

codealpha-task-3

September 18, 2024

TASK -03

The price of a car depends on a lot of factors like the goodwill of the brand of the car, features of the car, horsepower and the mileage it gives and many more. Car price prediction is one of the major research areas in machine learning. So if you want to learn how to train a car price prediction model then this project is for you

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[4]: import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score

data = pd.read_csv("C:\\Users\\Harshika k\\Downloads\\car data.csv")
print(data.head())

plt.figure(figsize=(10, 6))

numeric_data = data.select_dtypes(include=[float, int])

sns.heatmap(numeric_data.corr(), annot=True, cmap='coolwarm', linewidths=0.5)
plt.title("Correlation Heatmap")
plt.show()

X = data[['Year', 'Present_Price', 'Driven_kms', 'Owner']]
y = data['Selling_Price']
X = pd.get_dummies(X, drop_first=True)

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,
                                                    random_state=42)

model = LinearRegression()
model.fit(X_train, y_train)
y_pred = model.predict(X_test)

mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
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print(f"Mean Squared Error (MSE): {mse}")
print(f"R-squared (R²): {r2}")

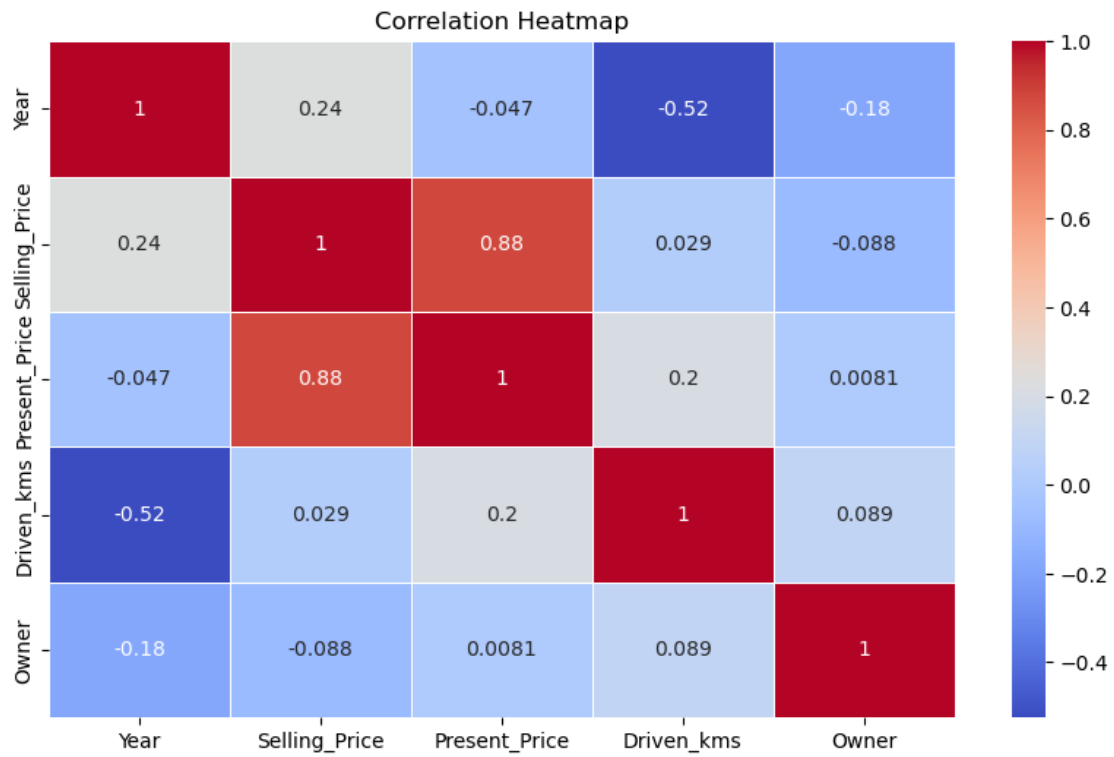
plt.figure(figsize=(8, 6))
plt.scatter(y_test, y_pred, color='blue')
plt.plot([min(y_test), max(y_test)], [min(y_test), max(y_test)], color='red',
         linewidth=2)
plt.title('Actual vs Predicted Prices')
plt.xlabel('Actual Prices')
plt.ylabel('Predicted Prices')
plt.show()

plt.figure(figsize=(8, 6))
residuals = y_test - y_pred
sns.histplot(residuals, bins=20, kde=True, color='purple')
plt.title('Residuals Distribution')
plt.xlabel('Residuals')
plt.show()

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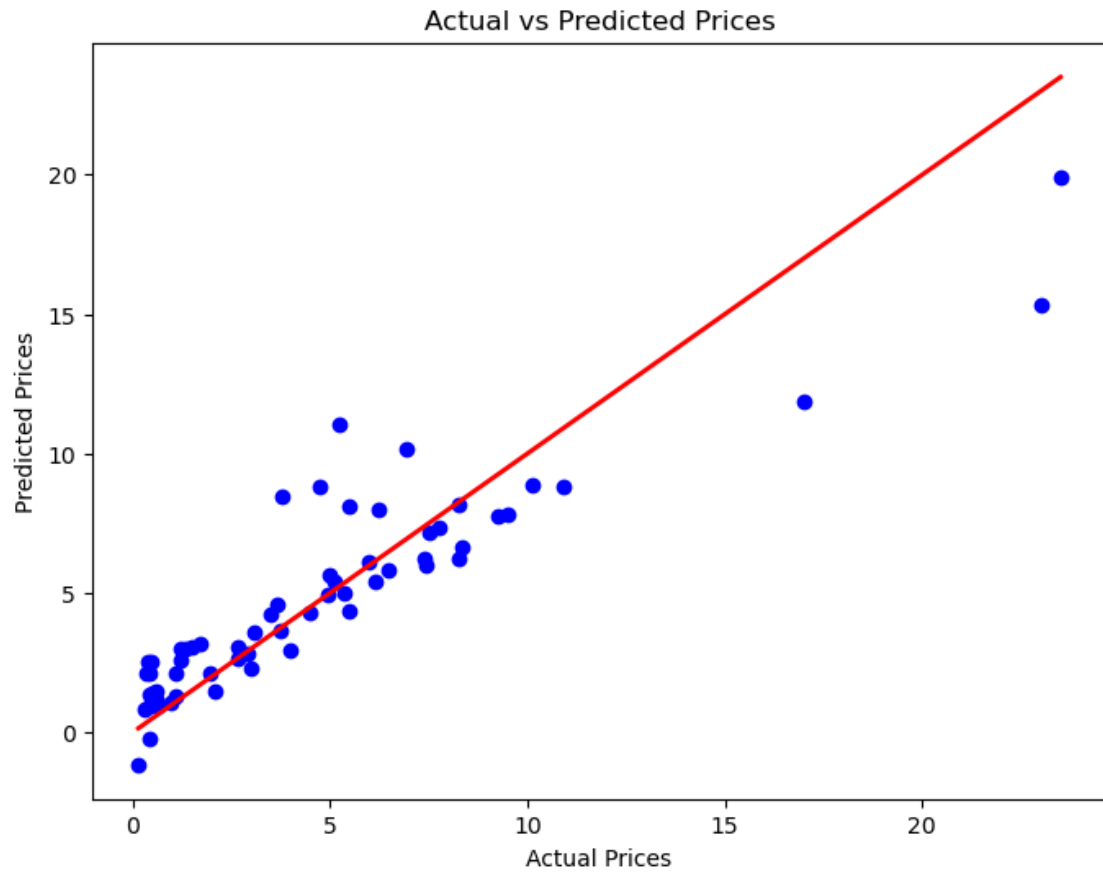
| | Car_Name | Year | Selling_Price | Present_Price | Driven_kms | Fuel_Type | \ |
|---|----------|------|---------------|---------------|------------|-----------|---|
| 0 | ritz | 2014 | 3.35 | 5.59 | 27000 | Petrol | |
| 1 | sx4 | 2013 | 4.75 | 9.54 | 43000 | Diesel | |
| 2 | ciaz | 2017 | 7.25 | 9.85 | 6900 | Petrol | |
| 3 | wagon r | 2011 | 2.85 | 4.15 | 5200 | Petrol | |
| 4 | swift | 2014 | 4.60 | 6.87 | 42450 | Diesel | |

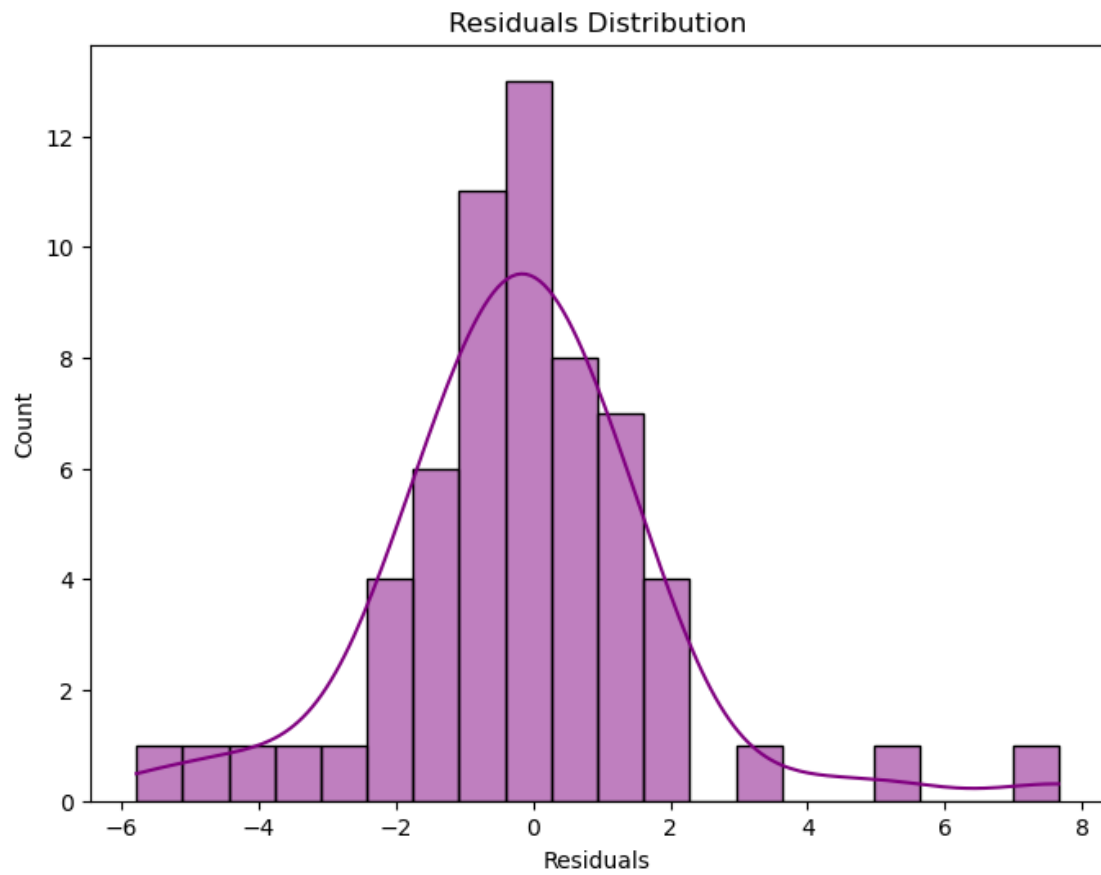
| | Selling_type | Transmission | Owner |
|---|--------------|--------------|-------|
| 0 | Dealer | Manual | 0 |
| 1 | Dealer | Manual | 0 |
| 2 | Dealer | Manual | 0 |
| 3 | Dealer | Manual | 0 |
| 4 | Dealer | Manual | 0 |



Mean Squared Error (MSE): 4.125555394840549

R-squared (R^2): 0.8209051135122415





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