

Iris classification using KNN ITA06-ML List of Experiments Welcome To Colab - Colab

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Section

```
[1] ✓ 0s
data = [
    ['Sunny', 'Warm', 'Normal', 'Strong', 'Warm', 'Same', 'Yes'],
    ['Sunny', 'Warm', 'High', 'Strong', 'Warm', 'Same', 'Yes'],
    ['Rainy', 'Cold', 'High', 'Strong', 'Warm', 'Change', 'No'],
    ['Sunny', 'Warm', 'High', 'Strong', 'Cool', 'Change', 'Yes']
]

hypothesis = ['?'] * (len(data[0]) - 1)

for row in data:
    if row[-1] == 'Yes':
        for i in range(len(hypothesis)):
            if hypothesis[i] == '?':
                hypothesis[i] = row[i]
            elif hypothesis[i] != row[i]:
                hypothesis[i] = '?'

print("Most Specific Hypothesis:", hypothesis)
...
Most Specific Hypothesis: ['Sunny', 'Warm', 'High', 'Strong', '?', '?']
```

Variables Terminal

7:48PM Python 3

Gold +133%

ENG IN 19:48 26-12-2025

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```
specific_h = concepts[0].copy()
general_h = [['?' for _ in range(len(specific_h))] for _ in range(len(specific_h))]

for i, val in enumerate(target):
    if val == "Yes":
        for x in range(len(specific_h)):
            if concepts[i][x] != specific_h[x]:
                specific_h[x] = '?'
                general_h[x][x] = '?'
    else:
        for x in range(len(specific_h)):
            if concepts[i][x] != specific_h[x]:
                general_h[x][x] = specific_h[x]
            else:
                general_h[x][x] = '?'
return specific_h, general_h

s, g = train(concepts, target)
print("Specific:", s)
print("General:", g)
```

Variables Terminal

7:48PM Python 3

Gold +133%

26-12-2025

Iris classification using KNN

IT06-ML List of Experiments

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Section

```
from sklearn.datasets import load_iris
from sklearn.tree import DecisionTreeClassifier

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

model = DecisionTreeClassifier().fit(X, y)

prediction = iris.target_names[model.predict([[5.1, 3.5, 1.4, 0.2]])[0]]
print("Predicted Class:", prediction)
```

Predicted Class: setosa

Variables Terminal

26°C Partly cloudy

7:50PM Python 3

ENG IN 19:51 26-12-2025

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+ Section

```
[4] from sklearn.neural_network import MLPClassifier
      X = [[0,0],[0,1],[1,0],[1,1]]
      y = [0,1,1,0] # XOR problem
      model = MLPClassifier(hidden_layer_sizes=(4,), max_iter=2000)
      model.fit(X, y)
      print("Prediction for [1,1]:", model.predict([[1,1]])[0])
...
*** Prediction for [1,1]: 0
/usr/local/lib/python3.12/dist-packages/sklearn/neural_network/_multilayer_perceptron.py:691: ConvergenceWarning:
  warnings.warn(
```

Variables Terminal 7:52PM Python 3

26°C Partly cloudy ENG IN 19:53 26-12-2025

The screenshot shows a Google Colab notebook titled "Welcome To Colab - Colab". The left sidebar contains a "Table of contents" with links to various resources like "Welcome to Colab!", "Google Colab is available in V...", "Free Pro Plan for Gemini &...", "Access popular AI models...", "Explore the Gemini API", "Getting started", "Data science", "Machine learning", "More Resources", and "Featured examples". Below this is a "+ Section" button.

The main workspace displays the following Python code:

```
from sklearn.datasets import load_iris
from sklearn.neighbors import KNeighborsClassifier

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

model = KNeighborsClassifier(n_neighbors=3).fit(X, y)

print("Prediction:", iris.target_names[model.predict([[5.1, 3.5, 1.4, 0.2]])[0]])

... Prediction: setosa
```

The code cell has a status bar indicating "[5] 0s". The bottom of the screen shows the operating system's taskbar with icons for Variables, Terminal, a blue star icon, and various application icons. System status indicators include weather (26°C, Partly cloudy), battery level (54%), and system time (7:53PM, 26-12-2025).

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+ Section

```
from sklearn.datasets import load_iris
from sklearn.model_selection import train_test_split
from sklearn.naive_bayes import GaussianNB
from sklearn.metrics import confusion_matrix, 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)

model = GaussianNB().fit(X_train, y_train)
pred = model.predict(X_test)

print("Confusion Matrix:\n", confusion_matrix(y_test, pred))
print("Accuracy:", accuracy_score(y_test, pred))

...
Confusion Matrix:
[[12  0  0]
 [ 0 15  0]
 [ 0  1 17]]
Accuracy: 0.9777777777777777
```

Variables Terminal

26°C Partly cloudy

7:54PM Python 3

ENG IN 19:55 26-12-2025

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Section

```
[?] 0s
from sklearn.linear_model import LogisticRegression
X = [[30,20,1],[25,40,0],[50,10,1],[45,30,1],[20,50,0]]
y = [1,0,1,1,0]

model = LogisticRegression().fit(X, y)
print("Prediction:", "Good" if model.predict([[40,25,1]])[0] else "Bad")
```

... Prediction: Good

Variables Terminal

26°C Partly cloudy

7:55PM Python 3

ENG IN 19:55 26-12-2025

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+ Section

```
from sklearn.linear_model import LinearRegression
X = [[1],[2],[3],[4],[5]]
y = [2,4,6,8,10]

model = LinearRegression()
model.fit(X, y)

print("Prediction for 6:", model.predict([[6]])[0])
```

...

Prediction for 6: 12.0

Variables Terminal 7:56PM Python 3

26°C Partly cloudy

ENG IN 19:56 26-12-2025

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Section

```
[0] ✓ 0s
Run cell (Ctrl+Enter)
cell executed since last change [1],[3],[4],[5]
executed at 7:56 PM (0 minutes ago) [21,31] # non-linear
executed in 0.02s

from sklearn.linear_model import LinearRegression
from sklearn.preprocessing import PolynomialFeatures
# Linear Regression
lin = LinearRegression().fit(X, y)
print("Linear Prediction (6):", lin.predict([[6]])[0])

# Polynomial Regression
poly = PolynomialFeatures(degree=2)
X_poly = poly.fit_transform(X)
poly_model = LinearRegression().fit(X_poly, y)

print("Polynomial Prediction (6):", poly_model.predict(poly.transform([[6]]))[0])

*** Linear Prediction (6): 36.0
Polynomial Prediction (6): 43.00000000000003
```

Variables Terminal

26°C Partly cloudy

7:56PM Python 3

ENG IN 19:56 26-12-2025

The screenshot shows the Google Colab interface. On the left, there is a sidebar titled "Table of contents" containing links to various resources like "Welcome to Colab!", "Google Colab is available in V...", "Free Pro Plan for Gemini &...", "Access popular AI models...", "Explore the Gemini API", "Getting started", "Data science", "Machine learning", "More Resources", and "Featured examples". Below this is a "+ Section" button.

The main area displays a code cell with the following Python code:

```
from sklearn.mixture import GaussianMixture
import numpy as np

X = np.array([[1],[2],[1],[5],[6],[5]]) # simple data

gmm = GaussianMixture(n_components=2).fit(X)
labels = gmm.predict(X)

print("Cluster Labels:", labels)
```

The output of the code is shown as:

```
... Cluster Labels: [1 1 1 0 0 0]
```

At the bottom of the screen, there are several status icons including weather (26°C Partly cloudy), system info (ENG IN), and date/time (7:56PM 26-12-2025).

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Credit Score: Good

```
[12] ✓ Os
from sklearn.datasets import load_iris
from sklearn.neighbors import KNeighborsClassifier

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

model = KNeighborsClassifier(n_neighbors=3).fit(X, y)

print("Prediction:", iris.target_names[model.predict([[5.1, 3.5, 1.4, 0.2]])[0]])

... Prediction: setosa
```

Variables Terminal

26°C Partly cloudy

7:59PM Python 3

ENG IN 19:59 26-12-2025

The screenshot shows a Google Colab notebook interface. At the top, there are three tabs: "Iris classification using KNN", "ITA06-ML List of Experiments", and "Welcome To Colab - Colab". The main area has a toolbar with "File", "Edit", "View", "Insert", "Runtime", "Tools", and "Help". Below the toolbar is a search bar and a "Commands" dropdown. On the right side, there are "Share", "RAM Disk", and other settings. A sidebar on the left titled "Table of contents" lists various resources like "Welcome to Colab!", "Google Colab is available in V...", "Free Pro Plan for Gemini &...", "Access popular AI models...", "Explore the Gemini API", "Getting started", "Data science", "Machine learning", "More Resources", and "Featured examples". The main content area contains a code cell with the following Python code:

```
from sklearn.linear_model import LogisticRegression
# [Income, Debt, Credit_History]
X = [[30,20,1],[25,40,0],[60,10,1],[45,30,1],[20,50,0]]
y = [1,0,1,1,0]

model = LogisticRegression().fit(X, y)

print("Credit Score: ", "Good" if model.predict([[40,25,1]])[0] else "Bad")
```

The output of the code is shown below the cell, indicating "Credit Score: Good". At the bottom, there are buttons for "Variables", "Terminal", and a star icon. The system tray shows the date and time (26-12-2025, 7:58PM), battery level (19:59), and weather (26°C, Partly cloudy).

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Prediction: setosa

```
[13] from sklearn.linear_model import LinearRegression
# [Year, Mileage, Engine]
X = [[2015,50000,1.6],[2013,60000,1.2],[2018,30000,2.0],[2020,20000,1.8],[2012,70000,1.4]]
y = [550000,350000,850000,900000,280000]

model = LinearRegression().fit(X, y)

print("Predicted Price:", int(model.predict([[2017,40000,1.6]])[0]))
```

... Predicted Price: 640312

Variables Terminal 8:05PM Python 3

26°C Partly cloudy

ENG IN 20:05 26-12-2025

The screenshot shows a Google Colab notebook titled "Welcome To Colab - Colab". The code cell contains Python code for loading the Iris dataset and using GaussianNB for classification:

```
from sklearn.datasets import load_iris
from sklearn.naive_bayes import GaussianNB

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

model = GaussianNB().fit(X, y)

print("Prediction:", iris.target_names[model.predict([[5.1, 3.5, 1.4, 0.2]])[0]])
|
```

The output of the code is visible as "... Prediction: setosa". On the left, there's a sidebar with a "Table of contents" section listing various AI-related topics like Gemini API, Data science, Machine learning, and More Resources. At the bottom, the Colab interface includes sections for "Variables" and "Terminal", along with system status icons for weather, battery, and connectivity.

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Predicted Price: 640312

```
from sklearn.linear_model import LinearRegression
# [Area, Bedrooms, Age]
X = [[1000,2,10],[1500,3,5],[2000,3,2],[2500,4,1],[800,2,15],[1200,3,8]]
y = [300000,450000,600000,750000,200000,350000]

model = LinearRegression().fit(X, y)

print("Predicted House Price:", int(model.predict([[1800,3,4]])[0]))
```

... Predicted House Price: 5403294

Variables Terminal 8:06PM Python 3

26°C Partly cloudy

20:06 26-12-2025

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Section

```
from sklearn.linear_model import LinearRegression
# [RAM(GB), Storage(GB), Camera(MP)]
X = [[4,64,12],[6,128,48],[8,128,64],[4,32,8],[12,256,108]]
y = [12000,18000,25000,8000,50000]

model = LinearRegression().fit(X, y)

print("Predicted Mobile Price:", int(model.predict([[6,128,48]])[0]))
```

8:07PM Python 3

26°C Partly cloudy

ENG IN 26-12-2025

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Section

```
from sklearn.neighbors import KNeighborsClassifier
from sklearn.naive_bayes import GaussianNB
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import 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)

models = {
    "KNN": KNeighborsClassifier(),
    "NaiveBayes": GaussianNB(),
    "DecisionTree": DecisionTreeClassifier()
}

for name, model in models.items():
    model.fit(X_train, y_train)
    pred = model.predict(X_test)
    print(name, "Accuracy:", accuracy_score(y_test, pred))

...
KNN Accuracy: 0.9333333333333333
NaiveBayes Accuracy: 0.9555555555555556
DecisionTree Accuracy: 0.9333333333333333
```

Variables Terminal 8:07PM Python 3

26°C Partly cloudy ENG IN 20:07 26-12-2025

Iris classification using KNN ITA06-ML List of Experiments Welcome To Colab - Colab

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Section

```
[19] ✓ 0s
from sklearn.naive_bayes import GaussianNB
# [Income, LoanAmount, CreditHistory]
X = [[50000,200000,1],[30000,150000,0],[70000,250000,1],[40000,100000,0]]
y = [1,0,1,0] # 1 = approved, 0 = rejected

model = GaussianNB().fit(X, y)

print("Loan Status:", "Approved" if model.predict([[60000,180000,1]])[0] else "Rejected")
```

...

Loan Status: Approved

Variables Terminal 8:08PM Python 3

26°C Partly cloudy ENG IN 20:00 26-12-2025

The screenshot shows a Google Colab notebook titled "Welcome To Colab - Colab". The code cell contains Python code for Iris classification:

```
from sklearn.datasets import load_iris
from sklearn.linear_model import Perceptron

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

model = Perceptron(max_iter=1000).fit(X, y)

print("Prediction:", iris.target_names[model.predict([[5.1, 3.5, 1.4, 0.2]])[0]])
```

The output of the code is: "Prediction: versicolor".

The Colab interface includes a sidebar with a "Table of contents" section containing links to various resources like "Welcome to Colab!", "Google Colab is available in V...", "Free Pro Plan for Gemini &...", "Access popular AI models...", "Explore the Gemini API", "Getting started", "Data science", "Machine learning", "More Resources", and "Featured examples".

At the bottom, there are tabs for "Variables" and "Terminal", along with system status icons for weather (26°C, Partly cloudy), time (8:07PM), and Python version (Python 3).

The screenshot shows a Google Colab notebook interface. The top navigation bar includes tabs for 'Iris classification using KNN', 'ITA06-ML List of Experiments', and 'Welcome To Colab - Colab'. The URL in the address bar is `colab.research.google.com/#scrollTo=EEj7nP-tGKMj`. The sidebar on the left contains a 'Table of contents' section with links to various resources like 'Welcome to Colab!', 'Google Colab is available in V...', 'Free Pro Plan for Gemini &...', 'Access popular AI model...', 'Explore the Gemini API', 'Getting started', 'Data science', 'Machine learning', 'More Resources', and 'Featured examples'. Below the sidebar is a 'Section' button. The main workspace contains a code cell with the following Python code:

```
from sklearn.linear_model import LinearRegression  
# [Month_Number] + Sales  
X = [[1],[2],[3],[4],[5],[6]]  
y = [120,150,170,200,210,240]  
model = LinearRegression().fit(X, y)  
print("Predicted Sales for Month 7:", int(model.predict([[7]])[0]))  
... Predicted Sales for Month 7: 262
```

The status bar at the bottom shows 'Variables', 'Terminal', the date '26-12-2025', the time '8:08PM', the Python version 'Python 3', and system information including temperature '26°C', weather 'Partly cloudy', and connectivity icons.