

# Mini Projet: A Machine Learning

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## UML:

Decision Tree
depth criterion
fit(X,y) predict(X) gini() entropy() built_tree() plot()

Linear regerssion
fit(X,y) predict(X) R2()

KNN
K distance
fit(X,y) predict(X) accuracy()

## Decision Tree :

Test 1: {fichie vide}

Remarque: there is no resulte

Test 2:

With predict =[1,1]

```
*****DecisionTree  Module*****  
Entropy: 1.0  
Gini Index: 0.5  
predictions of DecisionTree [0]
```

With predict =[0,0]

```
*****DecisionTree  Module*****  
Entropy: 1.0  
Gini Index: 0.5  
predictions of DecisionTree [1]
```

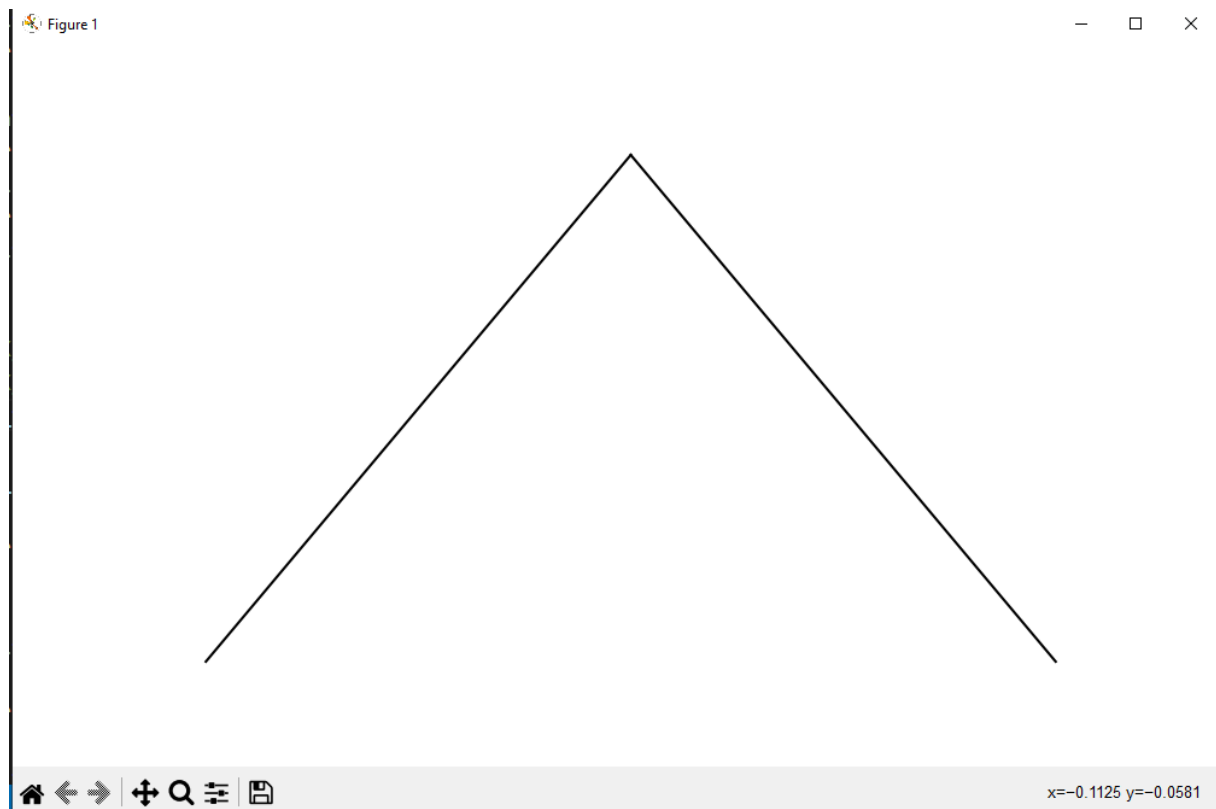
With predict =[1,0]

```
*****DecisionTree Module*****  
Entropy: 1.0  
Gini Index: 0.5  
predictions of DecisionTree [0]  
*****DecisionTree Module*****
```

Test3:

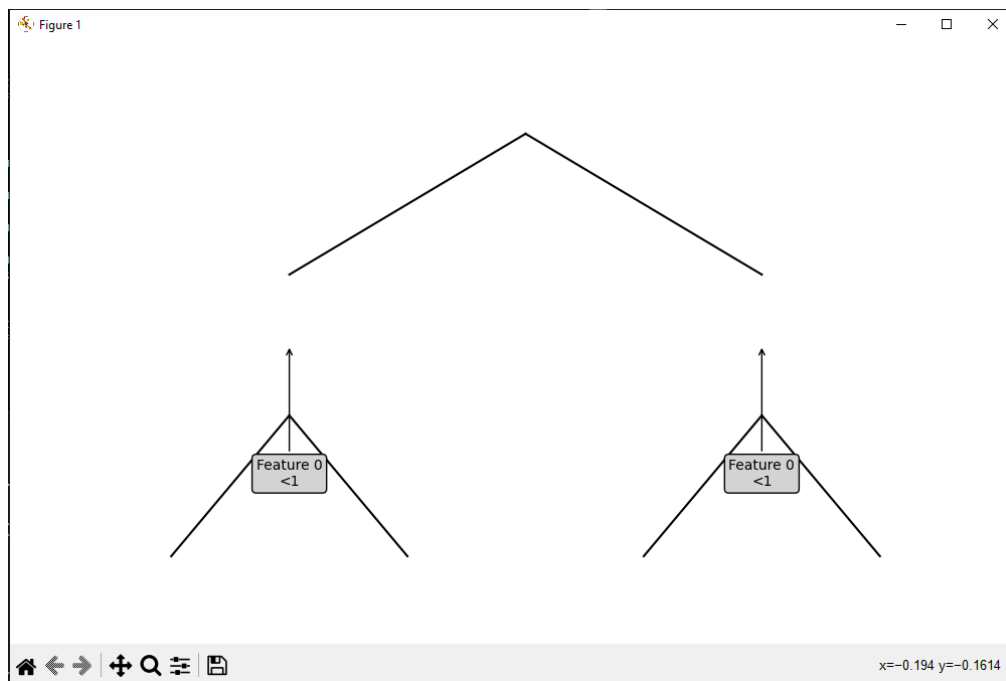
```
*****DecisionTree Module*****  
Entropy: 1.0  
Gini Index: 0.5  
predictions of DecisionTree [0]
```

Plot1:



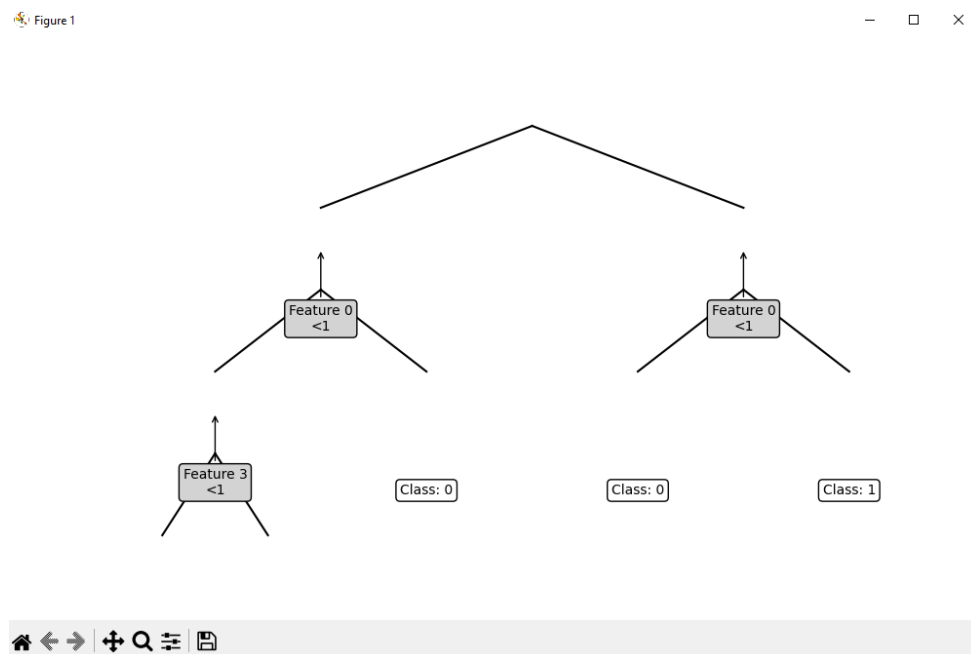
Plot2 :

With depth=2



Plot 2:

With depth=4



Linear regression :

Test1:

```
*****LinearRegression  Module*****  
predictions of LinearRegression [3.74983811]  
R2 score: -39.39968205594516
```

Test2:

```
*****LinearRegression  Module*****  
predictions of LinearRegression [3.99999999]  
R2 score: -37.50000005048902
```

Test3:

```
*****LinearRegression  Module*****  
predictions of LinearRegression [8.60454597]  
R2 score: -10.916596572448292
```