

Titanic Survival Prediction : Internship

VS CODE:

```
# Libraries
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import accuracy_score, classification_report, confusion_matrix

# Step 1: Load Dataset
url = 'https://raw.githubusercontent.com/datasciencedojo/datasets/master/titanic.csv'
data = pd.read_csv(url)
print("Dataset Loaded:")
print(data.head())

# Step 2: Data Preprocessing
# Drop irrelevant columns
data = data.drop(['Name', 'Ticket', 'Cabin'], axis=1)

# Fill missing values
data['Age'].fillna(data['Age'].median(), inplace=True)
data['Embarked'].fillna(data['Embarked'].mode()[0], inplace=True)

# Convert categorical to numerical
data = pd.get_dummies(data, columns=['Sex', 'Embarked'], drop_first=True)

# Define features and target
X = data.drop('Survived', axis=1)
y = data['Survived']

# Step 3: Split Data
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

# Step 4: Logistic Regression Model
log_reg = LogisticRegression(max_iter=200)
log_reg.fit(X_train, y_train)
y_pred_log = log_reg.predict(X_test)
log_acc = accuracy_score(y_test, y_pred_log)

print("\nLogistic Regression Accuracy:", log_acc)
print(classification_report(y_test, y_pred_log))

# Step 5: Decision Tree Model
dt_clf = DecisionTreeClassifier(random_state=42)
dt_clf.fit(X_train, y_train)
y_pred_dt = dt_clf.predict(X_test)
dt_acc = accuracy_score(y_test, y_pred_dt)

print("\nDecision Tree Accuracy:", dt_acc)
print(classification_report(y_test, y_pred_dt))
```

Step 6: Confusion Matrices

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print("\nLogistic Regression Confusion Matrix:")
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print(confusion_matrix(y_test, y_pred_log))
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print("\nDecision Tree Confusion Matrix:")
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print(confusion_matrix(y_test, y_pred_dt))
```

Step 7: Conclusion

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print("\nConclusion:")
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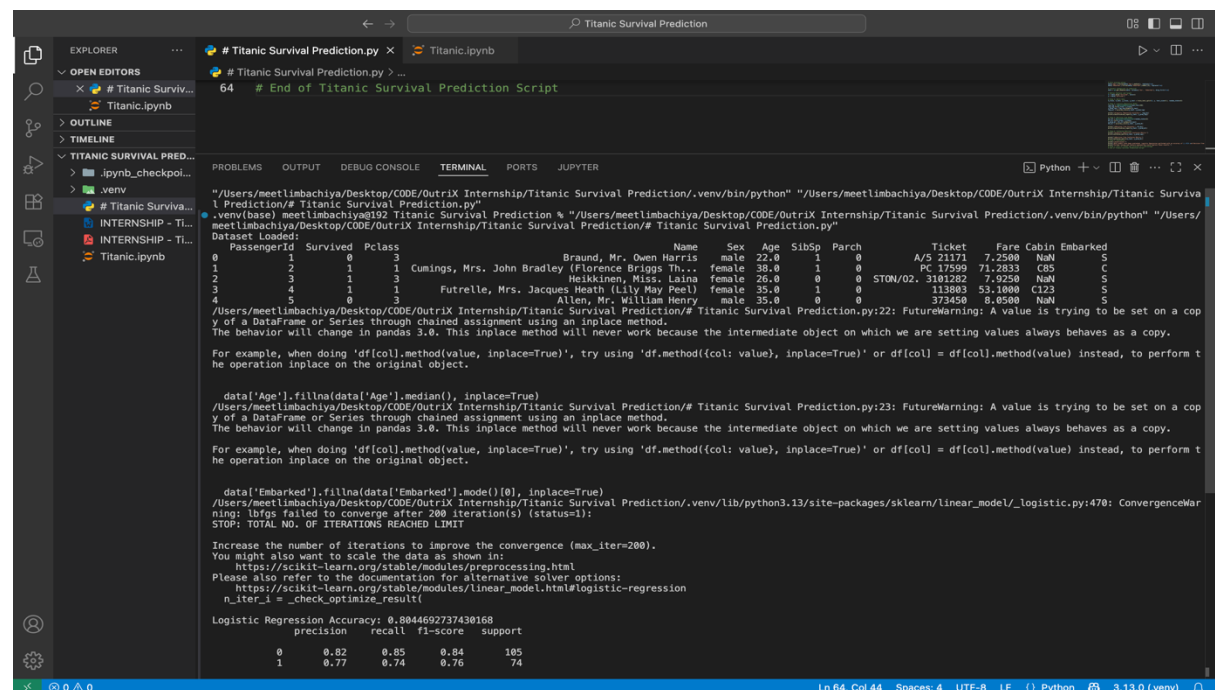
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print("Both models have been evaluated. Logistic Regression performed with an accuracy of {:.2f}% and  
Decision Tree with {:.2f}%".format(log_acc * 100, dt_acc * 100))
```

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print("Further tuning and feature engineering could improve these results.")
```

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# Used {:.2f}% to format the accuracy as a percentage.
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```
# End of Titanic Survival Prediction Script
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OUTPUT:



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"/Users/meetlimbachiya/Desktop/CODE/OutriX Internship/Titanic Survival Prediction/.venv/bin/python" "/Users/meetlimbachiya/Desktop/CODE/OutriX Internship/Titanic Survival Prediction/# Titanic Survival Prediction.py"
/Users/meetlimbachiya/Desktop/CODE/OutriX Internship/Titanic Survival Prediction % "/Users/meetlimbachiya/Desktop/CODE/OutriX Internship/Titanic Survival Prediction/.venv/bin/python" "/Users/meetlimbachiya/Desktop/CODE/OutriX Internship/Titanic Survival Prediction/# Titanic Survival Prediction.py"
Dataset loaded:
  PassengerId  Survived  Pclass
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```

JUPYTER NOTEBOOK:

The screenshot shows a Jupyter Notebook titled "Titanic" with a last checkpoint 1 hour ago. The interface includes a top bar with navigation icons, a menu bar (File, Edit, View, Run, Kernel, Settings, Help), and a toolbar with icons for saving, running, and other actions. The notebook contains four code cells:

```
[1]: import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import accuracy_score, classification_report, confusion_matrix

[2]: print("Libraries imported successfully!")

Libraries imported successfully!

[3]: #Link if of DATASET
url = 'https://raw.githubusercontent.com/datasciencedojo/datasets/master/titanic.csv'
data = pd.read_csv(url)
print("Dataset Loaded:")
data.head()

Dataset Loaded:
   PassengerId  Survived  Pclass    Name  Sex  Age  SibSp  Parch    Ticket   Fare  Cabin Embarked
0            1         0        3  Braund, Mr. Owen Harris  male  22.0    1    0      A/5 21171   7.2500   NaN        S
1            2         1        1  Cumings, Mrs. John Bradley (Florence Briggs Th... female  38.0    1    0      PC 17599  71.2833   C85        C
2            3         1        3  Heikkinen, Miss. Laina  female  26.0    0    0  STON/O2. 3101282   7.9250   NaN        S
3            4         1        1  Futrelle, Mrs. Jacques Heath (Lily May Peel) female  35.0    1    0     113803  53.1000  C123        S
4            5         0        3  Allen, Mr. William Henry  male  35.0    0    0     373450  8.0500   NaN        S

[4]: # Drop irrelevant columns
data = data.drop(['Name', 'Ticket', 'Cabin'], axis=1)

# Fill missing values
data['Age'] = data['Age'].fillna(data['Age'].median())
data['Embarked'] = data['Embarked'].fillna(data['Embarked'].mode()[0])
```

The screenshot shows the continuation of the Jupyter Notebook. The code cells are as follows:

```
[4]: # Drop irrelevant columns
data = data.drop(['Name', 'Ticket', 'Cabin'], axis=1)

# Fill missing values
data['Age'] = data['Age'].fillna(data['Age'].median())
data['Embarked'] = data['Embarked'].fillna(data['Embarked'].mode()[0])

# Convert categorical variables to numeric
data = pd.get_dummies(data, columns=['Sex', 'Embarked'], drop_first=True)

# Preview the processed data
data.head()

   PassengerId  Survived  Pclass  Age  SibSp  Parch  Fare  Sex_male  Embarked_Q  Embarked_S
0            1         0        3  22.0    1    0   7.2500        True         False         True
1            2         1        1  38.0    1    0  71.2833        False         False         False
2            3         1        3  26.0    0    0   7.9250        False         False         True
3            4         1        1  35.0    1    0  53.1000        False         False         True
4            5         0        3  35.0    0    0   8.0500         True         False         True

[5]: # Define features (independent variables)
X = data.drop('Survived', axis=1)

# Define target (dependent variable)
y = data['Survived']

[6]: print("Features shape:", X.shape)
print("Target shape:", y.shape)
#for Shape Verification
Features shape: (891, 9)
Target shape: (891,)

[7]: from sklearn.model_selection import train_test_split
```

```

[7]: from sklearn.model_selection import train_test_split

# For Splitting data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(
    X, y, test_size=0.2, random_state=42
)

print("Training features shape:", X_train.shape)
print("Testing features shape:", X_test.shape)
print("Training target shape:", y_train.shape)
print("Testing target shape:", y_test.shape)

Training features shape: (712, 9)
Testing features shape: (179, 9)
Training target shape: (712,)
Testing target shape: (179,)

[8]: from sklearn.preprocessing import StandardScaler

# Scale the features
scaler = StandardScaler()
X_train_scaled = scaler.fit_transform(X_train)
X_test_scaled = scaler.transform(X_test)

# Train Logistic Regression on scaled data
log_reg = LogisticRegression(max_iter=500)
log_reg.fit(X_train_scaled, y_train)

# Predict on test data
y_pred_log = log_reg.predict(X_test_scaled)

# Evaluate performance
print("Logistic Regression Accuracy:", accuracy_score(y_test, y_pred_log))
print("Classification Report:\n", classification_report(y_test, y_pred_log))
print("Confusion Matrix:\n", confusion_matrix(y_test, y_pred_log))

#0.804469 = 80%
Logistic Regression Accuracy: 0.8044692737430168
Classification Report:

```

```

Logistic Regression Accuracy: 0.8044692737430168
Classification Report:
      precision    recall  f1-score   support

     0       0.82     0.85     0.84       105
     1       0.77     0.74     0.76        74

 accuracy      0.80     0.80     0.80       179
  macro avg       0.80     0.80     0.80       179
 weighted avg       0.80     0.80     0.80       179

Confusion Matrix:
[[89 16]
 [19 55]]

[9]: # Initialize and train Decision Tree Classifier
dt_clf = DecisionTreeClassifier(random_state=42)
dt_clf.fit(X_train, y_train)

# Predict on test data
y_pred_dt = dt_clf.predict(X_test)

# Evaluate performance
print("Decision Tree Accuracy:", accuracy_score(y_test, y_pred_dt))
print("Classification Report:\n", classification_report(y_test, y_pred_dt))
print("Confusion Matrix:\n", confusion_matrix(y_test, y_pred_dt))

#Accuracy = 0.7206 = 72%
Decision Tree Accuracy: 0.7206703910614525
Classification Report:
      precision    recall  f1-score   support

     0       0.77     0.75     0.76       105
     1       0.66     0.68     0.67        74

 accuracy      0.71     0.71     0.72       179
  macro avg       0.71     0.71     0.71       179
 weighted avg       0.72     0.72     0.72       179

Confusion Matrix:

```

localhost

HomeTitanic

jupyter Titanic Last Checkpoint: 1 hour ago

FileEditViewRunKernelSettingsHelp

Not Trusted

JupyterLabPython 3 (ipykernel)

```
[189 16]
[19 55]]

[9]: # Initialize and train Decision Tree Classifier
dt_clf = DecisionTreeClassifier(random_state=42)
dt_clf.fit(X_train, y_train)

# Predict on test data
y_pred_dt = dt_clf.predict(X_test)

# Evaluate performance
print("Decision Tree Accuracy:", accuracy_score(y_test, y_pred_dt))
print("Classification Report:\n", classification_report(y_test, y_pred_dt))
print("Confusion Matrix:\n", confusion_matrix(y_test, y_pred_dt))

#Accuracy = 0.7206 = 72%
Decision Tree Accuracy: 0.7206703910614525
Classification Report:
      precision    recall  f1-score   support

      0       0.77       0.75       0.76       105
      1       0.66       0.68       0.67        74

 accuracy          0.71          0.71          0.71       179
 macro avg          0.71          0.71          0.71       179
 weighted avg          0.72          0.72          0.72       179

Confusion Matrix:
[[79 26]
 [24 50]]
```

[]: