

PRAKTIKUM FISIKA KOMPUTASI

DECISION TREE NEIGHBOOR

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KODE PROGRAM

```
from sklearn import tree

#Database: Gerbang Logika AND
# X = Data, y = Target

x = [[0,0,0],
      [0,5,0],
      [0,0,5],
      [0,5,5],
      [5,5,0],
      [5,0,5],
      [5,5,5],
      [10,5,5],
      [5,10,5],
      [10,10,10]
     ]
y = [0,0,0,5,5,5,10,10,5,0]

clf = tree.DecisionTreeClassifier()
clf = clf.fit(x,y)

print("Logika AND Metode Decision Tree")
print("Logika = Prediksi")
print("10 10 5 =", clf.predict([[0,0,0]])) # Added a third feature
(0)
print("5 10 2 =", clf.predict([[0,5,0]])) # Added a third feature (0)
print("2 0 10 =", clf.predict([[0,0,5]])) # Added a third feature (5)
print("5 0 2 =", clf.predict([[0,5,5]])) # Added a third feature (5)
print("0 0 2 =", clf.predict([[5,5,0]])) # Added a third feature (0)
print("2 10 2 =", clf.predict([[5,0,5]])) # Added a third feature (5)
print("1 12 5 =", clf.predict([[5,5,5]])) # Added a third feature (5)
print("2 2 6 =", clf.predict([[10,5,5]])) # Added a third feature (5)
print("10 5 7 =", clf.predict([[5,10,5]])) # Added a third feature
(5)
```

Logika AND Metode Decision Tree

Logika = Prediksi

10 10 5 = [0]

5 10 2 = [0]

2 0 10 = [0]

5 0 2 = [5]

0 0 2 = [5]

2 10 2 = [5]

1 12 5 = [10]

2 2 6 = [10]

10 5 7 = [5]

```
from google.colab import drive
```

```
import pandas as pd
```

```
import numpy as np
```

```
from sklearn.tree import DecisionTreeRegressor
```

```
import matplotlib.pyplot as plt
```

```
drive.mount('/content/drive')
```

```
FileDB = '/content/drive/My Drive/Cosinus.txt'
```

```
Database = pd.read_csv(FileDB, sep="," , header=0)
```

```
print("-----")
```

```
print(Database)
```

	Feature	Target
0	1	0.540302
1	2	-0.416147
2	3	-0.989992
3	4	-0.653644
4	5	0.283662
5	6	0.960170
6	7	0.753902
7	8	-0.145500
8	9	-0.911130
9	10	-0.839072
10	11	0.004426
11	12	0.843854
12	13	0.907447
13	14	0.136737
14	15	-0.759688
15	16	-0.957659

```
16      17 -0.275163
17      18  0.660317
18      19  0.988705
19      20  0.408082
```

```
x = Database[['Feature']]
y = Database.Target
```

```
reg = DecisionTreeRegressor(random_state=1)
reg = reg.fit(x,y)
```

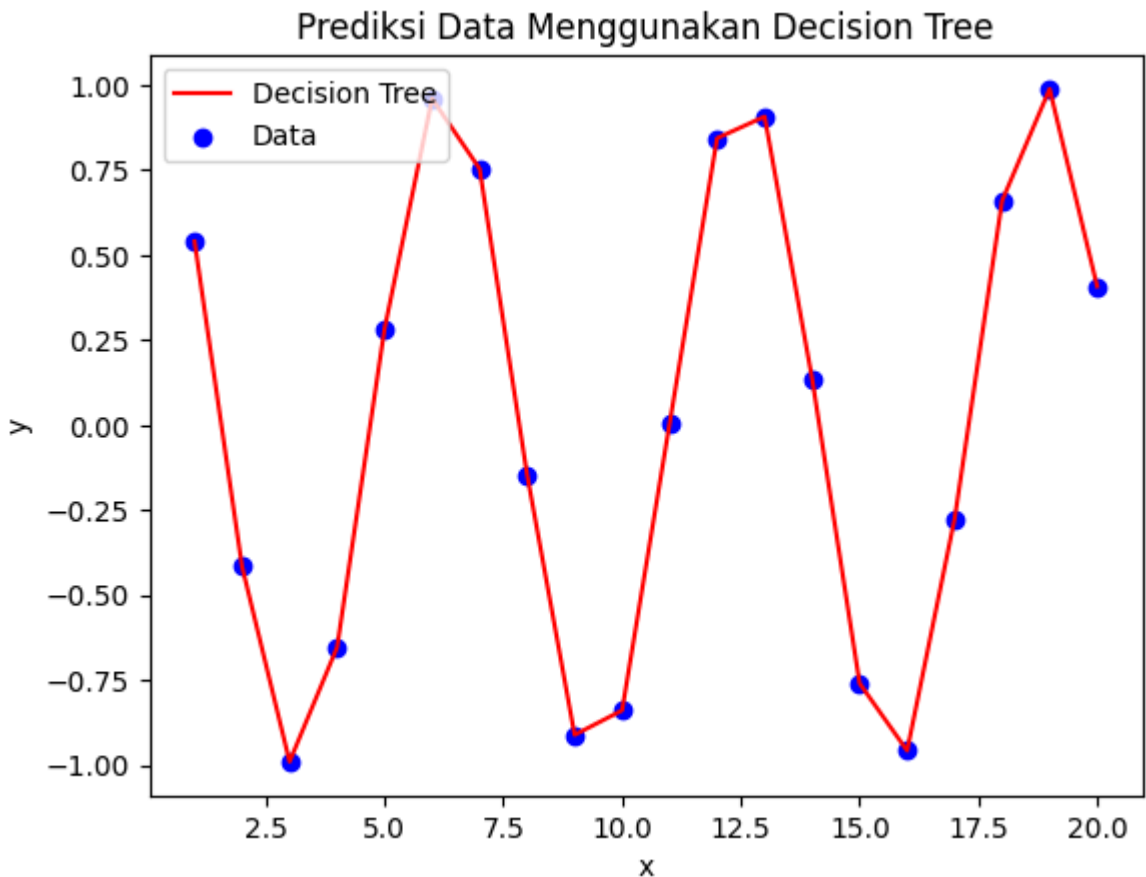
```
xx = np.arange(1, 21, 1)
n = len(xx)
print("xx(i) Decision Tree")
for i in range(n):
    y_dct = reg.predict([[xx[i]])]
    print('{:.2f}'.format(xx[i]), y_dct) # Changed x[i] to xx[i]

y_dct2 = reg.predict(x)
```

```
xx(i) Decision Tree
1.00 [0.5403023]
2.00 [-0.41614684]
3.00 [-0.9899925]
4.00 [-0.65364362]
5.00 [0.28366219]
6.00 [0.96017029]
7.00 [0.75390225]
8.00 [-0.14550003]
9.00 [-0.91113026]
10.00 [-0.83907153]
11.00 [0.0044257]
12.00 [0.84385396]
13.00 [0.90744678]
14.00 [0.13673722]
15.00 [-0.75968791]
16.00 [-0.95765948]
17.00 [-0.27516334]
18.00 [0.66031671]
19.00 [0.98870462]
20.00 [0.40808206]
```

```
plt.figure()
plt.plot(x,y_dct2, color='red')
```

```
plt.scatter(x,y, color='blue')
plt.title('Prediksi Data Menggunakan Decision Tree')
plt.xlabel('x')
plt.ylabel('y')
plt.legend(['Decision Tree', 'Data'], loc=2)
plt.show()
```



PENJELASAN

Dari hasil kode program tersebut, mendapatkan logika dan prediksi dari logika yang diketahui diatas serta hasil prediksi antara 0, 5, sampai 10. Lalu terdapat grafik pergerakan antara naik dan turun. Decision ini digunakan dari berbagai perkuliahan jurusan fisika seperti Gelombang, Fisika Matematika, dan Mekanika. Kemudian, ada perkuliahan fisika lainnya yang menggunakan decision tree ini khususnya pada mata kuliah pada berbagai kelompok keahlian jurusan fisika.