```
import pandas as pd
from sklearn.ensemble import AdaBoostClassifier
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import train_test_split, cross_val_score
from sklearn.metrics import accuracy_score, confusion_matrix
import seaborn as sns
import matplotlib.pyplot as plt
import re
import numpy as np
```

```
from google.colab import files
data = files.upload()
```

Elegir archivos df.csv

- **df.csv**(text/csv) - 905077 bytes, last modified: 16/11/2022 - 100% done

```
Saving df.csv to df (2).csv
```

```
data = pd.read_csv('df (2).csv')
data = data.drop(['Group', 'Session', 'Subject', 'Type', 'Sample'], axis=1)
#data['Type'] = data['Type'].str.extract('(\d+)').astype(int)

#data['Type'] = pd.to_numeric(data['Type'])
#data['ISI'] = pd.to_numeric(data['ISI'])
data
```

	EMGPeakToPeak	ISI	RRA	RA	GRA	Label
0	307.8442	10	2.500001	2.984275	3.015745	HC SWD
1	307.8442	0	2.500001	2.984275	3.015745	HC SWD
2	202.9491	8	1.648148	1.967411	1.988158	HC SWD
3	112.8762	0	0.916667	1.094234	1.105773	HC SWD
4	129.9786	-1	1.055555	1.260027	1.273314	HC SWD
...	...	...	...	...	...	...
9115	299.8630	0	2.231966	3.025579	3.053667	HC SWD
9116	294.1622	20	2.189533	2.968059	2.995612	HC SWD
9117	294.1622	0	2.189533	2.968059	2.995612	HC SWD
9118	196.1081	4	1.459689	1.978706	1.997075	HC SWD
9119	196.1081	0	1.459689	1.978706	1.997075	HC SWD

9120 rows × 6 columns

```
X = data.drop(['Label', 'RRA', 'RA', 'GRA'], axis=1)
y = data['Label']

```

```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.20, random_state=42, stratify=y)

bag_clf = AdaBoostClassifier(DecisionTreeClassifier(max_depth=8), n_estimators=20, algorithm='SAMME.R',
bag_clf.fit(X_train, y_train)
y_pred = bag_clf.predict(X_test)
acc = accuracy_score(y_test, y_pred)
acc
```

```
0.33114035087719296
```

```
X = data.drop(['Label', 'RA', 'GRA'], axis=1)
y = data['Label']

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.20, random_state=42, stratify=y)

bag_clf = AdaBoostClassifier(DecisionTreeClassifier(max_depth=8), n_estimators=500, algorithm='SAMME.R'
bag_clf.fit(X_train, y_train)
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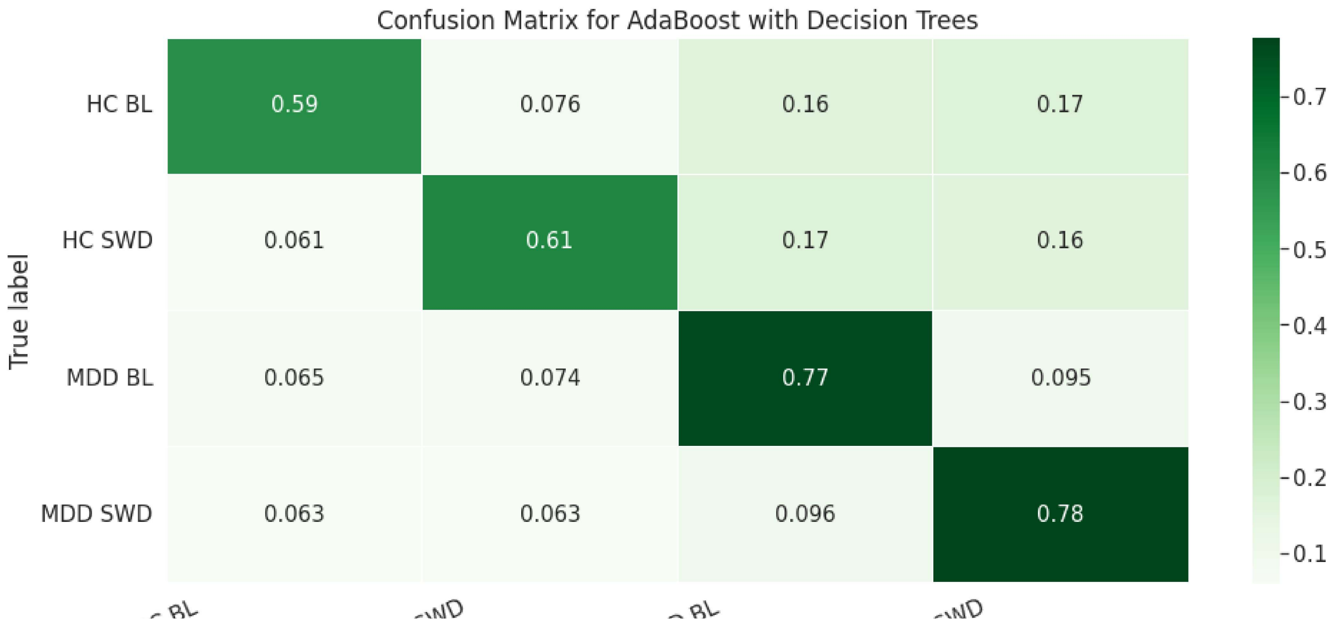
```

```
0.706140350877193
```

```
matrix = confusion_matrix(y_test, y_pred)
matrix = matrix.astype('float') / matrix.sum(axis=1)[:, np.newaxis]

# Build the plot
plt.figure(figsize=(16,7))
sns.set(font_scale=1.4)
sns.heatmap(matrix, annot=True, annot_kws={'size':15},
            cmap=plt.cm.Greens, linewidths=0.2)

# Add labels to the plot
class_names = ['HC BL', 'HC SWD', 'MDD BL',
               'MDD SWD']
tick_marks = np.arange(len(class_names))
tick_marks2 = tick_marks + 0.5
plt.xticks(tick_marks, class_names, rotation=25)
plt.yticks(tick_marks2, class_names, rotation=0)
plt.xlabel('Predicted label')
plt.ylabel('True label')
plt.title('Confusion Matrix for AdaBoost with Decision Trees')
plt.show()
```



```
X = data.drop(['Label', 'GRA', 'RRA' ], axis=1)
y = data['Label']

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.20, random_state=42, stratify=y)

bag_clf = AdaBoostClassifier(DecisionTreeClassifier(max_depth=8), n_estimators=500, algorithm='SAMME.R'
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0.7412280701754386
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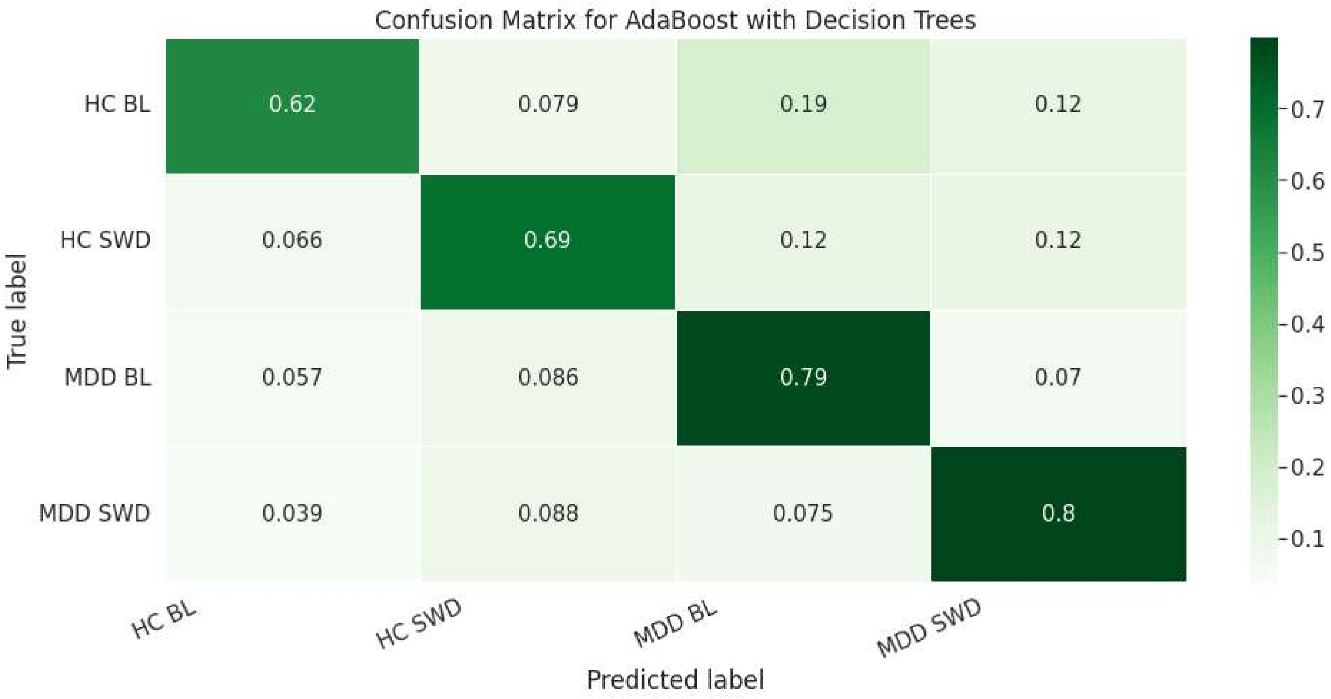

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0.8481359649122807
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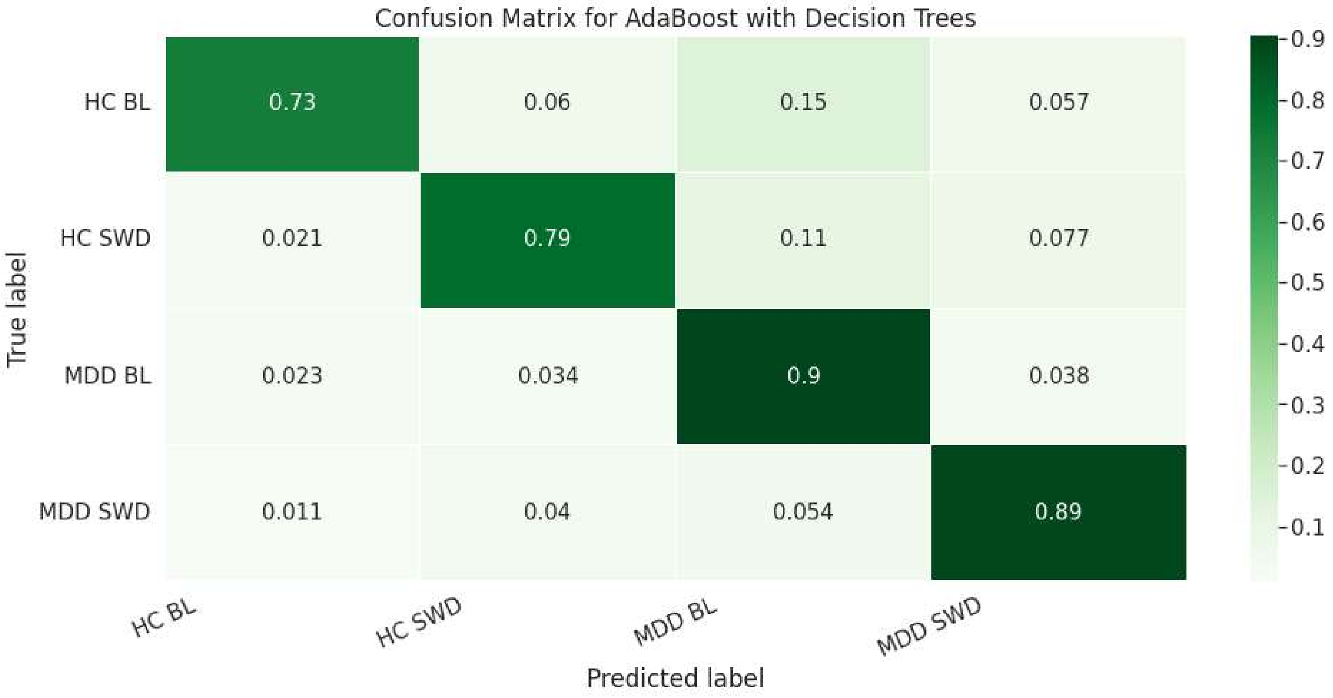

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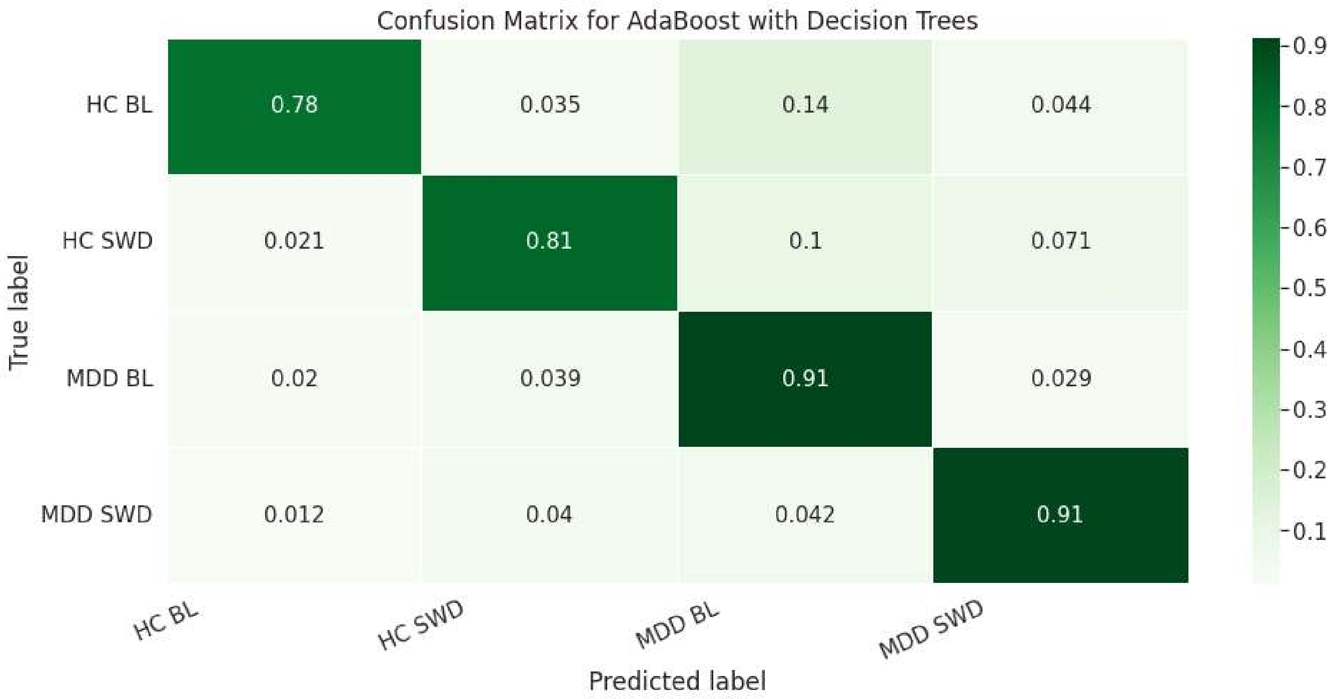

	HC BL	HC SWD	MDD BL	MDD SWD
HC BL	0.78	0.035	0.14	0.044
HC SWD	0.021	0.81	0.1	0.071
MDD BL	0.02	0.039	0.91	0.029
MDD SWD	0.012	0.04	0.042	0.91

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