Scaling Techniques Documentation

In this project, we applied feature scaling to the numerical features using the StandardScaler from Scikit-learn.

This technique standardizes the features by removing the mean and scaling to unit variance.

Feature scaling is essential in the preprocessing pipeline to ensure that all features contribute equally to the model's learning process.

Without scaling, features with larger ranges can disproportionately influence the model.

The StandardScaler transforms each feature by subtracting the mean and scaling to unit variance.

The formula used for scaling is:

$$X_{scaled} = (X - mean) / standard\_deviation$$

where:

- X is the original feature value
- mean is the average of the feature values
- standard_deviation is the standard deviation of the feature values

Below is the code snippet used for scaling the features:

```python
from sklearn.preprocessing import StandardScaler
```

```
# Initialize the scaler
scaler = StandardScaler()

# Separate features and target variable
target_column = 'Churn_No'  # Use 'Churn_No' as the target variable



# Separate features and target variable
X = df_encoded.drop([target_column, 'Churn_Yes'], axis=1)  # Drop the target variables

# Standardize the features
scaler = StandardScaler()
X_scaled = scaler.fit_transform(X)
```