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# 1. رفع الملف
from google.colab import files
uploaded = files.upload()

# 2. استيراد المكتبات
import pandas as pd
from sklearn.model_selection import train_test_split, GridSearchCV
from sklearn.preprocessing import LabelEncoder
from sklearn.impute import SimpleImputer
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score
from sklearn.feature_selection import SelectKBest, chi2, RFE

# 3. قراءة البيانات
data = pd.read_csv("titanic.csv")

print("تم قراءة البيانات")

# 4. معالجة القيم المفقودة
imputer = SimpleImputer(strategy='most_frequent')
data = pd.DataFrame(imputer.fit_transform(data), columns=data.columns)

print("تم تنظيف البيانات")

# 5. تحويل النصوص إلى أرقام
le = LabelEncoder()
for col in data.select_dtypes(include=['object']).columns:
    data[col] = le.fit_transform(data[col])

print("تم تحويل البيانات")

# 6. تقسيم البيانات
X = data.drop("Survived", axis=1)
y = data["Survived"]

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2)

# 7. Grid Search
param_grid = {'n_estimators': [50, 100], 'max_depth': [3, 5]}
model = RandomForestClassifier()

grid = GridSearchCV(model, param_grid, cv=3)
grid.fit(X_train, y_train)

best_model = grid.best_estimator_

# 8. التقييم
y_pred = best_model.predict(X_test)
print("Accuracy قبل Feature Selection:", accuracy_score(y_test, y_pred))

# 9. Feature Selection
selector1 = SelectKBest(score_func=chi2, k=3)
X_new1 = selector1.fit_transform(X, y)

selector2 = RFE(RandomForestClassifier(), n_features_to_select=3)
X_new2 = selector2.fit_transform(X, y)

# 10. إعادة التدريب
X_train1, X_test1, y_train1, y_test1 = train_test_split(X_new1, y, test_size=0.2)
model1 = RandomForestClassifier()
model1.fit(X_train1, y_train1)

print("Accuracy بعد SelectKBest:", accuracy_score(y_test1, model1.predict(X_test1)))

X_train2, X_test2, y_train2, y_test2 = train_test_split(X_new2, y, test_size=0.2)
model2 = RandomForestClassifier()
model2.fit(X_train2, y_train2)

print("Accuracy بعد RFE:", accuracy_score(y_test2, model2.predict(X_test2)))

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 titanic.csv**titanic.csv**(text/csv) - 296 bytes, last modified: 24100% - 2026/4/ done

Saving titanic.csv to titanic.csv

تم قراءة البيانات

تم تنظيف البيانات

تم تحويل البيانات

Accuracy قبل Feature Selection: 0.3333333333333333

Accuracy بعد SelectKBest: 0.3333333333333333

Accuracy بعد RFE: 0.6666666666666666