Develop a k-nearest neighbours classifier model based on the Iris dataset. Make use of visualization tools such as scatter plots to visualize the data.

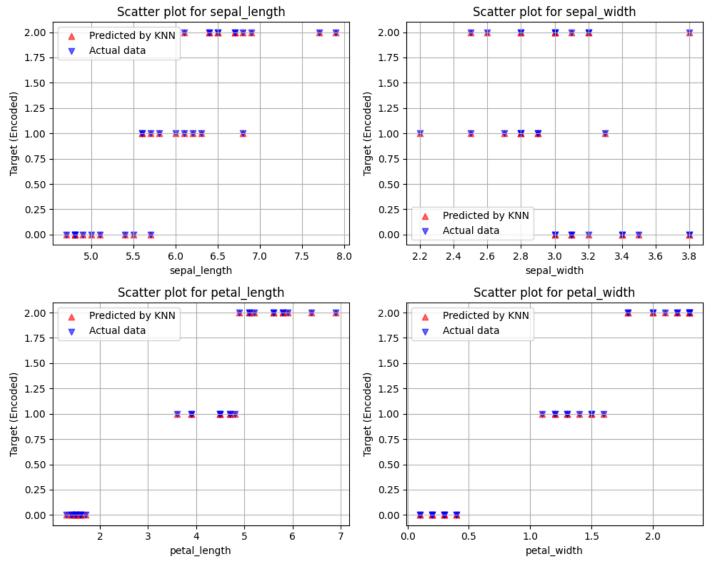
```
In [44]: import matplotlib.pyplot as plt
         from sklearn.model selection import train test split
         from sklearn.neighbors import KNeighborsClassifier
         import pandas as pd
         from sklearn.metrics import accuracy_score
         from sklearn.preprocessing import LabelEncoder
In [45]: | df = pd.read csv("iris dataset.csv")
         df.head()
Out[45]:
            sepal_length sepal_width petal_length petal_width
                                                               target
         0
                     5.1
                                3.5
                                            1.4
                                                       0.2 Iris-setosa
          1
                    4.9
                                3.0
                                                       0.2 Iris-setosa
                                            1.4
          2
                    4.7
                                            1.3
                                3.2
                                                       0.2 Iris-setosa
          3
                    4.6
                                3.1
                                            1.5
                                                       0.2 Iris-setosa
                    5.0
                                3.6
                                            1.4
                                                       0.2 Iris-setosa
In [46]: | x fields = ["sepal length", "sepal width", "petal length", "petal width"]
         X = df[x_fields]
         y = df["target"]
In [47]: X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42
In [48]: knn = KNeighborsClassifier(n_neighbors=3)
         knn.fit(X_train, y_train)
Out[48]:
                                           (i) (?)
                 KNeighborsClassifier
         KNeighborsClassifier(n_neighbors=3)
In [49]: y pred = knn.predict(X test)
In [52]: | accuracy = accuracy_score(y_test, y_pred)
         print(f"Accuracy = {accuracy * 100} %")
         label encoder = LabelEncoder()
         y test encoded = label encoder.fit transform(y test)
         y pred encoded = label encoder.transform(y pred)
        Accuracy = 100.0 %
In [59]: fig, axes = plt.subplots(2, 2, figsize=(10, 8))
         axes = axes.flatten()
```

1 of 2 12/18/24, 21:03

```
for i, field in enumerate(x_fields):
    axes[i].scatter(X_test[field], y_pred_encoded, color="red", marker="^", label="Predi
    axes[i].scatter(X_test[field], y_test_encoded, color="blue", marker="v", label="Actu
    axes[i].set_title(f"Scatter plot for {field}")
    axes[i].set_xlabel(f"{field}")
    axes[i].set_ylabel("Target (Encoded)")
    axes[i].legend()
    axes[i].grid(True)

plt.tight_layout()

plt.show()
```



2 of 2 12/18/24, 21:03