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# Student Performance Predictor using Logistic Regression

import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import accuracy_score, classification_report,
confusion_matrix
import matplotlib.pyplot as plt

# Sample dataset
data = {
    'Attendance': [85, 60, 90, 40, 75, 50, 92, 65],
    'Assignment Score': [80, 55, 88, 30, 70, 45, 95, 60],
    'Quiz Score': [78, 50, 85, 25, 75, 40, 90, 55],
    'Final Result': ['Pass', 'Fail', 'Pass', 'Fail', 'Pass', 'Fail',
'Pass', 'Fail']
}

df = pd.DataFrame(data)

# Encoding target column
df['Final Result'] = df['Final Result'].map({'Pass': 1, 'Fail': 0})

# Features and target
X = df[['Attendance', 'Assignment Score', 'Quiz Score']]
y = df['Final Result']

# Split the data
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3,
random_state=0)

# Train model
model = LogisticRegression()
model.fit(X_train, y_train)

# Predict
y_pred = model.predict(X_test)

# Evaluation
print("Accuracy:", accuracy_score(y_test, y_pred))
print("Classification Report:\n", classification_report(y_test, y_pred))
print("Confusion Matrix:\n", confusion_matrix(y_test, y_pred))

# Prediction example
new_input = [[80, 85, 90]]
prediction = model.predict(new_input)
print("New Input Prediction:", "Pass" if prediction[0] == 1 else "Fail")

# Visualization
plt.scatter(df['Attendance'], df['Quiz Score'], c=df['Final Result'],
cmap='bwr')
plt.xlabel('Attendance')
plt.ylabel('Quiz Score')
plt.title('Student Performance Visualization')
plt.show()

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