

The screenshot shows a Jupyter Notebook interface with multiple tabs at the top, including "Network Login", "exp3.ipynb (auto-D)", "Inbox (3,125) - ds107", "ChatGPT", "21AIC301J- Lab AI-A", and "Welcome To Colab". The main area displays a code cell [2:] containing Python code for a machine learning experiment. The code imports various sklearn modules, loads the Iris dataset, performs train-test split, scales the features, and trains three classifiers (KNN, Logistic Regression, and Gaussian NB). It then prints the accuracy and classification report. The notebook is running in a Python 3 kernel.

```
[2]: from sklearn.datasets import load_iris
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.neighbors import KNeighborsClassifier
from sklearn.linear_model import LogisticRegression
from sklearn.naive_bayes import GaussianNB
from sklearn.metrics import classification_report, accuracy_score

iris = load_iris()
X, y = iris.data, iris.target

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=42)

scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)

knn = KNeighborsClassifier(n_neighbors=5)
lr = LogisticRegression(max_iter=200)
nb = GaussianNB()

knn.fit(X_train, y_train)
lr.fit(X_train, y_train)
nb.fit(X_train, y_train)

knn_pred = knn.predict(X_test)
lr_pred = lr.predict(X_test)
nb_pred = nb.predict(X_test)

print("KNN Accuracy:", accuracy_score(y_test, knn_pred))
print(classification_report(y_test, knn_pred))
```

Network Login exp3.ipynb (auto-D : 10.1.38.19/user/ra2311047010033/lab/workspaces/auto-D/tree/DLT/exp3.ipynb) ChatGPT 21AIC301J- Lab AI-A Welcome To Colab -

File Edit View Run Kernel Tabs Settings Help

exp2.ipynb exp3.ipynb

Filter files by name

/ DLT /

Name	Last Modified
exp2.ipynb	last month
exp3.ipynb	last month
exp4.ipynb	last month
exp5.ipynb	14 days ago
exp6.ipynb	13 days ago
exp7.ipynb	30 minutes ago
Untitled.ipynb	13 days ago

```
nb.fit(X_train, y_train)

knn_pred = knn.predict(X_test)
lr_pred = lr.predict(X_test)
nb_pred = nb.predict(X_test)

print("KNN Accuracy:", accuracy_score(y_test, knn_pred))
print(classification_report(y_test, knn_pred))

print("Logistic Regression Accuracy:", accuracy_score(y_test, lr_pred))
print(classification_report(y_test, lr_pred))

print("Naive Bayes Accuracy:", accuracy_score(y_test, nb_pred))
print(classification_report(y_test, nb_pred))
```

KNN Accuracy: 1.0

	precision	recall	f1-score	support
0	1.00	1.00	1.00	19
1	1.00	1.00	1.00	13
2	1.00	1.00	1.00	13

accuracy 1.00
macro avg 1.00 1.00 1.00 45
weighted avg 1.00 1.00 1.00 45

Logistic Regression Accuracy: 1.0

	precision	recall	f1-score	support
0	1.00	1.00	1.00	19
1	1.00	1.00	1.00	13
2	1.00	1.00	1.00	13

accuracy 1.00
ENG US 23-09-2025

Network Login exp3.ipynb (auto-D : 10.1.38.19/user/ra2311047010033/lab/workspaces/auto-D/tree/DLT/exp3.ipynb) ChatGPT 21AIC301J- Lab AI-A Welcome To Colab -

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exp2.ipynb exp3.ipynb

Code Notebook Python 3 (ipykernel)

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Name	Last Modified
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exp3.ipynb	last month
exp4.ipynb	last month
exp5.ipynb	14 days ago
exp6.ipynb	13 days ago
exp7.ipynb	31 minutes ago
Untitled.ipynb	13 days ago

KNN Accuracy: 1.0

	precision	recall	f1-score	support
0	1.00	1.00	1.00	19
1	1.00	1.00	1.00	13
2	1.00	1.00	1.00	13

accuracy
macro avg
weighted avg

	precision	recall	f1-score	support
accuracy			1.00	45
macro avg	1.00	1.00	1.00	45
weighted avg	1.00	1.00	1.00	45

Logistic Regression Accuracy: 1.0

	precision	recall	f1-score	support
0	1.00	1.00	1.00	19
1	1.00	1.00	1.00	13
2	1.00	1.00	1.00	13

accuracy
macro avg
weighted avg

	precision	recall	f1-score	support
accuracy			1.00	45
macro avg	1.00	1.00	1.00	45
weighted avg	1.00	1.00	1.00	45

Naive Bayes Accuracy: 0.9777777777777777

	precision	recall	f1-score	support
0	1.00	1.00	1.00	19
1	1.00	0.92	0.96	13
2	0.93	1.00	0.96	13

accuracy
macro avg
weighted avg

	precision	recall	f1-score	support
accuracy			0.98	45
macro avg	0.98	0.97	0.97	45
weighted avg	0.98	0.98	0.98	45

Python 3 (ipykernel) | Idle Mem: 193.58 MB Mode: Command Ln 1, Col 1 exp3.ipynb 0 10:31 ENG US 23-09-2025

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07/08
Implement various classifier in Iiris dataset 3

Aim:-
To implement various classifier Iiris dataset and
(at) analysis the statistical parameter.

Pseudocode :-

For KNN :-

1. complete the distance x_{-test}, y_i
2. Sort all distance in ascending order
3. Select first k training points.
4. Count frequency of each label.
5. Return the label with highest frequency the predicted class.

For Logistic Regression :-

1. compute linear combination ($z : z = x_0 + b$)
2. Apply Sigmoid function: $\hat{y} = \text{sigmoid}(z) = 1/(1+e^{-z})$
3. Compute loss.
4. Compute Gradient
5. Update parameters

$$w = w - \alpha * d_w$$

$$b = b - \alpha * d_b$$

For NAIVE BAYES

1. For each class c in all classes

→ calculate prior probability.

$$P(c) = \text{count}(c) / \text{total-samples}$$

→ for each feature j :

2. For test point x -test:

$$P(A/B) = \frac{P(B/A) P(A)}{P(B)}$$

OBSERVATION:-

① → KNN

Accuracy: - 100%.

② → Logistic Regression.

Accuracy: - 100%.

③ → naive bayes

Accuracy: - 100%.

Justification:-

→ clear data

→ small samples

→ well separated features

→ balanced classes.

K.NN Accuracy :- 1.0

	precision	recall	f1 score	Support
0	1.00	1.00	1.00	19
1	1.00	1.00	1.00	63
2	1.00	1.00	1.00	13

accuracy :-			1.00	45
macroavg	1.00	1.00	1.00	45
weightedavg	1.00	1.00	1.00	45

Logistic Regression Accuracy :- 1.0

	precision	recall	f1 score	Support
0	1.00	1.00	1.00	19
1	1.00	1.00	1.00	13
2	1.00	1.00	1.00	13
accuracy			1.00	45
macroavg	1.00	1.00	1.00	45
weightedavg	1.00	1.00	1.00	45

Naive Bayes Accuracy :- 0.977

	Precision	Recall	F1 Score	Support
0	1.00	1.00	1.00	19
1	1.00	0.92	0.96	13
2	0.93	1.00	0.96	13
accuracy			0.98	45
macro avg	0.98	0.97	0.97	45
weighted avg	0.98	0.98	0.98	45

Result :- Implemented difference classifier Some
in data set and analysed Accuracy

~~Mr. Hafiz~~