

Blood Donation Forecast code

Importing necessary libraries

```
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestRegressor
from sklearn.metrics import mean_squared_error, mean_absolute_error
import matplotlib.pyplot as plt
```

Load the dataset

```
data = pd.read_csv("blood_donation_data.csv")
```

Display the first few rows of the dataset

```
print(data.head())
```

Check for missing values

```
print(data.isnull().sum())
```

Split the data into features and target variable

```
X = data[['Months since Last Donation', 'Number of Donations', 'Total Volume Donated (c.c.)']]
y = data['Made Donation in March 2007']
```

Split the 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)
```

Train the Random Forest Regressor model

```
model = RandomForestRegressor(n_estimators=100, random_state=42)
model.fit(X_train, y_train)
```

Make predictions

```
y_pred = model.predict(X_test)
```

Calculate and print evaluation metrics

```
mse = mean_squared_error(y_test, y_pred)
mae = mean_absolute_error(y_test, y_pred)
print("Mean Squared Error:", mse)
```

```

print("Mean Absolute Error:", mae)

# Plot the actual vs predicted values

plt.scatter(y_test, y_pred)

plt.xlabel("Actual")

plt.ylabel("Predicted")

plt.title("Actual vs Predicted")

plt.show()

```

Blood Donation Forecast output:

Unnamed: 0 Months since Last Donation Number of Donations Total Volume Donated (c.c.)
Months since First Donation Made Donation in March 2007

0	0	2	50	12500	98
1					
1	1	0	13	3250	28
1					
2	2	1	16	4000	35
1					
3	3	2	20	5000	45
1					
4	4	1	24	6000	77
0					

Unnamed: 0 0

Months since Last Donation 0

Number of Donations 0

Total Volume Donated (c.c.) 0

Months since First Donation 0

Made Donation in March 2007 0

dtype: int64

Mean Squared Error: 0.15347222222222223

Mean Absolute Error: 0.2516666666666667