s
689:    learn: 0.0381580        total: 6.99s    remaining: 3.14s
690:    learn: 0.0381312        total: 7s       remaining: 3.13s
691:    learn: 0.0380908        total: 7.01s    remaining: 3.12s
692:    learn: 0.0380568        total: 7.02s    remaining: 3.11s
693:    learn: 0.0380411        total: 7.03s    remaining: 3.1s
694:    learn: 0.0380193        total: 7.04s    remaining: 3.09s
695:    learn: 0.0379988        total: 7.05s    remaining: 3.08s
696:    learn: 0.0379636        total: 7.06s    remaining: 3.07s
697:    learn: 0.0379448        total: 7.08s    remaining: 3.06s
698:    learn: 0.0379208        total: 7.09s    remaining: 3.05s
699:    learn: 0.0378528        total: 7.1s     remaining: 3.04s
700:    learn: 0.0378031        total: 7.11s    remaining: 3.03s
701:    learn: 0.0377577        total: 7.12s    remaining: 3.02s
702:    learn: 0.0377122        total: 7.13s    remaining: 3.01s
703:    learn: 0.0376815        total: 7.14s    remaining: 3s
704:    learn: 0.0376513        total: 7.15s    remaining: 2.99s
705:    learn: 0.0376199        total: 7.16s    remaining: 2.98s
706:    learn: 0.0375734        total: 7.17s    remaining: 2.97s
707:    learn: 0.0375324        total: 7.18s    remaining: 2.96s
708:    learn: 0.0375276        total: 7.19s    remaining: 2.95s
709:    learn: 0.0375039        total: 7.2s     remaining: 2.94s
710:    learn: 0.0374426        total: 7.21s    remaining: 2.93s
711:    learn: 0.0374183        total: 7.22s    remaining: 2.92s
712:    learn: 0.0373952        total: 7.24s    remaining: 2.91s
713:    learn: 0.0373803        total: 7.25s    remaining: 2.9s
714:    learn: 0.0373313        total: 7.26s    remaining: 2.89s
715:    learn: 0.0373174        total: 7.27s    remaining: 2.88s
716:    learn: 0.0372850        total: 7.28s    remaining: 2.87s
717:    learn: 0.0372676        total: 7.29s    remaining: 2.86s
718:    learn: 0.0372244        total: 7.3s     remaining: 2.85s
719:    learn: 0.0372023        total: 7.31s    remaining: 2.84s
720:    learn: 0.0371874        total: 7.32s    remaining: 2.83s
721:    learn: 0.0371538        total: 7.33s    remaining: 2.82s
722:    learn: 0.0371396        total: 7.34s    remaining: 2.81s
723:    learn: 0.0370849        total: 7.34s    remaining: 2.8s
724:    learn: 0.0370410        total: 7.36s    remaining: 2.79s
725:    learn: 0.0370168        total: 7.37s    remaining: 2.78s
726:    learn: 0.0369811        total: 7.38s    remaining: 2.77s
727:    learn: 0.0369591        total: 7.38s    remaining: 2.76s
728:    learn: 0.0369314        total: 7.39s    remaining: 2.75s
729:    learn: 0.0369083        total: 7.41s    remaining: 2.74s
730:    learn: 0.0368877        total: 7.41s    remaining: 2.73s
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731:     learn: 0.0368832          total: 7.42s     remaining: 2.72s
732:     learn: 0.0368632          total: 7.43s     remaining: 2.71s
733:     learn: 0.0368369          total: 7.44s     remaining: 2.7s
734:     learn: 0.0368037          total: 7.46s     remaining: 2.69s
735:     learn: 0.0367899          total: 7.47s     remaining: 2.68s
736:     learn: 0.0367617          total: 7.48s     remaining: 2.67s
737:     learn: 0.0367485          total: 7.49s     remaining: 2.66s
738:     learn: 0.0367263          total: 7.5s      remaining: 2.65s
739:     learn: 0.0367137          total: 7.51s     remaining: 2.64s
740:     learn: 0.0366714          total: 7.52s     remaining: 2.63s
741:     learn: 0.0366595          total: 7.53s     remaining: 2.62s
742:     learn: 0.0366530          total: 7.54s     remaining: 2.61s
743:     learn: 0.0366370          total: 7.54s     remaining: 2.6s
744:     learn: 0.0366087          total: 7.55s     remaining: 2.58s
745:     learn: 0.0365650          total: 7.56s     remaining: 2.58s
746:     learn: 0.0365337          total: 7.57s     remaining: 2.56s
747:     learn: 0.0365262          total: 7.58s     remaining: 2.55s
748:     learn: 0.0364916          total: 7.59s     remaining: 2.54s
749:     learn: 0.0364489          total: 7.6s      remaining: 2.53s
750:     learn: 0.0364191          total: 7.61s     remaining: 2.52s
751:     learn: 0.0364009          total: 7.62s     remaining: 2.51s
752:     learn: 0.0363884          total: 7.63s     remaining: 2.5s
753:     learn: 0.0363804          total: 7.64s     remaining: 2.49s
754:     learn: 0.0363714          total: 7.65s     remaining: 2.48s
755:     learn: 0.0363405          total: 7.67s     remaining: 2.47s
756:     learn: 0.0363177          total: 7.68s     remaining: 2.46s
757:     learn: 0.0363052          total: 7.69s     remaining: 2.45s
758:     learn: 0.0363010          total: 7.7s      remaining: 2.44s
759:     learn: 0.0362845          total: 7.71s     remaining: 2.43s
760:     learn: 0.0362681          total: 7.71s     remaining: 2.42s
761:     learn: 0.0362478          total: 7.72s     remaining: 2.41s
762:     learn: 0.0362392          total: 7.73s     remaining: 2.4s
763:     learn: 0.0362069          total: 7.74s     remaining: 2.39s
764:     learn: 0.0361804          total: 7.75s     remaining: 2.38s
765:     learn: 0.0361268          total: 7.76s     remaining: 2.37s
766:     learn: 0.0360758          total: 7.77s     remaining: 2.36s
767:     learn: 0.0360678          total: 7.78s     remaining: 2.35s
768:     learn: 0.0360238          total: 7.79s     remaining: 2.34s
769:     learn: 0.0359941          total: 7.8s      remaining: 2.33s
770:     learn: 0.0359755          total: 7.81s     remaining: 2.32s
771:     learn: 0.0359270          total: 7.82s     remaining: 2.31s
772:     learn: 0.0358993          total: 7.83s     remaining: 2.3s
773:     learn: 0.0358600          total: 7.84s     remaining: 2.29s
774:     learn: 0.0358560          total: 7.85s     remaining: 2.28s
775:     learn: 0.0358063          total: 7.86s     remaining: 2.27s
776:     learn: 0.0357718          total: 7.87s     remaining: 2.26s
777:     learn: 0.0357659          total: 7.88s     remaining: 2.25s
778:     learn: 0.0357433          total: 7.89s     remaining: 2.24s
779:     learn: 0.0357239          total: 7.9s      remaining: 2.23s
780:     learn: 0.0357071          total: 7.91s     remaining: 2.22s
781:     learn: 0.0356852          total: 7.92s     remaining: 2.21s
782:     learn: 0.0356548          total: 7.93s     remaining: 2.2s
783:     learn: 0.0356270          total: 7.94s     remaining: 2.19s
784:     learn: 0.0355902          total: 7.95s     remaining: 2.18s
785:     learn: 0.0355624          total: 7.96s     remaining: 2.17s
786:     learn: 0.0355531          total: 7.97s     remaining: 2.16s
787:     learn: 0.0355230          total: 7.98s     remaining: 2.15s
788:     learn: 0.0354941          total: 7.99s     remaining: 2.13s
789:     learn: 0.0354780          total: 8s        remaining: 2.13s
790:     learn: 0.0354431          total: 8.01s     remaining: 2.12s
791:     learn: 0.0354157          total: 8.01s     remaining: 2.1s
```

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792:    learn: 0.0353879    total: 8.02s    remaining: 2.09s
793:    learn: 0.0353636    total: 8.03s    remaining: 2.08s
794:    learn: 0.0353370    total: 8.05s    remaining: 2.07s
795:    learn: 0.0353157    total: 8.05s    remaining: 2.06s
796:    learn: 0.0353008    total: 8.07s    remaining: 2.06s
797:    learn: 0.0352843    total: 8.09s    remaining: 2.05s
798:    learn: 0.0352804    total: 8.1s     remaining: 2.04s
799:    learn: 0.0352710    total: 8.11s    remaining: 2.03s
800:    learn: 0.0352462    total: 8.12s    remaining: 2.02s
801:    learn: 0.0352119    total: 8.13s    remaining: 2.01s
802:    learn: 0.0351562    total: 8.14s    remaining: 2s
803:    learn: 0.0351284    total: 8.15s    remaining: 1.99s
804:    learn: 0.0351246    total: 8.16s    remaining: 1.98s
805:    learn: 0.0350972    total: 8.17s    remaining: 1.97s
806:    learn: 0.0350822    total: 8.18s    remaining: 1.96s
807:    learn: 0.0350643    total: 8.19s    remaining: 1.95s
808:    learn: 0.0350489    total: 8.2s     remaining: 1.94s
809:    learn: 0.0350259    total: 8.21s    remaining: 1.92s
810:    learn: 0.0350124    total: 8.21s    remaining: 1.91s
811:    learn: 0.0349516    total: 8.22s    remaining: 1.9s
812:    learn: 0.0349257    total: 8.23s    remaining: 1.89s
813:    learn: 0.0348874    total: 8.24s    remaining: 1.88s
814:    learn: 0.0348718    total: 8.26s    remaining: 1.87s
815:    learn: 0.0348477    total: 8.27s    remaining: 1.86s
816:    learn: 0.0348287    total: 8.28s    remaining: 1.85s
817:    learn: 0.0348027    total: 8.29s    remaining: 1.84s
818:    learn: 0.0347558    total: 8.3s     remaining: 1.83s
819:    learn: 0.0347475    total: 8.31s    remaining: 1.82s
820:    learn: 0.0347344    total: 8.32s    remaining: 1.81s
821:    learn: 0.0346867    total: 8.33s    remaining: 1.8s
822:    learn: 0.0346715    total: 8.34s    remaining: 1.79s
823:    learn: 0.0346514    total: 8.35s    remaining: 1.78s
824:    learn: 0.0346297    total: 8.36s    remaining: 1.77s
825:    learn: 0.0345918    total: 8.36s    remaining: 1.76s
826:    learn: 0.0345653    total: 8.37s    remaining: 1.75s
827:    learn: 0.0345095    total: 8.38s    remaining: 1.74s
828:    learn: 0.0345058    total: 8.39s    remaining: 1.73s
829:    learn: 0.0344845    total: 8.4s     remaining: 1.72s
830:    learn: 0.0344581    total: 8.41s    remaining: 1.71s
831:    learn: 0.0344526    total: 8.42s    remaining: 1.7s
832:    learn: 0.0344451    total: 8.44s    remaining: 1.69s
833:    learn: 0.0344298    total: 8.45s    remaining: 1.68s
834:    learn: 0.0344089    total: 8.46s    remaining: 1.67s
835:    learn: 0.0343588    total: 8.47s    remaining: 1.66s
836:    learn: 0.0343289    total: 8.48s    remaining: 1.65s
837:    learn: 0.0342994    total: 8.49s    remaining: 1.64s
838:    learn: 0.0342769    total: 8.5s     remaining: 1.63s
839:    learn: 0.0342679    total: 8.51s    remaining: 1.62s
840:    learn: 0.0342609    total: 8.52s    remaining: 1.61s
841:    learn: 0.0342299    total: 8.53s    remaining: 1.6s
842:    learn: 0.0341896    total: 8.54s    remaining: 1.59s
843:    learn: 0.0341760    total: 8.55s    remaining: 1.58s
844:    learn: 0.0341501    total: 8.56s    remaining: 1.57s
845:    learn: 0.0341358    total: 8.57s    remaining: 1.56s
846:    learn: 0.0341053    total: 8.58s    remaining: 1.55s
847:    learn: 0.0340912    total: 8.59s    remaining: 1.54s
848:    learn: 0.0340721    total: 8.6s     remaining: 1.53s
849:    learn: 0.0340529    total: 8.61s    remaining: 1.52s
850:    learn: 0.0340344    total: 8.62s    remaining: 1.51s
851:    learn: 0.0340228    total: 8.63s    remaining: 1.5s
852:    learn: 0.0339963    total: 8.64s    remaining: 1.49s
```

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853:    learn: 0.0339764      total: 8.65s      remaining: 1.48s
854:    learn: 0.0339261      total: 8.66s      remaining: 1.47s
855:    learn: 0.0339094      total: 8.67s      remaining: 1.46s
856:    learn: 0.0338752      total: 8.68s      remaining: 1.45s
857:    learn: 0.0338552      total: 8.69s      remaining: 1.44s
858:    learn: 0.0338518      total: 8.7s       remaining: 1.43s
859:    learn: 0.0338352      total: 8.71s      remaining: 1.42s
860:    learn: 0.0338136      total: 8.72s      remaining: 1.41s
861:    learn: 0.0337930      total: 8.73s      remaining: 1.4s
862:    learn: 0.0337724      total: 8.74s      remaining: 1.39s
863:    learn: 0.0337691      total: 8.75s      remaining: 1.38s
864:    learn: 0.0337558      total: 8.76s      remaining: 1.37s
865:    learn: 0.0337275      total: 8.77s      remaining: 1.36s
866:    learn: 0.0336918      total: 8.78s      remaining: 1.35s
867:    learn: 0.0336697      total: 8.79s      remaining: 1.34s
868:    learn: 0.0336489      total: 8.8s       remaining: 1.33s
869:    learn: 0.0335933      total: 8.81s      remaining: 1.32s
870:    learn: 0.0335701      total: 8.82s      remaining: 1.3s
871:    learn: 0.0335544      total: 8.83s      remaining: 1.29s
872:    learn: 0.0335270      total: 8.84s      remaining: 1.28s
873:    learn: 0.0335130      total: 8.85s      remaining: 1.27s
874:    learn: 0.0334975      total: 8.86s      remaining: 1.26s
875:    learn: 0.0334874      total: 8.86s      remaining: 1.25s
876:    learn: 0.0334716      total: 8.87s      remaining: 1.24s
877:    learn: 0.0334685      total: 8.88s      remaining: 1.23s
878:    learn: 0.0334193      total: 8.89s      remaining: 1.22s
879:    learn: 0.0333922      total: 8.9s       remaining: 1.21s
880:    learn: 0.0333763      total: 8.91s      remaining: 1.2s
881:    learn: 0.0333469      total: 8.93s      remaining: 1.19s
882:    learn: 0.0333046      total: 8.94s      remaining: 1.18s
883:    learn: 0.0332723      total: 8.94s      remaining: 1.17s
884:    learn: 0.0332492      total: 8.95s      remaining: 1.16s
885:    learn: 0.0332311      total: 8.96s      remaining: 1.15s
886:    learn: 0.0332085      total: 8.97s      remaining: 1.14s
887:    learn: 0.0331679      total: 8.98s      remaining: 1.13s
888:    learn: 0.0331358      total: 8.99s      remaining: 1.12s
889:    learn: 0.0331187      total: 9s         remaining: 1.11s
890:    learn: 0.0330982      total: 9.01s      remaining: 1.1s
891:    learn: 0.0330722      total: 9.02s      remaining: 1.09s
892:    learn: 0.0330551      total: 9.03s      remaining: 1.08s
893:    learn: 0.0330463      total: 9.04s      remaining: 1.07s
894:    learn: 0.0330163      total: 9.05s      remaining: 1.06s
895:    learn: 0.0329876      total: 9.06s      remaining: 1.05s
896:    learn: 0.0329780      total: 9.07s      remaining: 1.04s
897:    learn: 0.0329701      total: 9.08s      remaining: 1.03s
898:    learn: 0.0329529      total: 9.09s      remaining: 1.02s
899:    learn: 0.0329319      total: 9.1s       remaining: 1.01s
900:    learn: 0.0329034      total: 9.11s      remaining: 1s
901:    learn: 0.0328801      total: 9.12s      remaining: 991ms
902:    learn: 0.0328715      total: 9.13s      remaining: 981ms
903:    learn: 0.0328207      total: 9.15s      remaining: 971ms
904:    learn: 0.0327808      total: 9.15s      remaining: 961ms
905:    learn: 0.0327432      total: 9.17s      remaining: 951ms
906:    learn: 0.0327052      total: 9.18s      remaining: 941ms
907:    learn: 0.0326704      total: 9.19s      remaining: 931ms
908:    learn: 0.0326595      total: 9.19s      remaining: 920ms
909:    learn: 0.0326177      total: 9.2s       remaining: 910ms
910:    learn: 0.0325916      total: 9.21s      remaining: 900ms
911:    learn: 0.0325773      total: 9.22s      remaining: 890ms
912:    learn: 0.0325499      total: 9.23s      remaining: 880ms
913:    learn: 0.0325389      total: 9.24s      remaining: 870ms
```

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914:     learn: 0.0325173          total: 9.25s      remaining: 859ms
915:     learn: 0.0325143          total: 9.26s      remaining: 849ms
916:     learn: 0.0324999          total: 9.27s      remaining: 839ms
917:     learn: 0.0324844          total: 9.28s      remaining: 829ms
918:     learn: 0.0324595          total: 9.29s      remaining: 819ms
919:     learn: 0.0324396          total: 9.3s       remaining: 808ms
920:     learn: 0.0324286          total: 9.31s      remaining: 798ms
921:     learn: 0.0324183          total: 9.31s      remaining: 788ms
922:     learn: 0.0324154          total: 9.32s      remaining: 778ms
923:     learn: 0.0323569          total: 9.34s      remaining: 768ms
924:     learn: 0.0322991          total: 9.35s      remaining: 758ms
925:     learn: 0.0322696          total: 9.36s      remaining: 748ms
926:     learn: 0.0322490          total: 9.37s      remaining: 738ms
927:     learn: 0.0322386          total: 9.38s      remaining: 727ms
928:     learn: 0.0322178          total: 9.38s      remaining: 717ms
929:     learn: 0.0322115          total: 9.39s      remaining: 707ms
930:     learn: 0.0321996          total: 9.4s       remaining: 697ms
931:     learn: 0.0321834          total: 9.41s      remaining: 687ms
932:     learn: 0.0321730          total: 9.42s      remaining: 676ms
933:     learn: 0.0321430          total: 9.43s      remaining: 666ms
934:     learn: 0.0321230          total: 9.44s      remaining: 656ms
935:     learn: 0.0321016          total: 9.45s      remaining: 646ms
936:     learn: 0.0320867          total: 9.46s      remaining: 636ms
937:     learn: 0.0320682          total: 9.47s      remaining: 626ms
938:     learn: 0.0320287          total: 9.48s      remaining: 616ms
939:     learn: 0.0319927          total: 9.49s      remaining: 606ms
940:     learn: 0.0319765          total: 9.5s       remaining: 596ms
941:     learn: 0.0319574          total: 9.51s      remaining: 585ms
942:     learn: 0.0319351          total: 9.52s      remaining: 575ms
943:     learn: 0.0319248          total: 9.53s      remaining: 565ms
944:     learn: 0.0319047          total: 9.54s      remaining: 555ms
945:     learn: 0.0318487          total: 9.55s      remaining: 545ms
946:     learn: 0.0318382          total: 9.56s      remaining: 535ms
947:     learn: 0.0318263          total: 9.57s      remaining: 525ms
948:     learn: 0.0317797          total: 9.58s      remaining: 515ms
949:     learn: 0.0317505          total: 9.59s      remaining: 505ms
950:     learn: 0.0317409          total: 9.6s       remaining: 494ms
951:     learn: 0.0316877          total: 9.61s      remaining: 484ms
952:     learn: 0.0316604          total: 9.62s      remaining: 474ms
953:     learn: 0.0316469          total: 9.63s      remaining: 464ms
954:     learn: 0.0316375          total: 9.63s      remaining: 454ms
955:     learn: 0.0316188          total: 9.64s      remaining: 444ms
956:     learn: 0.0316014          total: 9.65s      remaining: 434ms
957:     learn: 0.0315616          total: 9.66s      remaining: 424ms
958:     learn: 0.0315521          total: 9.67s      remaining: 414ms
959:     learn: 0.0315332          total: 9.68s      remaining: 403ms
960:     learn: 0.0315252          total: 9.69s      remaining: 393ms
961:     learn: 0.0314880          total: 9.7s       remaining: 383ms
962:     learn: 0.0314708          total: 9.71s      remaining: 373ms
963:     learn: 0.0314617          total: 9.72s      remaining: 363ms
964:     learn: 0.0314539          total: 9.73s      remaining: 353ms
965:     learn: 0.0314023          total: 9.74s      remaining: 343ms
966:     learn: 0.0313930          total: 9.75s      remaining: 333ms
967:     learn: 0.0313438          total: 9.76s      remaining: 323ms
968:     learn: 0.0312963          total: 9.78s      remaining: 313ms
969:     learn: 0.0312527          total: 9.79s      remaining: 303ms
970:     learn: 0.0312067          total: 9.79s      remaining: 293ms
971:     learn: 0.0311658          total: 9.8s       remaining: 282ms
972:     learn: 0.0311401          total: 9.81s      remaining: 272ms
973:     learn: 0.0311311          total: 9.82s      remaining: 262ms
974:     learn: 0.0311189          total: 9.83s      remaining: 252ms
```

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975:    learn: 0.0311038        total: 9.84s    remaining: 242ms
976:    learn: 0.0310877        total: 9.85s    remaining: 232ms
977:    learn: 0.0310712        total: 9.86s    remaining: 222ms
978:    learn: 0.0310267        total: 9.87s    remaining: 212ms
979:    learn: 0.0309913        total: 9.88s    remaining: 202ms
980:    learn: 0.0309631        total: 9.89s    remaining: 192ms
981:    learn: 0.0309056        total: 9.9s     remaining: 181ms
982:    learn: 0.0308749        total: 9.91s    remaining: 171ms
983:    learn: 0.0308545        total: 9.92s    remaining: 161ms
984:    learn: 0.0308462        total: 9.93s    remaining: 151ms
985:    learn: 0.0308433        total: 9.94s    remaining: 141ms
986:    learn: 0.0308316        total: 9.95s    remaining: 131ms
987:    learn: 0.0308216        total: 9.96s    remaining: 121ms
988:    learn: 0.0308061        total: 9.97s    remaining: 111ms
989:    learn: 0.0307679        total: 9.98s    remaining: 101ms
990:    learn: 0.0307540        total: 9.99s    remaining: 90.7ms
991:    learn: 0.0307255        total: 9.99s    remaining: 80.6ms
992:    learn: 0.0306821        total: 10s      remaining: 70.5ms
993:    learn: 0.0306407        total: 10s      remaining: 60.5ms
994:    learn: 0.0306237        total: 10s      remaining: 50.4ms
995:    learn: 0.0306159        total: 10s      remaining: 40.3ms
996:    learn: 0.0305981        total: 10s      remaining: 30.2ms
997:    learn: 0.0305820        total: 10.1s    remaining: 20.1ms
998:    learn: 0.0305422        total: 10.1s    remaining: 10.1ms
999:    learn: 0.0305058        total: 10.1s    remaining: 0us
```

In [20]:

```python
# y_pred_log = model.predict_proba(X_test)[:, 1]

# y_test = [(np.exp(x)) for x in [i for i in y_test]]

# y_pred = [(np.exp(x)) for x in [i for i in y_pred_log]]
```

In [21]:

```python
score = roc_auc_score(y_test, y_pred)
print(f'ROC AUC score: {score}')

# Catboost – 0.9844663430122664
# XGBoost – 0.9859398915012213
```

ROC AUC score: 0.9852206595006601

```python
# Submission File

# model = XGBClassifier()

model.fit(X, y)

y_pred = model.predict_proba(test)[:, 1]

submission = pd.DataFrame({'id':test_ID, 'target_class':y_pred})
submission.to_csv('Submission16.csv', index=False)
```

```
Learning rate set to 0.032099
0:      learn: 0.6266480       total: 10.6ms   remaining: 10.6s
1:      learn: 0.5632994       total: 21ms     remaining: 10.5s
2:      learn: 0.5079051       total: 32ms     remaining: 10.6s
3:      learn: 0.4609377       total: 42.3ms   remaining: 10.5s
4:      learn: 0.4213618       total: 52.7ms   remaining: 10.5s
5:      learn: 0.3831279       total: 63.4ms   remaining: 10.5s
6:      learn: 0.3531351       total: 74.2ms   remaining: 10.5s
7:      learn: 0.3241655       total: 85ms     remaining: 10.5s
8:      learn: 0.2982538       total: 95.7ms   remaining: 10.5s
9:      learn: 0.2755899       total: 106ms    remaining: 10.5s
10:     learn: 0.2549486       total: 117ms    remaining: 10.5s
11:     learn: 0.2357562       total: 129ms    remaining: 10.7s
12:     learn: 0.2198307       total: 140ms    remaining: 10.6s
13:     learn: 0.2061490       total: 151ms    remaining: 10.6s
14:     learn: 0.1952241       total: 161ms    remaining: 10.6s
15:     learn: 0.1819512       total: 172ms    remaining: 10.6s
16:     learn: 0.1714911       total: 183ms    remaining: 10.6s
17:     learn: 0.1619001       total: 193ms    remaining: 10.5s
18:     learn: 0.1531004       total: 207ms    remaining: 10.7s
19:     learn: 0.1459806       total: 218ms    remaining: 10.7s
20:     learn: 0.1394892       total: 229ms    remaining: 10.7s
21:     learn: 0.1334574       total: 239ms    remaining: 10.6s
22:     learn: 0.1281959       total: 250ms    remaining: 10.6s
23:     learn: 0.1236230       total: 260ms    remaining: 10.6s
24:     learn: 0.1186740       total: 271ms    remaining: 10.6s
25:     learn: 0.1145924       total: 282ms    remaining: 10.6s
26:     learn: 0.1110898       total: 292ms    remaining: 10.5s
27:     learn: 0.1077525       total: 305ms    remaining: 10.6s
28:     learn: 0.1047822       total: 315ms    remaining: 10.6s
29:     learn: 0.1022224       total: 327ms    remaining: 10.6s
30:     learn: 0.0994193       total: 337ms    remaining: 10.5s
31:     learn: 0.0970987       total: 348ms    remaining: 10.5s
32:     learn: 0.0945540       total: 358ms    remaining: 10.5s
33:     learn: 0.0928274       total: 369ms    remaining: 10.5s
34:     learn: 0.0913800       total: 379ms    remaining: 10.5s
35:     learn: 0.0897441       total: 390ms    remaining: 10.4s
36:     learn: 0.0878530       total: 400ms    remaining: 10.4s
37:     learn: 0.0862143       total: 414ms    remaining: 10.5s
38:     learn: 0.0848901       total: 425ms    remaining: 10.5s
39:     learn: 0.0833609       total: 435ms    remaining: 10.4s
40:     learn: 0.0824966       total: 445ms    remaining: 10.4s
41:     learn: 0.0814190       total: 456ms    remaining: 10.4s
42:     learn: 0.0803312       total: 466ms    remaining: 10.4s
43:     learn: 0.0795010       total: 477ms    remaining: 10.4s
44:     learn: 0.0787472       total: 487ms    remaining: 10.3s
45:     learn: 0.0778639       total: 498ms    remaining: 10.3s
46:     learn: 0.0768653       total: 508ms    remaining: 10.3s
47:     learn: 0.0762456       total: 518ms    remaining: 10.3s
48:     learn: 0.0755945       total: 532ms    remaining: 10.3s
49:     learn: 0.0749218       total: 542ms    remaining: 10.3s
50:     learn: 0.0743303       total: 553ms    remaining: 10.3s
51:     learn: 0.0738705       total: 563ms    remaining: 10.3s
52:     learn: 0.0734208       total: 574ms    remaining: 10.2s
53:     learn: 0.0729793       total: 584ms    remaining: 10.2s
54:     learn: 0.0725785       total: 594ms    remaining: 10.2s
55:     learn: 0.0721732       total: 613ms    remaining: 10.3s
56:     learn: 0.0718006       total: 626ms    remaining: 10.4s
57:     learn: 0.0714007       total: 639ms    remaining: 10.4s
58:     learn: 0.0709543       total: 649ms    remaining: 10.4s
59:     learn: 0.0705503       total: 659ms    remaining: 10.3s
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60:     learn: 0.0703442        total: 670ms    remaining: 10.3s
61:     learn: 0.0700855        total: 680ms    remaining: 10.3s
62:     learn: 0.0696545        total: 690ms    remaining: 10.3s
63:     learn: 0.0692917        total: 700ms    remaining: 10.2s
64:     learn: 0.0689355        total: 710ms    remaining: 10.2s
65:     learn: 0.0685731        total: 720ms    remaining: 10.2s
66:     learn: 0.0682800        total: 731ms    remaining: 10.2s
67:     learn: 0.0679881        total: 741ms    remaining: 10.2s
68:     learn: 0.0677727        total: 751ms    remaining: 10.1s
69:     learn: 0.0675667        total: 763ms    remaining: 10.1s
70:     learn: 0.0672933        total: 774ms    remaining: 10.1s
71:     learn: 0.0670567        total: 784ms    remaining: 10.1s
72:     learn: 0.0667825        total: 794ms    remaining: 10.1s
73:     learn: 0.0665372        total: 803ms    remaining: 10.1s
74:     learn: 0.0662908        total: 813ms    remaining: 10s
75:     learn: 0.0661208        total: 827ms    remaining: 10.1s
76:     learn: 0.0659482        total: 839ms    remaining: 10.1s
77:     learn: 0.0657690        total: 849ms    remaining: 10s
78:     learn: 0.0655886        total: 860ms    remaining: 10s
79:     learn: 0.0654026        total: 870ms    remaining: 10s
80:     learn: 0.0652646        total: 881ms    remaining: 10s
81:     learn: 0.0650993        total: 892ms    remaining: 9.98s
82:     learn: 0.0649162        total: 904ms    remaining: 9.99s
83:     learn: 0.0646924        total: 919ms    remaining: 10s
84:     learn: 0.0645140        total: 932ms    remaining: 10s
85:     learn: 0.0643593        total: 943ms    remaining: 10s
86:     learn: 0.0642596        total: 953ms    remaining: 10s
87:     learn: 0.0640468        total: 964ms    remaining: 9.99s
88:     learn: 0.0639250        total: 975ms    remaining: 9.98s
89:     learn: 0.0636809        total: 986ms    remaining: 9.97s
90:     learn: 0.0635013        total: 997ms    remaining: 9.96s
91:     learn: 0.0633897        total: 1.01s    remaining: 9.95s
92:     learn: 0.0633063        total: 1.02s    remaining: 9.94s
93:     learn: 0.0631678        total: 1.03s    remaining: 9.97s
94:     learn: 0.0630530        total: 1.04s    remaining: 9.96s
95:     learn: 0.0629052        total: 1.06s    remaining: 9.95s
96:     learn: 0.0627861        total: 1.07s    remaining: 9.94s
97:     learn: 0.0626191        total: 1.08s    remaining: 9.93s
98:     learn: 0.0625032        total: 1.09s    remaining: 9.91s
99:     learn: 0.0623891        total: 1.1s     remaining: 9.89s
100:    learn: 0.0622550        total: 1.11s    remaining: 9.88s
101:    learn: 0.0621471        total: 1.13s    remaining: 9.93s
102:    learn: 0.0620126        total: 1.14s    remaining: 9.91s
103:    learn: 0.0619164        total: 1.15s    remaining: 9.9s
104:    learn: 0.0618463        total: 1.16s    remaining: 9.89s
105:    learn: 0.0617528        total: 1.17s    remaining: 9.88s
106:    learn: 0.0616795        total: 1.18s    remaining: 9.86s
107:    learn: 0.0615682        total: 1.19s    remaining: 9.85s
108:    learn: 0.0615008        total: 1.2s     remaining: 9.83s
109:    learn: 0.0614019        total: 1.21s    remaining: 9.81s
110:    learn: 0.0612413        total: 1.22s    remaining: 9.79s
111:    learn: 0.0611106        total: 1.24s    remaining: 9.81s
112:    learn: 0.0609906        total: 1.25s    remaining: 9.82s
113:    learn: 0.0608835        total: 1.26s    remaining: 9.83s
114:    learn: 0.0607790        total: 1.27s    remaining: 9.81s
115:    learn: 0.0607006        total: 1.28s    remaining: 9.79s
116:    learn: 0.0606013        total: 1.29s    remaining: 9.78s
117:    learn: 0.0605478        total: 1.31s    remaining: 9.76s
118:    learn: 0.0604595        total: 1.32s    remaining: 9.75s
119:    learn: 0.0603974        total: 1.33s    remaining: 9.73s
120:    learn: 0.0602773        total: 1.34s    remaining: 9.71s
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121:    learn: 0.0602240        total: 1.35s    remaining: 9.69s
122:    learn: 0.0601206        total: 1.36s    remaining: 9.67s
123:    learn: 0.0600578        total: 1.37s    remaining: 9.66s
124:    learn: 0.0599554        total: 1.38s    remaining: 9.63s
125:    learn: 0.0598663        total: 1.39s    remaining: 9.63s
126:    learn: 0.0597706        total: 1.4s     remaining: 9.61s
127:    learn: 0.0597030        total: 1.41s    remaining: 9.59s
128:    learn: 0.0596021        total: 1.42s    remaining: 9.6s
129:    learn: 0.0595448        total: 1.43s    remaining: 9.59s
130:    learn: 0.0594709        total: 1.45s    remaining: 9.6s
131:    learn: 0.0593710        total: 1.46s    remaining: 9.58s
132:    learn: 0.0592849        total: 1.47s    remaining: 9.57s
133:    learn: 0.0592132        total: 1.48s    remaining: 9.55s
134:    learn: 0.0591541        total: 1.49s    remaining: 9.53s
135:    learn: 0.0591035        total: 1.5s     remaining: 9.51s
136:    learn: 0.0589975        total: 1.51s    remaining: 9.5s
137:    learn: 0.0589515        total: 1.52s    remaining: 9.48s
138:    learn: 0.0588872        total: 1.53s    remaining: 9.46s
139:    learn: 0.0587941        total: 1.54s    remaining: 9.45s
140:    learn: 0.0587096        total: 1.55s    remaining: 9.43s
141:    learn: 0.0586495        total: 1.56s    remaining: 9.42s
142:    learn: 0.0585704        total: 1.57s    remaining: 9.42s
143:    learn: 0.0584841        total: 1.58s    remaining: 9.4s
144:    learn: 0.0584343        total: 1.59s    remaining: 9.39s
145:    learn: 0.0583690        total: 1.61s    remaining: 9.43s
146:    learn: 0.0582905        total: 1.62s    remaining: 9.42s
147:    learn: 0.0581896        total: 1.63s    remaining: 9.4s
148:    learn: 0.0581313        total: 1.64s    remaining: 9.39s
149:    learn: 0.0580676        total: 1.66s    remaining: 9.39s
150:    learn: 0.0579914        total: 1.67s    remaining: 9.38s
151:    learn: 0.0579366        total: 1.68s    remaining: 9.36s
152:    learn: 0.0578558        total: 1.69s    remaining: 9.35s
153:    learn: 0.0578258        total: 1.7s     remaining: 9.33s
154:    learn: 0.0577404        total: 1.71s    remaining: 9.32s
155:    learn: 0.0576784        total: 1.72s    remaining: 9.3s
156:    learn: 0.0575811        total: 1.73s    remaining: 9.29s
157:    learn: 0.0575303        total: 1.74s    remaining: 9.27s
158:    learn: 0.0574694        total: 1.75s    remaining: 9.27s
159:    learn: 0.0573999        total: 1.76s    remaining: 9.25s
160:    learn: 0.0573743        total: 1.77s    remaining: 9.23s
161:    learn: 0.0573167        total: 1.78s    remaining: 9.22s
162:    learn: 0.0572456        total: 1.79s    remaining: 9.21s
163:    learn: 0.0571726        total: 1.8s     remaining: 9.19s
164:    learn: 0.0571251        total: 1.81s    remaining: 9.18s
165:    learn: 0.0570609        total: 1.82s    remaining: 9.16s
166:    learn: 0.0570100        total: 1.84s    remaining: 9.17s
167:    learn: 0.0569629        total: 1.85s    remaining: 9.15s
168:    learn: 0.0568755        total: 1.86s    remaining: 9.16s
169:    learn: 0.0568356        total: 1.87s    remaining: 9.14s
170:    learn: 0.0567956        total: 1.88s    remaining: 9.12s
171:    learn: 0.0567571        total: 1.89s    remaining: 9.11s
172:    learn: 0.0567088        total: 1.9s     remaining: 9.09s
173:    learn: 0.0566451        total: 1.91s    remaining: 9.07s
174:    learn: 0.0565844        total: 1.92s    remaining: 9.06s
175:    learn: 0.0564925        total: 1.93s    remaining: 9.04s
176:    learn: 0.0564281        total: 1.94s    remaining: 9.03s
177:    learn: 0.0563635        total: 1.95s    remaining: 9.02s
178:    learn: 0.0562975        total: 1.96s    remaining: 9s
179:    learn: 0.0562541        total: 1.97s    remaining: 8.99s
180:    learn: 0.0561778        total: 2s       remaining: 9.03s
181:    learn: 0.0561282        total: 2.01s    remaining: 9.02s
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182:    learn: 0.0560821        total: 2.02s    remaining: 9.01s
183:    learn: 0.0560437        total: 2.03s    remaining: 9s
184:    learn: 0.0559570        total: 2.04s    remaining: 8.99s
185:    learn: 0.0558812        total: 2.05s    remaining: 8.98s
186:    learn: 0.0558404        total: 2.06s    remaining: 8.98s
187:    learn: 0.0557950        total: 2.08s    remaining: 8.97s
188:    learn: 0.0557172        total: 2.09s    remaining: 8.96s
189:    learn: 0.0555864        total: 2.1s     remaining: 8.95s
190:    learn: 0.0555671        total: 2.11s    remaining: 8.94s
191:    learn: 0.0555078        total: 2.12s    remaining: 8.93s
192:    learn: 0.0554418        total: 2.13s    remaining: 8.92s
193:    learn: 0.0553708        total: 2.14s    remaining: 8.91s
194:    learn: 0.0553399        total: 2.15s    remaining: 8.9s
195:    learn: 0.0552758        total: 2.17s    remaining: 8.88s
196:    learn: 0.0552203        total: 2.17s    remaining: 8.87s
197:    learn: 0.0551502        total: 2.19s    remaining: 8.86s
198:    learn: 0.0551125        total: 2.2s     remaining: 8.84s
199:    learn: 0.0550721        total: 2.21s    remaining: 8.83s
200:    learn: 0.0550215        total: 2.22s    remaining: 8.81s
201:    learn: 0.0549761        total: 2.23s    remaining: 8.8s
202:    learn: 0.0549113        total: 2.24s    remaining: 8.78s
203:    learn: 0.0548550        total: 2.25s    remaining: 8.77s
204:    learn: 0.0547729        total: 2.26s    remaining: 8.75s
205:    learn: 0.0547088        total: 2.27s    remaining: 8.76s
206:    learn: 0.0546587        total: 2.28s    remaining: 8.74s
207:    learn: 0.0545992        total: 2.29s    remaining: 8.72s
208:    learn: 0.0545678        total: 2.3s     remaining: 8.71s
209:    learn: 0.0544944        total: 2.31s    remaining: 8.7s
210:    learn: 0.0544435        total: 2.33s    remaining: 8.69s
211:    learn: 0.0543743        total: 2.33s    remaining: 8.68s
212:    learn: 0.0543168        total: 2.35s    remaining: 8.67s
213:    learn: 0.0542723        total: 2.36s    remaining: 8.66s
214:    learn: 0.0542022        total: 2.37s    remaining: 8.64s
215:    learn: 0.0541503        total: 2.38s    remaining: 8.63s
216:    learn: 0.0540705        total: 2.39s    remaining: 8.62s
217:    learn: 0.0540011        total: 2.4s     remaining: 8.6s
218:    learn: 0.0539697        total: 2.41s    remaining: 8.59s
219:    learn: 0.0539080        total: 2.42s    remaining: 8.58s
220:    learn: 0.0538523        total: 2.43s    remaining: 8.56s
221:    learn: 0.0537791        total: 2.44s    remaining: 8.55s
222:    learn: 0.0537472        total: 2.45s    remaining: 8.53s
223:    learn: 0.0536995        total: 2.46s    remaining: 8.52s
224:    learn: 0.0536319        total: 2.47s    remaining: 8.51s
225:    learn: 0.0535966        total: 2.48s    remaining: 8.5s
226:    learn: 0.0535302        total: 2.49s    remaining: 8.48s
227:    learn: 0.0534459        total: 2.5s     remaining: 8.47s
228:    learn: 0.0533984        total: 2.51s    remaining: 8.46s
229:    learn: 0.0533338        total: 2.52s    remaining: 8.45s
230:    learn: 0.0532908        total: 2.53s    remaining: 8.43s
231:    learn: 0.0532412        total: 2.54s    remaining: 8.42s
232:    learn: 0.0531716        total: 2.55s    remaining: 8.4s
233:    learn: 0.0531367        total: 2.56s    remaining: 8.39s
234:    learn: 0.0530947        total: 2.57s    remaining: 8.37s
235:    learn: 0.0530030        total: 2.58s    remaining: 8.37s
236:    learn: 0.0529506        total: 2.6s     remaining: 8.38s
237:    learn: 0.0528536        total: 2.62s    remaining: 8.38s
238:    learn: 0.0527966        total: 2.63s    remaining: 8.37s
239:    learn: 0.0527454        total: 2.64s    remaining: 8.36s
240:    learn: 0.0527081        total: 2.65s    remaining: 8.34s
241:    learn: 0.0526200        total: 2.66s    remaining: 8.33s
242:    learn: 0.0525665        total: 2.67s    remaining: 8.32s
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243:     learn: 0.0525116        total: 2.68s      remaining: 8.31s
244:     learn: 0.0524438        total: 2.69s      remaining: 8.3s
245:     learn: 0.0524122        total: 2.7s       remaining: 8.29s
246:     learn: 0.0523883        total: 2.71s      remaining: 8.27s
247:     learn: 0.0523451        total: 2.72s      remaining: 8.26s
248:     learn: 0.0522955        total: 2.73s      remaining: 8.25s
249:     learn: 0.0522196        total: 2.74s      remaining: 8.23s
250:     learn: 0.0521616        total: 2.75s      remaining: 8.22s
251:     learn: 0.0521051        total: 2.76s      remaining: 8.21s
252:     learn: 0.0520668        total: 2.77s      remaining: 8.19s
253:     learn: 0.0520256        total: 2.79s      remaining: 8.18s
254:     learn: 0.0519836        total: 2.79s      remaining: 8.17s
255:     learn: 0.0519434        total: 2.81s      remaining: 8.15s
256:     learn: 0.0518957        total: 2.81s      remaining: 8.14s
257:     learn: 0.0518503        total: 2.83s      remaining: 8.13s
258:     learn: 0.0517827        total: 2.83s      remaining: 8.11s
259:     learn: 0.0517135        total: 2.85s      remaining: 8.1s
260:     learn: 0.0516653        total: 2.86s      remaining: 8.09s
261:     learn: 0.0516055        total: 2.87s      remaining: 8.07s
262:     learn: 0.0515612        total: 2.88s      remaining: 8.06s
263:     learn: 0.0515039        total: 2.89s      remaining: 8.06s
264:     learn: 0.0514667        total: 2.91s      remaining: 8.06s
265:     learn: 0.0514460        total: 2.92s      remaining: 8.05s
266:     learn: 0.0513791        total: 2.93s      remaining: 8.04s
267:     learn: 0.0513545        total: 2.94s      remaining: 8.03s
268:     learn: 0.0512924        total: 2.95s      remaining: 8.02s
269:     learn: 0.0512433        total: 2.96s      remaining: 8s
270:     learn: 0.0511820        total: 2.97s      remaining: 7.99s
271:     learn: 0.0511341        total: 2.98s      remaining: 7.97s
272:     learn: 0.0510945        total: 2.99s      remaining: 7.96s
273:     learn: 0.0510463        total: 3s         remaining: 7.95s
274:     learn: 0.0509952        total: 3.01s      remaining: 7.94s
275:     learn: 0.0509621        total: 3.02s      remaining: 7.92s
276:     learn: 0.0509145        total: 3.03s      remaining: 7.91s
277:     learn: 0.0508740        total: 3.04s      remaining: 7.9s
278:     learn: 0.0508433        total: 3.05s      remaining: 7.89s
279:     learn: 0.0508124        total: 3.06s      remaining: 7.88s
280:     learn: 0.0507416        total: 3.07s      remaining: 7.86s
281:     learn: 0.0506964        total: 3.08s      remaining: 7.86s
282:     learn: 0.0506713        total: 3.1s       remaining: 7.85s
283:     learn: 0.0506231        total: 3.11s      remaining: 7.84s
284:     learn: 0.0505753        total: 3.12s      remaining: 7.83s
285:     learn: 0.0505329        total: 3.13s      remaining: 7.82s
286:     learn: 0.0504648        total: 3.14s      remaining: 7.8s
287:     learn: 0.0504249        total: 3.15s      remaining: 7.79s
288:     learn: 0.0503887        total: 3.16s      remaining: 7.78s
289:     learn: 0.0503334        total: 3.17s      remaining: 7.76s
290:     learn: 0.0502546        total: 3.18s      remaining: 7.75s
291:     learn: 0.0502008        total: 3.19s      remaining: 7.74s
292:     learn: 0.0501747        total: 3.21s      remaining: 7.74s
293:     learn: 0.0501145        total: 3.22s      remaining: 7.73s
294:     learn: 0.0500460        total: 3.23s      remaining: 7.72s
295:     learn: 0.0499982        total: 3.24s      remaining: 7.71s
296:     learn: 0.0499600        total: 3.25s      remaining: 7.7s
297:     learn: 0.0499291        total: 3.26s      remaining: 7.68s
298:     learn: 0.0498968        total: 3.27s      remaining: 7.67s
299:     learn: 0.0498367        total: 3.28s      remaining: 7.66s
300:     learn: 0.0498057        total: 3.29s      remaining: 7.65s
301:     learn: 0.0497507        total: 3.31s      remaining: 7.65s
302:     learn: 0.0497233        total: 3.32s      remaining: 7.63s
303:     learn: 0.0496771        total: 3.33s      remaining: 7.62s
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304:    learn: 0.0496413    total: 3.34s    remaining: 7.61s
305:    learn: 0.0495891    total: 3.35s    remaining: 7.6s
306:    learn: 0.0495316    total: 3.36s    remaining: 7.58s
307:    learn: 0.0494523    total: 3.37s    remaining: 7.57s
308:    learn: 0.0494047    total: 3.38s    remaining: 7.56s
309:    learn: 0.0493251    total: 3.39s    remaining: 7.55s
310:    learn: 0.0492909    total: 3.4s     remaining: 7.54s
311:    learn: 0.0492541    total: 3.41s    remaining: 7.52s
312:    learn: 0.0492164    total: 3.42s    remaining: 7.51s
313:    learn: 0.0491489    total: 3.43s    remaining: 7.5s
314:    learn: 0.0490986    total: 3.44s    remaining: 7.49s
315:    learn: 0.0490658    total: 3.45s    remaining: 7.47s
316:    learn: 0.0490173    total: 3.46s    remaining: 7.46s
317:    learn: 0.0489744    total: 3.48s    remaining: 7.46s
318:    learn: 0.0489480    total: 3.49s    remaining: 7.44s
319:    learn: 0.0488977    total: 3.51s    remaining: 7.46s
320:    learn: 0.0488665    total: 3.54s    remaining: 7.48s
321:    learn: 0.0488253    total: 3.54s    remaining: 7.47s
322:    learn: 0.0487970    total: 3.56s    remaining: 7.45s
323:    learn: 0.0487698    total: 3.57s    remaining: 7.44s
324:    learn: 0.0487388    total: 3.58s    remaining: 7.43s
325:    learn: 0.0486969    total: 3.59s    remaining: 7.42s
326:    learn: 0.0486500    total: 3.61s    remaining: 7.42s
327:    learn: 0.0486120    total: 3.62s    remaining: 7.41s
328:    learn: 0.0485731    total: 3.63s    remaining: 7.4s
329:    learn: 0.0485229    total: 3.64s    remaining: 7.39s
330:    learn: 0.0484791    total: 3.65s    remaining: 7.37s
331:    learn: 0.0484391    total: 3.66s    remaining: 7.36s
332:    learn: 0.0483901    total: 3.67s    remaining: 7.35s
333:    learn: 0.0483623    total: 3.68s    remaining: 7.33s
334:    learn: 0.0483000    total: 3.69s    remaining: 7.32s
335:    learn: 0.0482672    total: 3.7s     remaining: 7.31s
336:    learn: 0.0482479    total: 3.71s    remaining: 7.31s
337:    learn: 0.0482062    total: 3.72s    remaining: 7.29s
338:    learn: 0.0481451    total: 3.73s    remaining: 7.28s
339:    learn: 0.0480975    total: 3.74s    remaining: 7.27s
340:    learn: 0.0480374    total: 3.75s    remaining: 7.26s
341:    learn: 0.0479859    total: 3.77s    remaining: 7.24s
342:    learn: 0.0479433    total: 3.77s    remaining: 7.23s
343:    learn: 0.0478930    total: 3.79s    remaining: 7.22s
344:    learn: 0.0478515    total: 3.8s     remaining: 7.21s
345:    learn: 0.0478074    total: 3.81s    remaining: 7.2s
346:    learn: 0.0477626    total: 3.82s    remaining: 7.18s
347:    learn: 0.0476864    total: 3.83s    remaining: 7.17s
348:    learn: 0.0476443    total: 3.84s    remaining: 7.16s
349:    learn: 0.0476050    total: 3.85s    remaining: 7.15s
350:    learn: 0.0475748    total: 3.86s    remaining: 7.14s
351:    learn: 0.0475495    total: 3.87s    remaining: 7.13s
352:    learn: 0.0475199    total: 3.88s    remaining: 7.12s
353:    learn: 0.0474832    total: 3.89s    remaining: 7.1s
354:    learn: 0.0474299    total: 3.9s     remaining: 7.09s
355:    learn: 0.0474055    total: 3.91s    remaining: 7.08s
356:    learn: 0.0473304    total: 3.93s    remaining: 7.07s
357:    learn: 0.0472901    total: 3.94s    remaining: 7.06s
358:    learn: 0.0472494    total: 3.95s    remaining: 7.05s
359:    learn: 0.0472073    total: 3.96s    remaining: 7.04s
360:    learn: 0.0471548    total: 3.97s    remaining: 7.03s
361:    learn: 0.0471027    total: 3.98s    remaining: 7.01s
362:    learn: 0.0470590    total: 3.99s    remaining: 7s
363:    learn: 0.0470013    total: 4s       remaining: 6.99s
364:    learn: 0.0469683    total: 4.01s    remaining: 6.98s
```

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365:    learn: 0.0469109        total: 4.02s    remaining: 6.97s
366:    learn: 0.0468862        total: 4.04s    remaining: 6.96s
367:    learn: 0.0468631        total: 4.04s    remaining: 6.95s
368:    learn: 0.0467860        total: 4.06s    remaining: 6.94s
369:    learn: 0.0467648        total: 4.07s    remaining: 6.93s
370:    learn: 0.0467307        total: 4.08s    remaining: 6.91s
371:    learn: 0.0466911        total: 4.09s    remaining: 6.9s
372:    learn: 0.0466614        total: 4.1s     remaining: 6.89s
373:    learn: 0.0466269        total: 4.11s    remaining: 6.88s
374:    learn: 0.0465906        total: 4.12s    remaining: 6.86s
375:    learn: 0.0465558        total: 4.13s    remaining: 6.86s
376:    learn: 0.0464986        total: 4.14s    remaining: 6.85s
377:    learn: 0.0464726        total: 4.16s    remaining: 6.84s
378:    learn: 0.0464510        total: 4.17s    remaining: 6.83s
379:    learn: 0.0463934        total: 4.18s    remaining: 6.82s
380:    learn: 0.0463721        total: 4.19s    remaining: 6.81s
381:    learn: 0.0463325        total: 4.2s     remaining: 6.8s
382:    learn: 0.0462892        total: 4.21s    remaining: 6.79s
383:    learn: 0.0462358        total: 4.22s    remaining: 6.77s
384:    learn: 0.0461834        total: 4.23s    remaining: 6.76s
385:    learn: 0.0461517        total: 4.24s    remaining: 6.75s
386:    learn: 0.0461305        total: 4.25s    remaining: 6.74s
387:    learn: 0.0460972        total: 4.26s    remaining: 6.73s
388:    learn: 0.0460501        total: 4.28s    remaining: 6.71s
389:    learn: 0.0460186        total: 4.29s    remaining: 6.7s
390:    learn: 0.0459711        total: 4.29s    remaining: 6.69s
391:    learn: 0.0459438        total: 4.3s     remaining: 6.68s
392:    learn: 0.0459137        total: 4.32s    remaining: 6.67s
393:    learn: 0.0458787        total: 4.33s    remaining: 6.65s
394:    learn: 0.0458331        total: 4.34s    remaining: 6.65s
395:    learn: 0.0457692        total: 4.35s    remaining: 6.63s
396:    learn: 0.0457223        total: 4.36s    remaining: 6.62s
397:    learn: 0.0456728        total: 4.37s    remaining: 6.61s
398:    learn: 0.0455990        total: 4.38s    remaining: 6.6s
399:    learn: 0.0455689        total: 4.39s    remaining: 6.59s
400:    learn: 0.0455499        total: 4.4s     remaining: 6.58s
401:    learn: 0.0455238        total: 4.41s    remaining: 6.56s
402:    learn: 0.0454290        total: 4.42s    remaining: 6.55s
403:    learn: 0.0454028        total: 4.43s    remaining: 6.54s
404:    learn: 0.0453829        total: 4.44s    remaining: 6.53s
405:    learn: 0.0453111        total: 4.45s    remaining: 6.52s
406:    learn: 0.0452883        total: 4.47s    remaining: 6.51s
407:    learn: 0.0452707        total: 4.48s    remaining: 6.5s
408:    learn: 0.0452425        total: 4.49s    remaining: 6.49s
409:    learn: 0.0451544        total: 4.51s    remaining: 6.48s
410:    learn: 0.0451231        total: 4.52s    remaining: 6.47s
411:    learn: 0.0450786        total: 4.53s    remaining: 6.46s
412:    learn: 0.0450620        total: 4.54s    remaining: 6.45s
413:    learn: 0.0450254        total: 4.55s    remaining: 6.44s
414:    learn: 0.0450019        total: 4.56s    remaining: 6.43s
415:    learn: 0.0449867        total: 4.57s    remaining: 6.42s
416:    learn: 0.0449587        total: 4.58s    remaining: 6.41s
417:    learn: 0.0449230        total: 4.61s    remaining: 6.41s
418:    learn: 0.0448617        total: 4.62s    remaining: 6.4s
419:    learn: 0.0448019        total: 4.63s    remaining: 6.39s
420:    learn: 0.0447016        total: 4.64s    remaining: 6.38s
421:    learn: 0.0446831        total: 4.65s    remaining: 6.37s
422:    learn: 0.0446061        total: 4.66s    remaining: 6.35s
423:    learn: 0.0445760        total: 4.67s    remaining: 6.34s
424:    learn: 0.0445070        total: 4.68s    remaining: 6.33s
425:    learn: 0.0444650        total: 4.69s    remaining: 6.32s
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426:    learn: 0.0444450         total: 4.7s      remaining: 6.31s
427:    learn: 0.0443902         total: 4.71s     remaining: 6.29s
428:    learn: 0.0443609         total: 4.72s     remaining: 6.28s
429:    learn: 0.0443420         total: 4.73s     remaining: 6.27s
430:    learn: 0.0443266         total: 4.74s     remaining: 6.26s
431:    learn: 0.0442901         total: 4.75s     remaining: 6.25s
432:    learn: 0.0442363         total: 4.76s     remaining: 6.24s
433:    learn: 0.0441716         total: 4.78s     remaining: 6.23s
434:    learn: 0.0441096         total: 4.79s     remaining: 6.22s
435:    learn: 0.0440840         total: 4.8s      remaining: 6.21s
436:    learn: 0.0440443         total: 4.81s     remaining: 6.2s
437:    learn: 0.0440162         total: 4.82s     remaining: 6.19s
438:    learn: 0.0439987         total: 4.83s     remaining: 6.17s
439:    learn: 0.0439581         total: 4.84s     remaining: 6.16s
440:    learn: 0.0439339         total: 4.85s     remaining: 6.15s
441:    learn: 0.0439031         total: 4.86s     remaining: 6.14s
442:    learn: 0.0438796         total: 4.87s     remaining: 6.13s
443:    learn: 0.0438384         total: 4.88s     remaining: 6.12s
444:    learn: 0.0437585         total: 4.89s     remaining: 6.1s
445:    learn: 0.0436959         total: 4.9s      remaining: 6.09s
446:    learn: 0.0436724         total: 4.91s     remaining: 6.08s
447:    learn: 0.0436276         total: 4.92s     remaining: 6.07s
448:    learn: 0.0435821         total: 4.93s     remaining: 6.06s
449:    learn: 0.0435537         total: 4.95s     remaining: 6.04s
450:    learn: 0.0435388         total: 4.96s     remaining: 6.03s
451:    learn: 0.0434972         total: 4.97s     remaining: 6.03s
452:    learn: 0.0434672         total: 4.98s     remaining: 6.01s
453:    learn: 0.0434507         total: 4.99s     remaining: 6s
454:    learn: 0.0434008         total: 5s        remaining: 5.99s
455:    learn: 0.0433708         total: 5.01s     remaining: 5.98s
456:    learn: 0.0432921         total: 5.02s     remaining: 5.97s
457:    learn: 0.0432292         total: 5.03s     remaining: 5.96s
458:    learn: 0.0431998         total: 5.04s     remaining: 5.94s
459:    learn: 0.0431491         total: 5.05s     remaining: 5.93s
460:    learn: 0.0431362         total: 5.07s     remaining: 5.92s
461:    learn: 0.0430893         total: 5.08s     remaining: 5.91s
462:    learn: 0.0430273         total: 5.08s     remaining: 5.9s
463:    learn: 0.0430147         total: 5.09s     remaining: 5.89s
464:    learn: 0.0429775         total: 5.11s     remaining: 5.88s
465:    learn: 0.0429487         total: 5.12s     remaining: 5.86s
466:    learn: 0.0429126         total: 5.13s     remaining: 5.85s
467:    learn: 0.0428828         total: 5.14s     remaining: 5.84s
468:    learn: 0.0428375         total: 5.15s     remaining: 5.83s
469:    learn: 0.0427926         total: 5.16s     remaining: 5.82s
470:    learn: 0.0427623         total: 5.17s     remaining: 5.81s
471:    learn: 0.0427174         total: 5.18s     remaining: 5.8s
472:    learn: 0.0426584         total: 5.2s      remaining: 5.79s
473:    learn: 0.0426310         total: 5.21s     remaining: 5.78s
474:    learn: 0.0426149         total: 5.22s     remaining: 5.76s
475:    learn: 0.0425696         total: 5.23s     remaining: 5.75s
476:    learn: 0.0425575         total: 5.24s     remaining: 5.74s
477:    learn: 0.0425355         total: 5.25s     remaining: 5.73s
478:    learn: 0.0425027         total: 5.26s     remaining: 5.72s
479:    learn: 0.0424769         total: 5.27s     remaining: 5.71s
480:    learn: 0.0424592         total: 5.28s     remaining: 5.7s
481:    learn: 0.0424297         total: 5.29s     remaining: 5.69s
482:    learn: 0.0423839         total: 5.3s      remaining: 5.67s
483:    learn: 0.0423599         total: 5.31s     remaining: 5.66s
484:    learn: 0.0423095         total: 5.32s     remaining: 5.65s
485:    learn: 0.0422377         total: 5.33s     remaining: 5.64s
486:    learn: 0.0422230         total: 5.34s     remaining: 5.63s
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487:    learn: 0.0422017         total: 5.35s    remaining: 5.62s
488:    learn: 0.0421544         total: 5.36s    remaining: 5.61s
489:    learn: 0.0421309         total: 5.38s    remaining: 5.6s
490:    learn: 0.0421171         total: 5.39s    remaining: 5.59s
491:    learn: 0.0420997         total: 5.4s     remaining: 5.57s
492:    learn: 0.0420803         total: 5.41s    remaining: 5.56s
493:    learn: 0.0420530         total: 5.42s    remaining: 5.55s
494:    learn: 0.0420356         total: 5.43s    remaining: 5.54s
495:    learn: 0.0420147         total: 5.44s    remaining: 5.53s
496:    learn: 0.0419708         total: 5.45s    remaining: 5.51s
497:    learn: 0.0419353         total: 5.46s    remaining: 5.51s
498:    learn: 0.0419220         total: 5.47s    remaining: 5.5s
499:    learn: 0.0419092         total: 5.49s    remaining: 5.49s
500:    learn: 0.0418857         total: 5.5s     remaining: 5.47s
501:    learn: 0.0418342         total: 5.5s     remaining: 5.46s
502:    learn: 0.0418146         total: 5.51s    remaining: 5.45s
503:    learn: 0.0417904         total: 5.52s    remaining: 5.44s
504:    learn: 0.0417697         total: 5.53s    remaining: 5.42s
505:    learn: 0.0417552         total: 5.54s    remaining: 5.41s
506:    learn: 0.0417139         total: 5.55s    remaining: 5.4s
507:    learn: 0.0416622         total: 5.57s    remaining: 5.39s
508:    learn: 0.0415975         total: 5.58s    remaining: 5.38s
509:    learn: 0.0415893         total: 5.59s    remaining: 5.37s
510:    learn: 0.0415255         total: 5.61s    remaining: 5.36s
511:    learn: 0.0414781         total: 5.62s    remaining: 5.35s
512:    learn: 0.0414624         total: 5.63s    remaining: 5.34s
513:    learn: 0.0414372         total: 5.64s    remaining: 5.33s
514:    learn: 0.0413896         total: 5.65s    remaining: 5.32s
515:    learn: 0.0413409         total: 5.66s    remaining: 5.31s
516:    learn: 0.0413257         total: 5.67s    remaining: 5.29s
517:    learn: 0.0413067         total: 5.68s    remaining: 5.29s
518:    learn: 0.0412876         total: 5.69s    remaining: 5.27s
519:    learn: 0.0412743         total: 5.7s     remaining: 5.26s
520:    learn: 0.0412589         total: 5.71s    remaining: 5.25s
521:    learn: 0.0412305         total: 5.72s    remaining: 5.24s
522:    learn: 0.0412097         total: 5.73s    remaining: 5.23s
523:    learn: 0.0411915         total: 5.74s    remaining: 5.21s
524:    learn: 0.0411701         total: 5.75s    remaining: 5.2s
525:    learn: 0.0411239         total: 5.76s    remaining: 5.19s
526:    learn: 0.0411055         total: 5.77s    remaining: 5.18s
527:    learn: 0.0410905         total: 5.79s    remaining: 5.17s
528:    learn: 0.0410352         total: 5.8s     remaining: 5.17s
529:    learn: 0.0410047         total: 5.81s    remaining: 5.15s
530:    learn: 0.0409489         total: 5.82s    remaining: 5.14s
531:    learn: 0.0409239         total: 5.83s    remaining: 5.13s
532:    learn: 0.0409069         total: 5.84s    remaining: 5.12s
533:    learn: 0.0408760         total: 5.86s    remaining: 5.11s
534:    learn: 0.0408517         total: 5.87s    remaining: 5.1s
535:    learn: 0.0408099         total: 5.88s    remaining: 5.09s
536:    learn: 0.0407861         total: 5.89s    remaining: 5.08s
537:    learn: 0.0407419         total: 5.9s     remaining: 5.07s
538:    learn: 0.0406966         total: 5.91s    remaining: 5.05s
539:    learn: 0.0406836         total: 5.92s    remaining: 5.04s
540:    learn: 0.0406697         total: 5.93s    remaining: 5.03s
541:    learn: 0.0406571         total: 5.94s    remaining: 5.02s
542:    learn: 0.0406232         total: 5.95s    remaining: 5.01s
543:    learn: 0.0406133         total: 5.96s    remaining: 4.99s
544:    learn: 0.0405811         total: 5.97s    remaining: 4.98s
545:    learn: 0.0405170         total: 5.98s    remaining: 4.97s
546:    learn: 0.0404971         total: 5.99s    remaining: 4.96s
547:    learn: 0.0404835         total: 6s       remaining: 4.95s
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548:    learn: 0.0404676        total: 6.01s    remaining: 4.94s
549:    learn: 0.0404531        total: 6.02s    remaining: 4.93s
550:    learn: 0.0404359        total: 6.03s    remaining: 4.92s
551:    learn: 0.0404099        total: 6.04s    remaining: 4.91s
552:    learn: 0.0403946        total: 6.05s    remaining: 4.89s
553:    learn: 0.0403726        total: 6.06s    remaining: 4.88s
554:    learn: 0.0403345        total: 6.07s    remaining: 4.87s
555:    learn: 0.0403239        total: 6.08s    remaining: 4.86s
556:    learn: 0.0403080        total: 6.09s    remaining: 4.85s
557:    learn: 0.0402475        total: 6.11s    remaining: 4.84s
558:    learn: 0.0402120        total: 6.12s    remaining: 4.83s
559:    learn: 0.0401914        total: 6.13s    remaining: 4.82s
560:    learn: 0.0401317        total: 6.14s    remaining: 4.81s
561:    learn: 0.0400756        total: 6.15s    remaining: 4.8s
562:    learn: 0.0400636        total: 6.16s    remaining: 4.79s
563:    learn: 0.0400396        total: 6.17s    remaining: 4.77s
564:    learn: 0.0400084        total: 6.19s    remaining: 4.76s
565:    learn: 0.0399650        total: 6.2s     remaining: 4.75s
566:    learn: 0.0399038        total: 6.21s    remaining: 4.74s
567:    learn: 0.0398677        total: 6.22s    remaining: 4.73s
568:    learn: 0.0398531        total: 6.23s    remaining: 4.72s
569:    learn: 0.0398273        total: 6.24s    remaining: 4.71s
570:    learn: 0.0398027        total: 6.25s    remaining: 4.7s
571:    learn: 0.0397682        total: 6.26s    remaining: 4.69s
572:    learn: 0.0397561        total: 6.27s    remaining: 4.67s
573:    learn: 0.0397437        total: 6.28s    remaining: 4.66s
574:    learn: 0.0397266        total: 6.29s    remaining: 4.65s
575:    learn: 0.0397148        total: 6.3s     remaining: 4.64s
576:    learn: 0.0396836        total: 6.31s    remaining: 4.63s
577:    learn: 0.0396579        total: 6.33s    remaining: 4.62s
578:    learn: 0.0396443        total: 6.33s    remaining: 4.61s
579:    learn: 0.0396190        total: 6.34s    remaining: 4.59s
580:    learn: 0.0395714        total: 6.36s    remaining: 4.58s
581:    learn: 0.0395547        total: 6.37s    remaining: 4.57s
582:    learn: 0.0394936        total: 6.38s    remaining: 4.56s
583:    learn: 0.0394521        total: 6.39s    remaining: 4.55s
584:    learn: 0.0394153        total: 6.4s     remaining: 4.54s
585:    learn: 0.0393570        total: 6.41s    remaining: 4.53s
586:    learn: 0.0393409        total: 6.42s    remaining: 4.52s
587:    learn: 0.0392833        total: 6.43s    remaining: 4.51s
588:    learn: 0.0392583        total: 6.45s    remaining: 4.5s
589:    learn: 0.0392165        total: 6.46s    remaining: 4.49s
590:    learn: 0.0391710        total: 6.47s    remaining: 4.48s
591:    learn: 0.0391413        total: 6.48s    remaining: 4.46s
592:    learn: 0.0391210        total: 6.49s    remaining: 4.45s
593:    learn: 0.0391057        total: 6.5s     remaining: 4.44s
594:    learn: 0.0390927        total: 6.51s    remaining: 4.43s
595:    learn: 0.0390821        total: 6.52s    remaining: 4.42s
596:    learn: 0.0390658        total: 6.53s    remaining: 4.41s
597:    learn: 0.0390092        total: 6.54s    remaining: 4.4s
598:    learn: 0.0389967        total: 6.55s    remaining: 4.38s
599:    learn: 0.0389572        total: 6.56s    remaining: 4.37s
600:    learn: 0.0389365        total: 6.57s    remaining: 4.36s
601:    learn: 0.0389029        total: 6.58s    remaining: 4.35s
602:    learn: 0.0388808        total: 6.59s    remaining: 4.34s
603:    learn: 0.0388506        total: 6.61s    remaining: 4.33s
604:    learn: 0.0388237        total: 6.62s    remaining: 4.32s
605:    learn: 0.0387983        total: 6.63s    remaining: 4.31s
606:    learn: 0.0387698        total: 6.64s    remaining: 4.3s
607:    learn: 0.0387477        total: 6.65s    remaining: 4.29s
608:    learn: 0.0387132        total: 6.67s    remaining: 4.28s
```

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609:    learn: 0.0386962        total: 6.68s    remaining: 4.27s
610:    learn: 0.0386863        total: 6.69s    remaining: 4.26s
611:    learn: 0.0386534        total: 6.7s     remaining: 4.25s
612:    learn: 0.0385832        total: 6.71s    remaining: 4.24s
613:    learn: 0.0385452        total: 6.72s    remaining: 4.22s
614:    learn: 0.0385244        total: 6.73s    remaining: 4.21s
615:    learn: 0.0384709        total: 6.74s    remaining: 4.2s
616:    learn: 0.0384402        total: 6.75s    remaining: 4.19s
617:    learn: 0.0384090        total: 6.77s    remaining: 4.18s
618:    learn: 0.0383982        total: 6.78s    remaining: 4.17s
619:    learn: 0.0383921        total: 6.79s    remaining: 4.16s
620:    learn: 0.0383745        total: 6.8s     remaining: 4.15s
621:    learn: 0.0383468        total: 6.81s    remaining: 4.14s
622:    learn: 0.0383367        total: 6.82s    remaining: 4.13s
623:    learn: 0.0383283        total: 6.83s    remaining: 4.12s
624:    learn: 0.0382868        total: 6.84s    remaining: 4.11s
625:    learn: 0.0382519        total: 6.86s    remaining: 4.1s
626:    learn: 0.0382255        total: 6.87s    remaining: 4.08s
627:    learn: 0.0381886        total: 6.88s    remaining: 4.07s
628:    learn: 0.0381706        total: 6.89s    remaining: 4.06s
629:    learn: 0.0381603        total: 6.9s     remaining: 4.05s
630:    learn: 0.0381289        total: 6.91s    remaining: 4.04s
631:    learn: 0.0380960        total: 6.92s    remaining: 4.03s
632:    learn: 0.0380859        total: 6.93s    remaining: 4.02s
633:    learn: 0.0380680        total: 6.94s    remaining: 4.01s
634:    learn: 0.0380011        total: 6.95s    remaining: 4s
635:    learn: 0.0379791        total: 6.96s    remaining: 3.98s
636:    learn: 0.0379283        total: 6.97s    remaining: 3.97s
637:    learn: 0.0379131        total: 6.98s    remaining: 3.96s
638:    learn: 0.0378882        total: 6.99s    remaining: 3.95s
639:    learn: 0.0378521        total: 7s       remaining: 3.94s
640:    learn: 0.0378285        total: 7.01s    remaining: 3.93s
641:    learn: 0.0377950        total: 7.02s    remaining: 3.92s
642:    learn: 0.0377769        total: 7.03s    remaining: 3.9s
643:    learn: 0.0377502        total: 7.05s    remaining: 3.9s
644:    learn: 0.0377336        total: 7.06s    remaining: 3.88s
645:    learn: 0.0377102        total: 7.07s    remaining: 3.87s
646:    learn: 0.0376512        total: 7.08s    remaining: 3.86s
647:    learn: 0.0376348        total: 7.09s    remaining: 3.85s
648:    learn: 0.0375806        total: 7.1s     remaining: 3.84s
649:    learn: 0.0375521        total: 7.11s    remaining: 3.83s
650:    learn: 0.0375205        total: 7.12s    remaining: 3.82s
651:    learn: 0.0374813        total: 7.13s    remaining: 3.81s
652:    learn: 0.0374519        total: 7.14s    remaining: 3.8s
653:    learn: 0.0374315        total: 7.15s    remaining: 3.78s
654:    learn: 0.0374113        total: 7.16s    remaining: 3.77s
655:    learn: 0.0373810        total: 7.17s    remaining: 3.76s
656:    learn: 0.0373568        total: 7.18s    remaining: 3.75s
657:    learn: 0.0373156        total: 7.19s    remaining: 3.74s
658:    learn: 0.0373012        total: 7.2s     remaining: 3.73s
659:    learn: 0.0372751        total: 7.21s    remaining: 3.72s
660:    learn: 0.0372677        total: 7.22s    remaining: 3.71s
661:    learn: 0.0372369        total: 7.23s    remaining: 3.69s
662:    learn: 0.0372212        total: 7.24s    remaining: 3.68s
663:    learn: 0.0371956        total: 7.26s    remaining: 3.67s
664:    learn: 0.0371575        total: 7.27s    remaining: 3.66s
665:    learn: 0.0371113        total: 7.28s    remaining: 3.65s
666:    learn: 0.0370899        total: 7.29s    remaining: 3.64s
667:    learn: 0.0370814        total: 7.3s     remaining: 3.63s
668:    learn: 0.0370535        total: 7.31s    remaining: 3.62s
669:    learn: 0.0370269        total: 7.32s    remaining: 3.6s
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670:    learn: 0.0369968    total: 7.33s    remaining: 3.59s
671:    learn: 0.0369591    total: 7.34s    remaining: 3.58s
672:    learn: 0.0369445    total: 7.35s    remaining: 3.57s
673:    learn: 0.0368799    total: 7.37s    remaining: 3.56s
674:    learn: 0.0368480    total: 7.39s    remaining: 3.56s
675:    learn: 0.0368238    total: 7.4s     remaining: 3.54s
676:    learn: 0.0368158    total: 7.41s    remaining: 3.53s
677:    learn: 0.0368045    total: 7.42s    remaining: 3.52s
678:    learn: 0.0367549    total: 7.43s    remaining: 3.51s
679:    learn: 0.0367161    total: 7.44s    remaining: 3.5s
680:    learn: 0.0366945    total: 7.45s    remaining: 3.49s
681:    learn: 0.0366476    total: 7.47s    remaining: 3.48s
682:    learn: 0.0366122    total: 7.48s    remaining: 3.47s
683:    learn: 0.0365889    total: 7.49s    remaining: 3.46s
684:    learn: 0.0365742    total: 7.5s     remaining: 3.45s
685:    learn: 0.0365479    total: 7.51s    remaining: 3.44s
686:    learn: 0.0365253    total: 7.52s    remaining: 3.43s
687:    learn: 0.0364792    total: 7.53s    remaining: 3.42s
688:    learn: 0.0364133    total: 7.54s    remaining: 3.4s
689:    learn: 0.0363788    total: 7.55s    remaining: 3.39s
690:    learn: 0.0363669    total: 7.56s    remaining: 3.38s
691:    learn: 0.0363535    total: 7.57s    remaining: 3.37s
692:    learn: 0.0363290    total: 7.58s    remaining: 3.36s
693:    learn: 0.0363148    total: 7.6s     remaining: 3.35s
694:    learn: 0.0362878    total: 7.61s    remaining: 3.34s
695:    learn: 0.0362530    total: 7.62s    remaining: 3.33s
696:    learn: 0.0362322    total: 7.63s    remaining: 3.32s
697:    learn: 0.0362168    total: 7.64s    remaining: 3.31s
698:    learn: 0.0362022    total: 7.65s    remaining: 3.3s
699:    learn: 0.0361940    total: 7.67s    remaining: 3.29s
700:    learn: 0.0361838    total: 7.68s    remaining: 3.27s
701:    learn: 0.0361530    total: 7.69s    remaining: 3.26s
702:    learn: 0.0361298    total: 7.7s     remaining: 3.25s
703:    learn: 0.0361055    total: 7.71s    remaining: 3.24s
704:    learn: 0.0360829    total: 7.72s    remaining: 3.23s
705:    learn: 0.0360704    total: 7.73s    remaining: 3.22s
706:    learn: 0.0360607    total: 7.74s    remaining: 3.21s
707:    learn: 0.0360548    total: 7.75s    remaining: 3.2s
708:    learn: 0.0360315    total: 7.76s    remaining: 3.19s
709:    learn: 0.0360093    total: 7.78s    remaining: 3.18s
710:    learn: 0.0359877    total: 7.79s    remaining: 3.17s
711:    learn: 0.0359682    total: 7.8s     remaining: 3.15s
712:    learn: 0.0359566    total: 7.81s    remaining: 3.14s
713:    learn: 0.0359325    total: 7.82s    remaining: 3.13s
714:    learn: 0.0359254    total: 7.83s    remaining: 3.12s
715:    learn: 0.0358941    total: 7.84s    remaining: 3.11s
716:    learn: 0.0358884    total: 7.85s    remaining: 3.1s
717:    learn: 0.0358671    total: 7.86s    remaining: 3.09s
718:    learn: 0.0358438    total: 7.87s    remaining: 3.08s
719:    learn: 0.0358181    total: 7.88s    remaining: 3.06s
720:    learn: 0.0358055    total: 7.89s    remaining: 3.05s
721:    learn: 0.0357968    total: 7.9s     remaining: 3.04s
722:    learn: 0.0357645    total: 7.91s    remaining: 3.03s
723:    learn: 0.0357343    total: 7.92s    remaining: 3.02s
724:    learn: 0.0357028    total: 7.93s    remaining: 3.01s
725:    learn: 0.0356891    total: 7.94s    remaining: 3s
726:    learn: 0.0356634    total: 7.95s    remaining: 2.98s
727:    learn: 0.0356460    total: 7.96s    remaining: 2.97s
728:    learn: 0.0356161    total: 7.97s    remaining: 2.96s
729:    learn: 0.0356067    total: 7.98s    remaining: 2.95s
730:    learn: 0.0355786    total: 7.99s    remaining: 2.94s
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731:    learn: 0.0355647        total: 8s       remaining: 2.93s
732:    learn: 0.0355467        total: 8.01s    remaining: 2.92s
733:    learn: 0.0355339        total: 8.02s    remaining: 2.91s
734:    learn: 0.0355022        total: 8.03s    remaining: 2.9s
735:    learn: 0.0354949        total: 8.04s    remaining: 2.88s
736:    learn: 0.0354590        total: 8.05s    remaining: 2.87s
737:    learn: 0.0354383        total: 8.06s    remaining: 2.86s
738:    learn: 0.0354181        total: 8.07s    remaining: 2.85s
739:    learn: 0.0354096        total: 8.08s    remaining: 2.84s
740:    learn: 0.0353741        total: 8.1s     remaining: 2.83s
741:    learn: 0.0353608        total: 8.11s    remaining: 2.82s
742:    learn: 0.0353403        total: 8.12s    remaining: 2.81s
743:    learn: 0.0353320        total: 8.13s    remaining: 2.8s
744:    learn: 0.0353032        total: 8.14s    remaining: 2.79s
745:    learn: 0.0352837        total: 8.15s    remaining: 2.77s
746:    learn: 0.0352703        total: 8.16s    remaining: 2.76s
747:    learn: 0.0352609        total: 8.17s    remaining: 2.75s
748:    learn: 0.0352393        total: 8.18s    remaining: 2.74s
749:    learn: 0.0352112        total: 8.19s    remaining: 2.73s
750:    learn: 0.0352015        total: 8.2s     remaining: 2.72s
751:    learn: 0.0351742        total: 8.21s    remaining: 2.71s
752:    learn: 0.0351268        total: 8.22s    remaining: 2.7s
753:    learn: 0.0351072        total: 8.23s    remaining: 2.69s
754:    learn: 0.0350819        total: 8.24s    remaining: 2.67s
755:    learn: 0.0350738        total: 8.26s    remaining: 2.66s
756:    learn: 0.0350499        total: 8.27s    remaining: 2.65s
757:    learn: 0.0350083        total: 8.28s    remaining: 2.64s
758:    learn: 0.0349817        total: 8.29s    remaining: 2.63s
759:    learn: 0.0349688        total: 8.3s     remaining: 2.62s
760:    learn: 0.0349453        total: 8.31s    remaining: 2.61s
761:    learn: 0.0349338        total: 8.32s    remaining: 2.6s
762:    learn: 0.0349210        total: 8.33s    remaining: 2.59s
763:    learn: 0.0349140        total: 8.34s    remaining: 2.58s
764:    learn: 0.0349014        total: 8.35s    remaining: 2.56s
765:    learn: 0.0348827        total: 8.36s    remaining: 2.55s
766:    learn: 0.0348764        total: 8.37s    remaining: 2.54s
767:    learn: 0.0348584        total: 8.38s    remaining: 2.53s
768:    learn: 0.0348350        total: 8.39s    remaining: 2.52s
769:    learn: 0.0348060        total: 8.4s     remaining: 2.51s
770:    learn: 0.0347834        total: 8.41s    remaining: 2.5s
771:    learn: 0.0347766        total: 8.42s    remaining: 2.49s
772:    learn: 0.0347568        total: 8.44s    remaining: 2.48s
773:    learn: 0.0347477        total: 8.44s    remaining: 2.46s
774:    learn: 0.0347213        total: 8.46s    remaining: 2.45s
775:    learn: 0.0346985        total: 8.46s    remaining: 2.44s
776:    learn: 0.0346915        total: 8.47s    remaining: 2.43s
777:    learn: 0.0346724        total: 8.48s    remaining: 2.42s
778:    learn: 0.0346613        total: 8.5s     remaining: 2.41s
779:    learn: 0.0346168        total: 8.51s    remaining: 2.4s
780:    learn: 0.0345753        total: 8.52s    remaining: 2.39s
781:    learn: 0.0345465        total: 8.53s    remaining: 2.38s
782:    learn: 0.0345262        total: 8.54s    remaining: 2.37s
783:    learn: 0.0345019        total: 8.55s    remaining: 2.36s
784:    learn: 0.0344887        total: 8.56s    remaining: 2.34s
785:    learn: 0.0344766        total: 8.57s    remaining: 2.33s
786:    learn: 0.0344376        total: 8.58s    remaining: 2.32s
787:    learn: 0.0344149        total: 8.6s     remaining: 2.31s
788:    learn: 0.0344085        total: 8.61s    remaining: 2.3s
789:    learn: 0.0343776        total: 8.62s    remaining: 2.29s
790:    learn: 0.0343699        total: 8.63s    remaining: 2.28s
791:    learn: 0.0343467        total: 8.64s    remaining: 2.27s
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792:     learn: 0.0343401       total: 8.65s     remaining: 2.26s
793:     learn: 0.0343154       total: 8.66s     remaining: 2.25s
794:     learn: 0.0342913       total: 8.67s     remaining: 2.24s
795:     learn: 0.0342851       total: 8.68s     remaining: 2.23s
796:     learn: 0.0342764       total: 8.69s     remaining: 2.21s
797:     learn: 0.0342607       total: 8.71s     remaining: 2.2s
798:     learn: 0.0342320       total: 8.72s     remaining: 2.19s
799:     learn: 0.0341902       total: 8.73s     remaining: 2.18s
800:     learn: 0.0341443       total: 8.74s     remaining: 2.17s
801:     learn: 0.0341112       total: 8.76s     remaining: 2.16s
802:     learn: 0.0340579       total: 8.77s     remaining: 2.15s
803:     learn: 0.0340371       total: 8.78s     remaining: 2.14s
804:     learn: 0.0340180       total: 8.79s     remaining: 2.13s
805:     learn: 0.0339930       total: 8.8s      remaining: 2.12s
806:     learn: 0.0339683       total: 8.81s     remaining: 2.11s
807:     learn: 0.0339558       total: 8.82s     remaining: 2.1s
808:     learn: 0.0339443       total: 8.83s     remaining: 2.08s
809:     learn: 0.0339247       total: 8.84s     remaining: 2.07s
810:     learn: 0.0338958       total: 8.85s     remaining: 2.06s
811:     learn: 0.0338885       total: 8.86s     remaining: 2.05s
812:     learn: 0.0338669       total: 8.87s     remaining: 2.04s
813:     learn: 0.0338289       total: 8.88s     remaining: 2.03s
814:     learn: 0.0337809       total: 8.89s     remaining: 2.02s
815:     learn: 0.0337631       total: 8.9s      remaining: 2.01s
816:     learn: 0.0337570       total: 8.91s     remaining: 2s
817:     learn: 0.0337470       total: 8.92s     remaining: 1.99s
818:     learn: 0.0337049       total: 8.94s     remaining: 1.97s
819:     learn: 0.0336939       total: 8.95s     remaining: 1.96s
820:     learn: 0.0336714       total: 8.96s     remaining: 1.95s
821:     learn: 0.0336592       total: 8.97s     remaining: 1.94s
822:     learn: 0.0336374       total: 8.98s     remaining: 1.93s
823:     learn: 0.0336031       total: 8.99s     remaining: 1.92s
824:     learn: 0.0335769       total: 9s        remaining: 1.91s
825:     learn: 0.0335591       total: 9.01s     remaining: 1.9s
826:     learn: 0.0335416       total: 9.02s     remaining: 1.89s
827:     learn: 0.0335149       total: 9.03s     remaining: 1.88s
828:     learn: 0.0334950       total: 9.04s     remaining: 1.86s
829:     learn: 0.0334697       total: 9.05s     remaining: 1.85s
830:     learn: 0.0334305       total: 9.06s     remaining: 1.84s
831:     learn: 0.0334038       total: 9.07s     remaining: 1.83s
832:     learn: 0.0333839       total: 9.09s     remaining: 1.82s
833:     learn: 0.0333769       total: 9.1s      remaining: 1.81s
834:     learn: 0.0333690       total: 9.11s     remaining: 1.8s
835:     learn: 0.0333191       total: 9.12s     remaining: 1.79s
836:     learn: 0.0332951       total: 9.14s     remaining: 1.78s
837:     learn: 0.0332847       total: 9.15s     remaining: 1.77s
838:     learn: 0.0332629       total: 9.16s     remaining: 1.76s
839:     learn: 0.0332338       total: 9.17s     remaining: 1.75s
840:     learn: 0.0332193       total: 9.18s     remaining: 1.74s
841:     learn: 0.0331824       total: 9.19s     remaining: 1.72s
842:     learn: 0.0331642       total: 9.2s      remaining: 1.71s
843:     learn: 0.0331363       total: 9.21s     remaining: 1.7s
844:     learn: 0.0330864       total: 9.22s     remaining: 1.69s
845:     learn: 0.0330514       total: 9.23s     remaining: 1.68s
846:     learn: 0.0330285       total: 9.24s     remaining: 1.67s
847:     learn: 0.0330067       total: 9.25s     remaining: 1.66s
848:     learn: 0.0329799       total: 9.26s     remaining: 1.65s
849:     learn: 0.0329542       total: 9.27s     remaining: 1.64s
850:     learn: 0.0329282       total: 9.28s     remaining: 1.63s
851:     learn: 0.0328852       total: 9.29s     remaining: 1.61s
852:     learn: 0.0328689       total: 9.3s      remaining: 1.6s
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853:    learn: 0.0328583    total: 9.31s    remaining: 1.59s
854:    learn: 0.0328358    total: 9.32s    remaining: 1.58s
855:    learn: 0.0328214    total: 9.34s    remaining: 1.57s
856:    learn: 0.0327992    total: 9.35s    remaining: 1.56s
857:    learn: 0.0327937    total: 9.36s    remaining: 1.55s
858:    learn: 0.0327596    total: 9.37s    remaining: 1.54s
859:    learn: 0.0327428    total: 9.38s    remaining: 1.53s
860:    learn: 0.0326908    total: 9.39s    remaining: 1.51s
861:    learn: 0.0326554    total: 9.4s     remaining: 1.5s
862:    learn: 0.0326500    total: 9.41s    remaining: 1.49s
863:    learn: 0.0326392    total: 9.42s    remaining: 1.48s
864:    learn: 0.0326297    total: 9.43s    remaining: 1.47s
865:    learn: 0.0325878    total: 9.45s    remaining: 1.46s
866:    learn: 0.0325667    total: 9.46s    remaining: 1.45s
867:    learn: 0.0325461    total: 9.47s    remaining: 1.44s
868:    learn: 0.0325359    total: 9.48s    remaining: 1.43s
869:    learn: 0.0325169    total: 9.49s    remaining: 1.42s
870:    learn: 0.0324432    total: 9.5s     remaining: 1.41s
871:    learn: 0.0324097    total: 9.51s    remaining: 1.4s
872:    learn: 0.0324002    total: 9.52s    remaining: 1.38s
873:    learn: 0.0323950    total: 9.53s    remaining: 1.37s
874:    learn: 0.0323751    total: 9.54s    remaining: 1.36s
875:    learn: 0.0323567    total: 9.56s    remaining: 1.35s
876:    learn: 0.0323411    total: 9.57s    remaining: 1.34s
877:    learn: 0.0323278    total: 9.58s    remaining: 1.33s
878:    learn: 0.0323065    total: 9.6s     remaining: 1.32s
879:    learn: 0.0322923    total: 9.61s    remaining: 1.31s
880:    learn: 0.0322820    total: 9.62s    remaining: 1.3s
881:    learn: 0.0322599    total: 9.63s    remaining: 1.29s
882:    learn: 0.0322549    total: 9.64s    remaining: 1.28s
883:    learn: 0.0322357    total: 9.65s    remaining: 1.27s
884:    learn: 0.0322258    total: 9.66s    remaining: 1.25s
885:    learn: 0.0322027    total: 9.67s    remaining: 1.24s
886:    learn: 0.0321920    total: 9.68s    remaining: 1.23s
887:    learn: 0.0321849    total: 9.69s    remaining: 1.22s
888:    learn: 0.0321553    total: 9.7s     remaining: 1.21s
889:    learn: 0.0321344    total: 9.71s    remaining: 1.2s
890:    learn: 0.0321244    total: 9.72s    remaining: 1.19s
891:    learn: 0.0321041    total: 9.73s    remaining: 1.18s
892:    learn: 0.0320594    total: 9.74s    remaining: 1.17s
893:    learn: 0.0320423    total: 9.76s    remaining: 1.16s
894:    learn: 0.0320374    total: 9.77s    remaining: 1.15s
895:    learn: 0.0320220    total: 9.78s    remaining: 1.14s
896:    learn: 0.0319825    total: 9.79s    remaining: 1.12s
897:    learn: 0.0319133    total: 9.8s     remaining: 1.11s
898:    learn: 0.0318646    total: 9.81s    remaining: 1.1s
899:    learn: 0.0318471    total: 9.82s    remaining: 1.09s
900:    learn: 0.0318330    total: 9.84s    remaining: 1.08s
901:    learn: 0.0318081    total: 9.85s    remaining: 1.07s
902:    learn: 0.0317953    total: 9.86s    remaining: 1.06s
903:    learn: 0.0317796    total: 9.87s    remaining: 1.05s
904:    learn: 0.0317581    total: 9.88s    remaining: 1.04s
905:    learn: 0.0317455    total: 9.89s    remaining: 1.02s
906:    learn: 0.0317076    total: 9.9s     remaining: 1.01s
907:    learn: 0.0316860    total: 9.91s    remaining: 1s
908:    learn: 0.0316664    total: 9.92s    remaining: 993ms
909:    learn: 0.0316465    total: 9.93s    remaining: 982ms
910:    learn: 0.0316216    total: 9.94s    remaining: 971ms
911:    learn: 0.0316005    total: 9.95s    remaining: 961ms
912:    learn: 0.0315769    total: 9.96s    remaining: 950ms
913:    learn: 0.0315569    total: 9.98s    remaining: 939ms
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914:     learn: 0.0315212     total: 9.99s     remaining: 928ms
915:     learn: 0.0314938     total: 10s       remaining: 917ms
916:     learn: 0.0314747     total: 10s       remaining: 906ms
917:     learn: 0.0314563     total: 10s       remaining: 895ms
918:     learn: 0.0314368     total: 10s       remaining: 884ms
919:     learn: 0.0313900     total: 10s       remaining: 873ms
920:     learn: 0.0313641     total: 10s       remaining: 862ms
921:     learn: 0.0313526     total: 10.1s     remaining: 851ms
922:     learn: 0.0313380     total: 10.1s     remaining: 840ms
923:     learn: 0.0312986     total: 10.1s     remaining: 830ms
924:     learn: 0.0312899     total: 10.1s     remaining: 819ms
925:     learn: 0.0312842     total: 10.1s     remaining: 808ms
926:     learn: 0.0312591     total: 10.1s     remaining: 797ms
927:     learn: 0.0312399     total: 10.1s     remaining: 786ms
928:     learn: 0.0312261     total: 10.1s     remaining: 775ms
929:     learn: 0.0312177     total: 10.1s     remaining: 764ms
930:     learn: 0.0311997     total: 10.2s     remaining: 753ms
931:     learn: 0.0311929     total: 10.2s     remaining: 742ms
932:     learn: 0.0311823     total: 10.2s     remaining: 731ms
933:     learn: 0.0311629     total: 10.2s     remaining: 720ms
934:     learn: 0.0311482     total: 10.2s     remaining: 709ms
935:     learn: 0.0311398     total: 10.2s     remaining: 699ms
936:     learn: 0.0311204     total: 10.2s     remaining: 688ms
937:     learn: 0.0310999     total: 10.2s     remaining: 677ms
938:     learn: 0.0310761     total: 10.2s     remaining: 666ms
939:     learn: 0.0310566     total: 10.3s     remaining: 655ms
940:     learn: 0.0310393     total: 10.3s     remaining: 644ms
941:     learn: 0.0310097     total: 10.3s     remaining: 633ms
942:     learn: 0.0310016     total: 10.3s     remaining: 622ms
943:     learn: 0.0309949     total: 10.3s     remaining: 611ms
944:     learn: 0.0309860     total: 10.3s     remaining: 600ms
945:     learn: 0.0309725     total: 10.3s     remaining: 589ms
946:     learn: 0.0309609     total: 10.3s     remaining: 578ms
947:     learn: 0.0309257     total: 10.3s     remaining: 567ms
948:     learn: 0.0309196     total: 10.4s     remaining: 556ms
949:     learn: 0.0308991     total: 10.4s     remaining: 546ms
950:     learn: 0.0308844     total: 10.4s     remaining: 535ms
951:     learn: 0.0308521     total: 10.4s     remaining: 524ms
952:     learn: 0.0308244     total: 10.4s     remaining: 513ms
953:     learn: 0.0308151     total: 10.4s     remaining: 502ms
954:     learn: 0.0308095     total: 10.4s     remaining: 491ms
955:     learn: 0.0307950     total: 10.4s     remaining: 480ms
956:     learn: 0.0307810     total: 10.4s     remaining: 469ms
957:     learn: 0.0307753     total: 10.5s     remaining: 458ms
958:     learn: 0.0307615     total: 10.5s     remaining: 447ms
959:     learn: 0.0307538     total: 10.5s     remaining: 436ms
960:     learn: 0.0307487     total: 10.5s     remaining: 426ms
961:     learn: 0.0307344     total: 10.5s     remaining: 415ms
962:     learn: 0.0307114     total: 10.5s     remaining: 404ms
963:     learn: 0.0306748     total: 10.5s     remaining: 393ms
964:     learn: 0.0306576     total: 10.5s     remaining: 382ms
965:     learn: 0.0306379     total: 10.5s     remaining: 371ms
966:     learn: 0.0306305     total: 10.5s     remaining: 360ms
967:     learn: 0.0306274     total: 10.6s     remaining: 349ms
968:     learn: 0.0306233     total: 10.6s     remaining: 338ms
969:     learn: 0.0306060     total: 10.6s     remaining: 327ms
970:     learn: 0.0305998     total: 10.6s     remaining: 317ms
971:     learn: 0.0305860     total: 10.6s     remaining: 306ms
972:     learn: 0.0305794     total: 10.6s     remaining: 295ms
973:     learn: 0.0305557     total: 10.6s     remaining: 284ms
974:     learn: 0.0305317     total: 10.6s     remaining: 273ms
```

```
975:      learn: 0.0305227       total: 10.7s    remaining: 262ms
976:      learn: 0.0305061       total: 10.7s    remaining: 251ms
977:      learn: 0.0304980       total: 10.7s    remaining: 240ms
978:      learn: 0.0304913       total: 10.7s    remaining: 229ms
979:      learn: 0.0304719       total: 10.7s    remaining: 218ms
980:      learn: 0.0304651       total: 10.7s    remaining: 207ms
981:      learn: 0.0304540       total: 10.7s    remaining: 196ms
982:      learn: 0.0304364       total: 10.7s    remaining: 186ms
983:      learn: 0.0304256       total: 10.7s    remaining: 175ms
984:      learn: 0.0303951       total: 10.8s    remaining: 164ms
985:      learn: 0.0303714       total: 10.8s    remaining: 153ms
986:      learn: 0.0303575       total: 10.8s    remaining: 142ms
987:      learn: 0.0303237       total: 10.8s    remaining: 131ms
988:      learn: 0.0303142       total: 10.8s    remaining: 120ms
989:      learn: 0.0302671       total: 10.8s    remaining: 109ms
990:      learn: 0.0302526       total: 10.8s    remaining: 98.3ms
991:      learn: 0.0302462       total: 10.8s    remaining: 87.4ms
992:      learn: 0.0302354       total: 10.8s    remaining: 76.5ms
993:      learn: 0.0302012       total: 10.9s    remaining: 65.5ms
994:      learn: 0.0301595       total: 10.9s    remaining: 54.6ms
995:      learn: 0.0301417       total: 10.9s    remaining: 43.7ms
996:      learn: 0.0301177       total: 10.9s    remaining: 32.8ms
997:      learn: 0.0301116       total: 10.9s    remaining: 21.8ms
998:      learn: 0.0300906       total: 10.9s    remaining: 10.9ms
999:      learn: 0.0300838       total: 10.9s    remaining: 0us
```

In [ ]:

```python
# Ensemble

read_1 = pd.read_csv('Submission16.csv')

read_2 = pd.read_csv('Submission17.csv')

new = (0.75 * read_1['target_class']) + (0.25 * read_2['target_class'])

file_out = pd.DataFrame({'id': read_2['id'], 'target_class':new})

file_out.to_csv('Submission18.csv', index=False)
```

In [ ]:

```python
# # Submission File

# model = CatBoostClassifier()

# model.fit(X, y)

# y_pred_log = model.predict_proba(test)[:, 1]

# y_test = [(np.exp(x)) for x in [i for i in y_test]]

# y_pred = [(np.exp(x)) for x in [i for i in y_pred_log]]

# submission = pd.DataFrame({'id':test_ID, 'target_class':y_pred})
# submission.to_csv('Submission2.csv', index=False)
```

In [ ]:

```
submission.shape
```

Out[ ]:

(3580, 2)

In [ ]:

```
submission.shape
```

Out[ ]:

(3580, 2)