Pembelajaran Mesin (Praktikum) TI –B4

FAKULTTAS VOKASI
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- **MEMBACA DATA**

```
import numpy as np
import pandas as pd
import seaborn as sns
from sklearn import datasets
from sklearn.metrics import classification_report
from sklearn.metrics import confusion_matrix
from sklearn.metrics import accuracy_score ,precision_score,recall_score,f1_score
from sklearn.naive_bayes import GaussianNB
from sklearn.model_selection import train_test_split
import sklearn.metrics
from sklearn.ensemble import RandomForestClassifier
from collections import Counter
import matplotlib.pyplot as plt
import matplotlib.colors as colors
import sklearn.model_selection as model_selection
from sklearn.metrics import (confusion_matrix, accuracy_score,
                             f1_score, ConfusionMatrixDisplay,
                             classification_report)

pd.options.mode.chained_assignment = None

#membaca data
dataframe = pd.read_excel(r"D:\CAMPUS\SEMESTER 5\MACHINE LEARNING PRAKTIKUM\TM 5 NAIVE BAYES\BlaBla.xlsx")

data=dataframe[['A','B','C',
                'D','E','F',
                'G','H',
                'I','J',
                'K','L',
                'M','N']]

print("data awal".center(75,"="))
print(data)
print("===========================================================")
```

- HASIL

```
==================================data awal==================================
      A  B  C  D  E  F  G  H  I  J  K  L  M  N
0     1  0  1  0  0  0  0  0  1  0  0  0  1  0
1     5  0  0  0  0  0  0  0  1  1  1  0  1  1
2     3  0  0  0  0  0  1  0  0  0  0  0  1  0
3     5  0  0  0  0  0  0  0  0  1  0  0  1  0
4     3  0  0  0  0  0  1  0  0  0  1  0  1  0
...  .. .. .. .. .. .. .. .. .. .. .. .. .. ..
2303  2  0  0  1  0  0  0  1  0  1  1  1  1  1
2304  1  1  0  1  0  0  0  0  1  0  0  0  1  1
2305  1  0  0  1  0  0  0  0  0  1  1  1  1  1
2306  4  0  0  0  0  0  0  0  1  0  1  1  1  1
2307  1  0  0  0  0  0  0  1  0  0  1  0  1  1
```

- PENGECEKAN MISSING VALUE

```
#pengecekan missing value
print("pengecekan missing value".center(75,"="))
print(data.isnull().sum())
print("===========================================================")
```

- HASIL

```
=========================pengecekan missing value=========================
A    0
B    0
C    0
D    0
E    0
F    0
G    0
H    0
I    0
J    0
K    0
L    0
M    0
N    0
dtype: int64
```

- GROUPING MENJADI DUA

```
#grouping yang dibagi menjadi dua
print("GROUPING VARIABEL".center(75,"="))
X=data.iloc[:,0:13].values
y=data.iloc[:,13].values
print("data variabel".center(75,"="))
print(X)
print("data kelas".center(75,"="))
print(y)
print("============================================================")
```

- HASIL

```
============================GROUPING VARIABEL============================
============================data variabel============================
[[1 0 1 ... 0 0 1]
 [5 0 0 ... 1 0 1]
 [3 0 0 ... 0 0 1]
 ...
 [1 0 0 ... 1 1 1]
 [4 0 0 ... 1 1 1]
 [1 0 0 ... 1 0 1]]
============================data kelas============================
[0 1 0 ... 1 1 1]
============================================================
```

- PEMBANGIAN TRAINNING DAN TESTING

```
#pembagian training dan testing
print("SPLITTING DATA 20-80".center(75,"="))
X_train,X_test,y_train,y_test=train_test_split(X,y,test_size=0.2,random_state=0)
print("instance variabel data training".center(75,"="))
print(X_train)
print("instance kelas data training".center(75,"="))
print(y_train)
print("instance variabel data testing".center(75,"="))
print(X_test)
print("instance kelas data testing".center(75,"="))
print(y_test)
print("============================================================")
print()
```

- HASIL

```
============================SPLITTING DATA 20-80============================
=====================instance variabel data training=====================
[[3 0 0 ... 1 0 1]
 [3 0 0 ... 0 0 1]
 [1 0 0 ... 0 0 1]
 ...
 [1 1 0 ... 0 0 1]
 [1 1 0 ... 0 0 1]
 [4 0 0 ... 1 0 1]]
=======================instance kelas data training=======================
[1 0 0 ... 0 0 0]
=======================instance variabel data testing=====================
[[5 0 0 ... 0 0 1]
 [1 0 0 ... 1 0 1]
 [1 0 0 ... 1 0 1]
 ...
 [2 0 0 ... 1 1 1]
 [1 1 0 ... 0 0 1]
 [4 0 0 ... 0 0 1]]
=======================instance kelas data testing=======================
[0 1 1 0 0 0 0 1 1 0 0 0 0 0 1 0 0 0 1 0 0 1 1 1 0 0 1 0 1 0 0 1 0 0 0 0 0
 0 1 0 1 0 0 0 0 0 0 1 1 0 1 0 0 0 1 0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 1 0 1 1
 0 0 0 1 1 0 0 1 1 0 0 1 0 0 0 1 1 0 0 0 1 1 0 0 0 0 0 1 0 0 0 0 1 0 1 0 1
 0 0 0 0 0 0 0 0 1 1 1 0 0 1 0 0 1 0 1 0 1 1 0 1 0 1 1 0 0 0 0 0 0 0 1 0 0
 0 0 0 0 0 0 1 1 0 0 0 1 0 0 1 0 0 1 1 0 0 0 0 1 0 0 0 0 1 0 0 1 0 0 0 1 0
 0 1 1 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 0 1 1 1 0 0 0 0 1 0 1 0 1 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 1 1 0 1 0 0 0 1 1 1 0 0 0 0 0 1 0 0 1 1 0 0 1 1 1 0
 0 1 1 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 1 0 0 1
 0 1 0 0 0 1 0 0 0 1 1 0 0 0 0 0 0 1 1 0 0 0 0 1 0 1 0 1 1 1 0 0 0 0 0 0 0
 1 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 1 0 1 0 0 1 1 0 1 0 0 0 1 1 0 1 0 1 0 1 1
 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 1 0 0 0 1 1 1 0 0 1 1 0 0 0 1 0 0 0
 1 1 0 0 1 1 0 0 0 1 0 0 1 1 1 0 0 0 0 1 0 0 1 0 1 1 0 0 0 0 0 0 1 0 1 0 0
 1 0 0 0 1 0 0 0 0 0 1 0 0 0 0 1 0 0]
============================================================
```

- PEMODELAN NAÏVE BAYES

```
#pemodelan naive bayes
print("PEMODELAN DENGAN NAIVE BAYES".center(75,"="))
gaussian = GaussianNB()
gaussian.fit(X_train, y_train)
Y_pred = gaussian.predict(X_test)
accuracy_nb=round(accuracy_score(y_test,Y_pred)* 100, 2)
acc_gaussian = round(gaussian.score(X_train, y_train) * 100, 2)
print("instance prediksi naive bayes:")
print(Y_pred)
print("=====================================================")
#perhitungan confusion matrix
cm = confusion_matrix(y_test, Y_pred)
print('CLASSIFICATION REPORT NAIVE BAYES'.center(75,'='))

#Mendapat Akurasi
accuracy = accuracy_score(y_test, Y_pred)
# Mendapat Akurasi
precision = precision_score(y_test, Y_pred)
# Menampilkan recision    recall  f1-score   support
print(classification_report(y_test, Y_pred))

cm = confusion_matrix(y_test, Y_pred)
TN = cm[1][1] * 1.0
FN = cm[1][0] * 1.0
TP = cm[0][0] * 1.0
FP = cm[0][1] * 1.0
total = TN + FN + TP + FP
sens = TN / (TN + FP) * 100
spec = TP / (TP + FN) * 100

print('Akurasi : ', accuracy * 100, "%")
print('Sensitivity : ' + str(sens))
print('Specificity : ' + str(spec))

print('Precision : ' + str(precision))
print("=========================================================")
print()
```

- HASIL

```
=======================PEMODELAN DENGAN NAIVE BAYES=======================
instance prediksi naive bayes:
[0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 1 0 0 0 1 1 0 0 1 0 1 0 0 1 0 0 0 0 0
 0 1 0 1 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 0 1 1
 0 0 1 1 1 0 0 1 1 0 0 1 0 0 0 1 1 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 1 0 1 0 1
 0 0 0 0 0 0 0 0 1 0 1 0 0 1 0 0 1 0 0 0 0 0 0 1 0 1 1 0 0 0 0 0 0 0 1 0 0
 0 0 0 0 0 0 1 1 0 0 0 1 0 0 1 0 0 1 1 0 0 1 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
 0 1 1 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 1 0 1 1 0 0 0 0 0 1 0 1 0 1 1 0 0
 0 1 0 0 0 1 0 0 0 1 0 1 1 0 0 0 0 0 1 1 1 0 0 0 0 0 1 0 0 0 0 0 0 1 1 1 0
 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 1 0 0 0 0 0 1 0 0 0 1 0 0 0
 1 1 0 0 0 1 0 0 0 0 1 1 0 0 0 0 0 0 1 0 0 0 0 0 0 1 0 1 1 1 0 0 0 0 0 0 0
 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 1 0 0 0 0 1 1 0 1 0 0 0 1 1 0 1 0 1 0 0 1
 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 0 1 1 0 0 0 1 0 0 0
 0 1 0 0 1 1 0 0 0 0 0 0 1 1 1 0 0 0 0 1 0 0 1 0 0 1 0 0 0 0 0 0 0 1 0 0 0 1
 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0]
====================CLASSIFICATION REPORT NAIVE BAYES====================
              precision    recall  f1-score   support

           0       0.89      0.98      0.93       315
           1       0.94      0.73      0.82       147

    accuracy                           0.90       462
   macro avg       0.91      0.86      0.88       462
weighted avg       0.90      0.90      0.90       462

Akurasi :  90.04329004329004 %
Sensitivity : 93.91304347826087
Specificity : 88.76080691642652
Precision : 0.9391304347826087
```

- MENAMPILKAN CONFUSION MATRIX

```
#Menampilkan Confusion Matrix
cm_display=ConfusionMatrixDisplay(confusion_matrix=cm)

print('Confusion matrix for Naive Bayes\n',cm)
f, ax = plt.subplots(figsize=(8,5))
sns.heatmap(confusion_matrix(y_test, Y_pred), annot=True, fmt=".0f", ax=ax)
plt.xlabel("Predicted")
plt.ylabel("Actual")
plt.show()

print("============================================================")
print()
```

- HASIL

```
Confusion matrix for Naive Bayes
 [[308   7]
 [ 39 108]]
```

- COBA INPUT

```
#COBA INPUT
A = int(input("Umur Pasien = "))
print("Isi Jenis kelamin dengan 0 jika Perempuan dan dan 1 jika Laki-Laki")
B = input("Jenis Kelamin Pasien = ")
print("Isi Y jika mengalami dan N jika tidak")
C = input("Apakah pasien mengalami C? = ")
D = input("Apakah pasien mengalami D? = ")
E = input("Apakah pasien mengalami E? = ")
F = input("Apakah pasien mengalami F? = ")
G = input("Apakah pasien mengalami G? = ")
H = input("Apakah pasien mengalami H? = ")
I = input("Apakah pasien mengalami I? = ")
J = input("Apakah pasien mengalami J? = ")
K = input("Apakah pasien mengalami K? = ")
L = input("Apakah pasien mengalami L? = ")
M = input("Apakah M? = ")

umur_k = 0
A_k = 0
B_k = 0

if A<21:
    A_k=1
if A>20 and A<31:
    A_k=2
if A>30 and A<41:
    A_k=3
if A>40 and A<51:
    A_k=4

if A>50:
    A_k=5
print("kode umur pasien adalah",A_k)

if B=="P":
    B_k=1
else:
    B_k=0
```

```
if C=="Y":
    C=1
else:
    C=0

if D=="Y":
     D=1
else:
    D=0

if E=="Y":
    E=1
else:
    E=0

if F=="Y":
    F=1
else:
    F=0

if G=="Y":
    G=1
else:
    G=0

if H=="Y":
    H=1
else:
    H=0
```

```
if I=="Y":
    I=1
else:
    I=0

if J=="Y":
    J=1
else:
    J=0

if K=="Y":
    K=1
else:
    K=0

if L=="Y":
    L=1
else:
    L=0

if M=="Y":
    M=1
else:
    M=0
```

```
Train = [A_k,B_k,C,D,E,F,G,
         H,I,J,K,L,M]
print(Train)

test = pd.DataFrame(Train).T

predtest = gaussian.predict(test)

if predtest==1:
    print("Pasien Positive ")
else:
    print("Pasien Negative ")
```

- HASIL

```
Umur Pasien = 30
Isi Jenis kelamin dengan 0 jika Perempuan dan dan 1 jika Laki-Laki
Jenis Kelamin Pasien = 0
Isi Y jika mengalami dan N jika tidak
Apakah pasien mengalami C? = y
Apakah pasien mengalami D? = n
Apakah pasien mengalami E? = y
Apakah pasien mengalami F? = n
Apakah pasien mengalami G? = n
Apakah pasien mengalami H? = y
Apakah pasien mengalami I? = n
Apakah pasien mengalami J? = y
Apakah pasien mengalami K? = n
Apakah pasien mengalami L? = y
Apakah M? = y
kode umur pasien adalah 2
[2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
Pasien Negative
```

- FIGURE