

In [ ]:

```
import pandas as pd
dataset = pd.read_csv('D:\si\si_lab3_material\dataset\DATASET_SI_XYZ_FINAL.csv', usecols= [0,1,2,3,4,5,6,7,8,9,10,11] )
dataset
```

Out [ ]:

	x_is_at	goto_x	y_is_at	goto_y	z_is_at	goto_z	move_x_right	move_x_left	move_y_outside	move_y_inside	move_z_down	move_z_up
0	5	7	2	2	1	2	1	0	0	0	1	0
1	7	9	2	2	5	5	1	0	0	0	0	0
2	3	10	2	2	1	3	1	0	0	0	1	0
3	3	3	2	2	1	3	0	0	0	0	1	0
4	3	5	2	2	1	4	1	0	0	0	1	0
...	...	...	...	...	...	...	...	...	...	...	...	...
19994	1	10	1	3	3	5	0	0	1	0	0	0
19995	10	5	2	3	5	2	0	0	1	0	0	0
19996	5	8	1	2	5	2	0	0	1	0	0	0
19997	3	5	2	3	5	4	0	0	1	0	0	0
19998	10	3	2	3	2	3	0	0	1	0	0	0

19999 rows × 12 columns

In [ ]:

```
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import accuracy_score
from sklearn.metrics import confusion_matrix
from sklearn.metrics import precision_score
from sklearn.metrics import classification_report
from colorama import init, Fore, Back, Style
import numpy as np

X = dataset.iloc[:, 0:6]
Y = dataset.iloc[:,20000, 6:12]
X_train, X_test, y_train, y_test = train_test_split(X,Y,test_size=0.25, random_state=10, shuffle=False)

clf = DecisionTreeClassifier()
clf = clf.fit(X_train, y_train)
clf.get_params()

predictions = clf.predict(X_test)
#predictions = clf.predict_proba(X_test)
#predictions[:10]

#print(y_test)
#print(X_test)
print(X)
```

	x_is_at	goto_x	y_is_at	goto_y	z_is_at	goto_z
0	5	7	2	2	1	2
1	7	9	2	2	5	5
2	3	10	2	2	1	3
3	3	3	2	2	1	3
4	3	5	2	2	1	4
...	...	...	...	...	...	...
19994	1	10	1	3	3	5
19995	10	5	2	3	5	2
19996	5	8	1	2	5	2
19997	3	5	2	3	5	4
19998	10	3	2	3	2	3

[19999 rows x 6 columns]

In [ ]:

```
#accuracy_score(y_test, predictions) # accuracy
#confusion_matrix(y_test, predictions, labels=[0,1]) # [num corretas, num erradas] ou [num erradas, num corretas]
#precision_score(y_test, predictions, average=None) # precision
#print(classification_report(y_test, predictions, target_names['move_x_right', 'move_x_left']))
print(y_test[:10])
```

	move_x_right	move_x_left	move_y_outside	move_y_inside	move_z_down	\
14999	0	0	1	0	0	
15000	0	0	1	0	0	
15001	0	0	0	0	0	
15002	0	0	1	0	0	
15003	0	0	0	0	0	
15004	0	0	1	0	0	
15005	0	0	0	0	0	
15006	0	0	0	1	0	
15007	0	0	1	0	0	
15008	0	0	1	0	0	

	move_z_up
14999	0
15000	0
15001	0
15002	0
15003	0
15004	0
15005	0
15006	0
15007	0
15008	0

In [ ]:

```
print(X_test[:10])
```

	x_is_at	goto_x	y_is_at	goto_y	z_is_at	goto_z
14999	9	3	1	2	5	1
15000	6	4	2	3	1	4
15001	8	6	3	3	1	5
15002	10	4	1	3	5	2
15003	7	5	3	3	5	4
15004	4	4	1	2	3	2
15005	9	10	1	1	5	4
15006	8	8	2	1	5	3
15007	5	3	2	3	2	1
15008	8	2	1	3	2	4

In [ ]:

```
accuracy_score(y_test, predictions)
```

Out [ ]:

0.999

In [ ]:

```
print(X_train[:2])
```

	x_is_at	goto_x	y_is_at	goto_y	z_is_at	goto_z
0	5	7	2	2	1	2
1	7	9	2	2	5	5