PREDICTING PERMENENT MAGNET RESISTANCE OF ELECTRIC MOTOR USING MACHINE LEARNING

PROGRAM:

Here is a Python code example using machine learning to predict permanent magnet resistance of an electric motor:

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# Import necessary libraries
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.linear_model import LinearRegression
from sklearn.metrics import mean_squared_error, r2_score
import matplotlib.pyplot as plt

# Load the dataset
data = pd.read_csv('electric_motor_data.csv')

# Split data into features and target variable
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X = data.drop('magnetic_resistance', axis=1)
y = data['magnetic_resistance']

# Split 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)

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

# Train a linear regression model
model = LinearRegression()
model.fit(X_train_scaled, y_train)

# Make predictions
y_pred = model.predict(X_test_scaled)

# Evaluate the model
mse = mean_squared_error(y_test, y_pred)
r2 = r2_score(y_test, y_pred)
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print("Mean Squared Error:", mse)
print("R^2 Score:", r2)

# Plotting actual vs. predicted values
plt.scatter(y_test, y_pred)
plt.xlabel("Actual Magnetic Resistance")
plt.ylabel("Predicted Magnetic Resistance")
plt.title("Actual vs. Predicted Magnetic Resistance")
plt.show()
```

This code assumes you have a CSV file named motor_data.csv containing the data, with the permanent magnet resistance as the target variable. The code preprocesses the data, splits it into training and testing sets, trains a linear regression model, makes predictions on the test data, evaluates the model's performance, and uses the model to make predictions on new data.