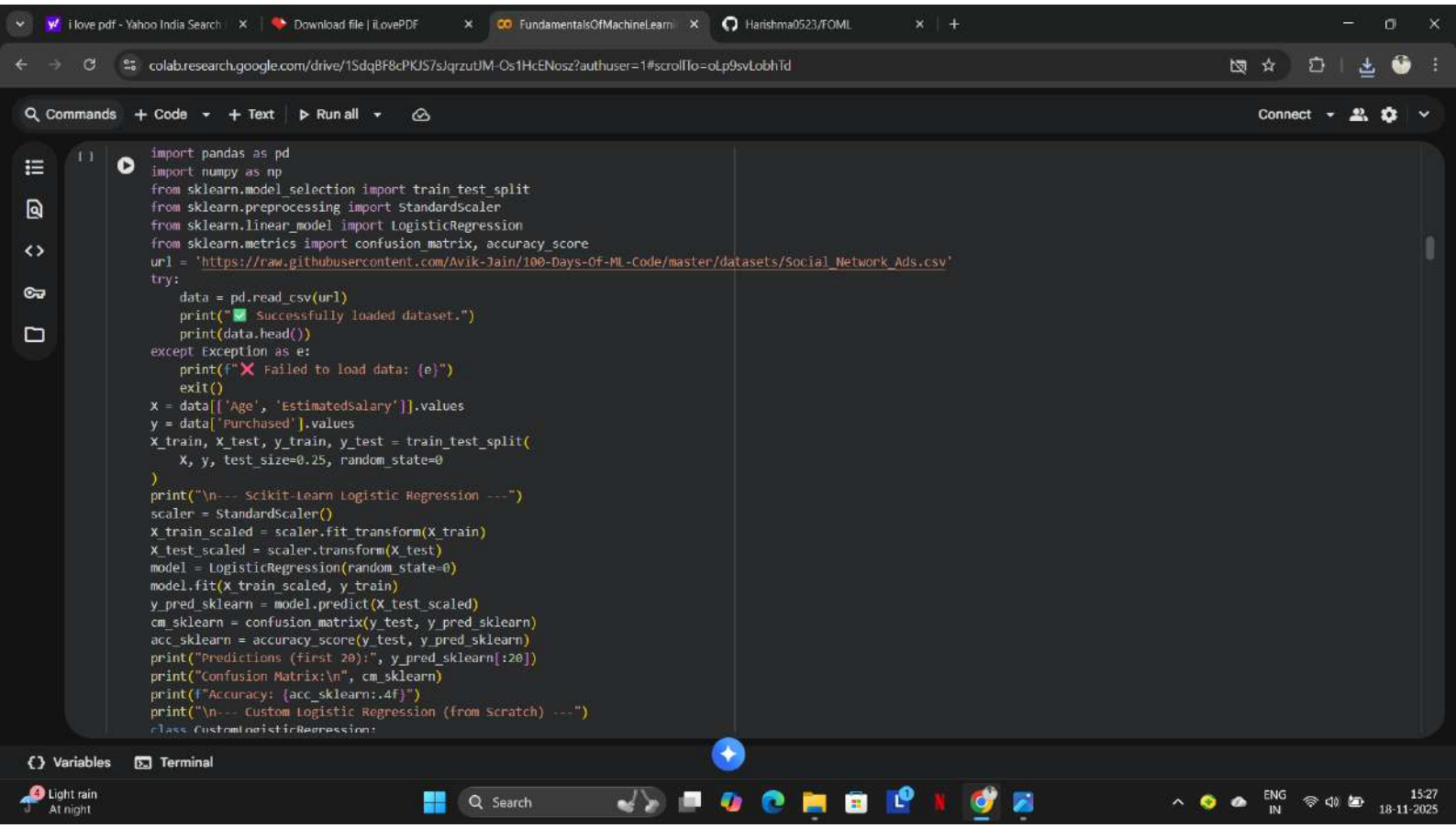

i love pdf - Yahoo India Search
Download file | iLovePDF
FundamentalsOfMachineLearni
Harishma0523/FOML
colab.research.google.com/drive/1SdqBF8cPKJS7sJqrzutJM-Os1HcENosz?authuser=1#scrollTo=oLp9svLobhTd
Commands
+ Code
+ Text
Run all
Connect
[ ]
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import confusion_matrix, accuracy_score
url = 'https://raw.githubusercontent.com/Avik-Jain/100-Days-Of-ML-Code/master/datasets/Social_Network_Ads.csv'
try:
data = pd.read_csv(url)
print("✅ Successfully loaded dataset.")
print(data.head())
except Exception as e:
print(f"❌ Failed to load data: {e}")
exit()
X = data[['Age', 'EstimatedSalary']].values
y = data['Purchased'].values
X_train, X_test, y_train, y_test = train_test_split(
X, y, test_size=0.25, random_state=0
)
print("\n--- Scikit-Learn Logistic Regression ---")
scaler = StandardScaler()
X_train_scaled = scaler.fit_transform(X_train)
X_test_scaled = scaler.transform(X_test)
model = LogisticRegression(random_state=0)
model.fit(X_train_scaled, y_train)
y_pred_sklearn = model.predict(X_test_scaled)
cm_sklearn = confusion_matrix(y_test, y_pred_sklearn)
acc_sklearn = accuracy_score(y_test, y_pred_sklearn)
print("Predictions (first 20):", y_pred_sklearn[:20])
print("Confusion Matrix:\n", cm_sklearn)
print(f"Accuracy: {acc_sklearn:.4f}")
print("\n--- Custom Logistic Regression (from Scratch) ---")
class CustomLogisticRegression:
Variables
Terminal
Light rain
At night
Search
ENG
IN
15:27
18-11-2025

i love pdf - Yahoo India Search | Download file | iLovePDF | FundamentalsOfMachineLearni | Harishma0523/FOML

colab.research.google.com/drive/1SdqBF8cPKJS7sJqrzutJM-Os1HcENosz?authuser=1#scrollTo=oLp9svLobhTd

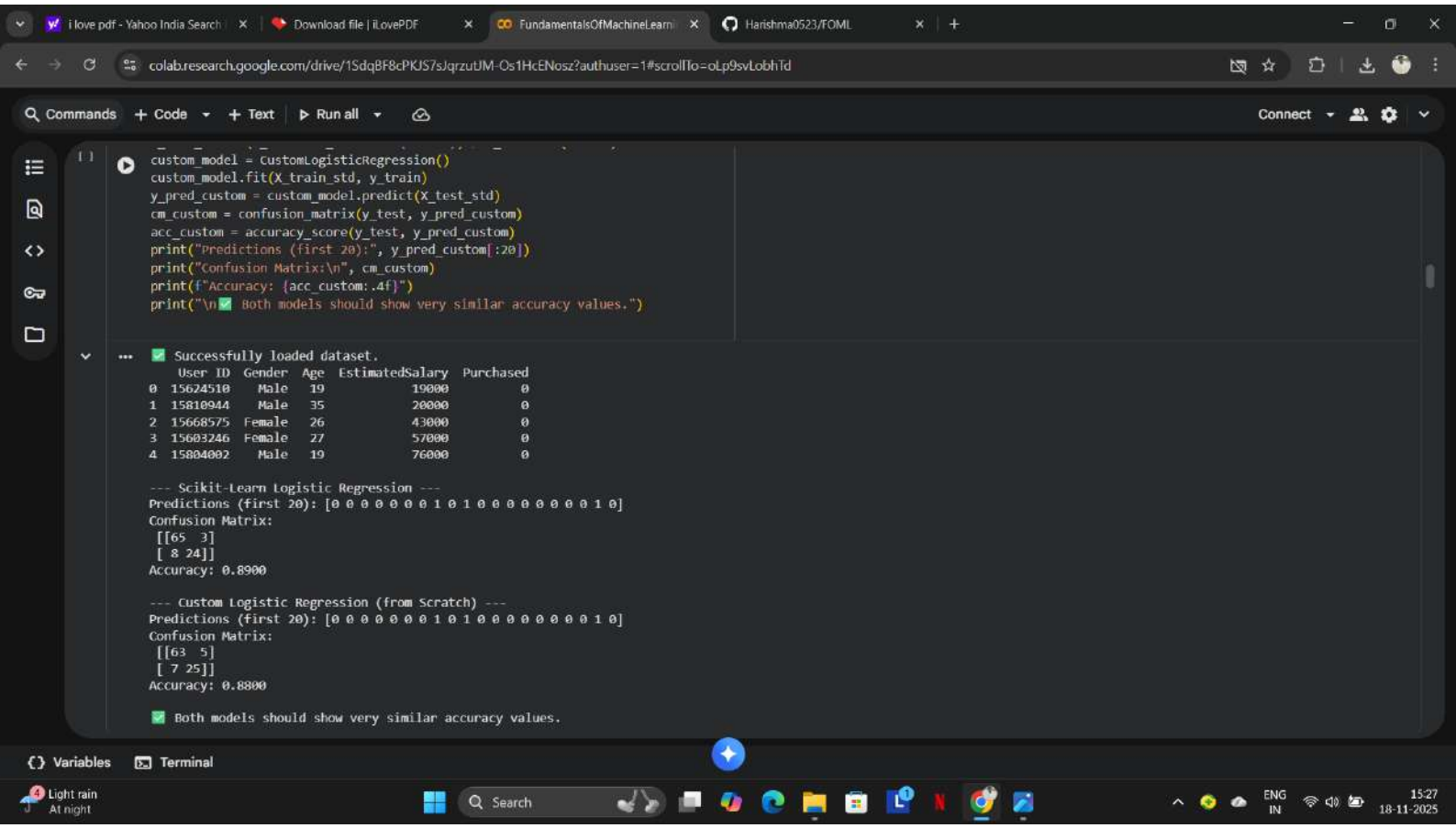
Commands + Code + Text Run all Connect

```
class CustomLogisticRegression:
    def sigmoid(self, z):
        return 1 / (1 + np.exp(-z))
    def fit(self, X, y, alpha=0.01, iterations=500):
        X = np.c_[np.ones((X.shape[0], 1)), X]
        self.weights = np.zeros((X.shape[1], 1))
        y = y.reshape(-1, 1)
        for _ in range(iterations):
            z = np.dot(X, self.weights)
            predictions = self.sigmoid(z)
            gradient = np.dot(X.T, (predictions - y)) / len(y)
            self.weights -= alpha * gradient
    def predict(self, X):
        X = np.c_[np.ones((X.shape[0], 1)), X]
        probs = self.sigmoid(np.dot(X, self.weights))
        return (probs >= 0.5).astype(int).flatten()
X_train_std = (X_train - X_train.mean(axis=0)) / X_train.std(axis=0)
X_test_std = (X_test - X_test.mean(axis=0)) / X_test.std(axis=0)
custom_model = CustomLogisticRegression()
custom_model.fit(X_train_std, y_train)
y_pred_custom = custom_model.predict(X_test_std)
cm_custom = confusion_matrix(y_test, y_pred_custom)
acc_custom = accuracy_score(y_test, y_pred_custom)
print("Predictions (first 20):", y_pred_custom[:20])
print("Confusion Matrix:\n", cm_custom)
print(f"Accuracy: {acc_custom:.4f}")
print("\n✅ Both models should show very similar accuracy values.")
```

```
✅ Successfully loaded dataset.
   User ID  Gender  Age  EstimatedSalary  Purchased
0  15624510    Male   19            19000          0
1  15810944    Male   35            20000          0
```

Variables Terminal

Light rain At night | Search | ENG IN | 15:27 18-11-2025


i love pdf - Yahoo India Search
Download file | iLovePDF
FundamentalsOfMachineLearni
Harishma0523/FOML
colab.research.google.com/drive/1SdqBF8cPKJS7sJqrzutJM-Os1HcENosz?authuser=1#scrollTo=oLp9svLobhTd
Commands
+ Code
+ Text
Run all
Connect
custom_model = CustomLogisticRegression()
custom_model.fit(X_train_std, y_train)
y_pred_custom = custom_model.predict(X_test_std)
cm_custom = confusion_matrix(y_test, y_pred_custom)
acc_custom = accuracy_score(y_test, y_pred_custom)
print("Predictions (first 20):", y_pred_custom[:20])
print("Confusion Matrix:\n", cm_custom)
print(f"Accuracy: {acc_custom:.4f}")
print("\n✅ Both models should show very similar accuracy values.")
✅ Successfully loaded dataset.
User ID Gender Age EstimatedSalary Purchased
0 15624510 Male 19 19000 0
1 15810944 Male 35 20000 0
2 15668575 Female 26 43000 0
3 15603246 Female 27 57000 0
4 15804002 Male 19 76000 0
--- Scikit-Learn Logistic Regression ---
Predictions (first 20): [0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 1 0]
Confusion Matrix:
[[65 3]
[8 24]]
Accuracy: 0.8900
--- Custom Logistic Regression (from Scratch) ---
Predictions (first 20): [0 0 0 0 0 0 0 1 0 1 0 0 0 0 0 0 0 1 0]
Confusion Matrix:
[[63 5]
[7 25]]
Accuracy: 0.8800
✅ Both models should show very similar accuracy values.
Variables
Terminal
Light rain
At night
Search
ENG
IN
15:27
18-11-2025