
Experiment No: 07

Code:

```
import pandas as pd

from sklearn.model_selection import train_test_split

from sklearn.ensemble import RandomForestClassifier

from sklearn.preprocessing import LabelEncoder

from sklearn.metrics import classification_report, accuracy_score


# Load the data

data =
pd.read_csv(r'D:\Current_Learning\TY_NOTES\ML\Practical\Exp_No_07\Experiment7.csv'
)


# Check for missing values in categorical columns

data.fillna({'Sex': 'unknown', 'Embarked': 'unknown'}, inplace=True)

# data['Sex'] = data['Sex'].fillna('unknown')

# data['Embarked'] = data['Embarked'].fillna('unknown')


# Encode categorical variables

label_encoder = LabelEncoder()

data['Sex'] = label_encoder.fit_transform(data['Sex'])

data['Embarked'] = label_encoder.fit_transform(data['Embarked'])


# Define features and target variable

X = data.drop(columns=['Survived'])

y = data['Survived']
```

```
# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_state=42)

# Initialize and train the Random Forest Classifier
rf_model = RandomForestClassifier(random_state=42, n_estimators=100)
rf_model.fit(X_train, y_train)

# Make predictions
y_pred = rf_model.predict(X_test)

# Evaluate the model
accuracy = accuracy_score(y_test, y_pred)
report = classification_report(y_test, y_pred)

print(f"Accuracy: {accuracy * 100:.2f}%")
print("Classification Report:\n", report)
```

Output:

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS

Microsoft Windows [Version 10.0.26100.2314]
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D:\Current_Learning\TY_NOTES\ML\Practical\Exp_No_07>python -u "d:\Current_Learning\TY_NOTES\ML\Practical\Exp_No_07\ML_07_01_01.py"
Accuracy: 78.73%
Classification Report:
              precision    recall  f1-score   support

           0       0.82      0.82      0.82       157
           1       0.75      0.74      0.74       111

    accuracy                           0.79       268
   macro avg       0.78      0.78      0.78       268
weighted avg       0.79      0.79      0.79       268


D:\Current_Learning\TY_NOTES\ML\Practical\Exp_No_07>
```