

Files

- sample_data
- Data_Gov_Tamil_Nadu (1).csv

```
import pandas as pd
import numpy as np
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.feature_selection import SelectKBest, chi2
from sklearn.metrics import roc_curve, roc_auc_score
from sklearn.ensemble import RandomForestClassifier
import matplotlib.pyplot as plt
```

```
[2] # Load your dataset (replace 'data.csv' with your data file)
data = pd.read_csv('/content/Data Gov Tamil Nadu (1).csv')

# Explore the dataset (e.g., check for missing values, data types, etc.)
data.info()
data.head()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 29941 entries, 0 to 29940
Data columns (total 17 columns):
 #   Column                                     Non-Null Count  Dtype
---  -
 0   CORPORATE_IDENTIFICATION_NUMBER          29941 non-null  object
 1   COMPANY_NAME                             29941 non-null  object
 2   COMPANY_STATUS                           29940 non-null  object
 3   COMPANY_CLASS                            29629 non-null  object
 4   COMPANY_CATEGORY                         29629 non-null  object
 5   COMPANY_SUB_CATEGORY                     29629 non-null  object
 6   DATE_OF_REGISTRATION                     29982 non-null  object
 7   REGISTERED_STATE                         29940 non-null  object
```

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[2] # Load your dataset (replace 'data.csv' with your data file)
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1 COMPANY_NAME	29941 non-null	object
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3 COMPANY_CLASS	29629 non-null	object
4 COMPANY_CATEGORY	29629 non-null	object
5 COMPANY_SUB_CATEGORY	29629 non-null	object
6 DATE_OF_REGISTRATION	29902 non-null	object
7 REGISTERED_STATE	29940 non-null	object
8 AUTHORIZED_CAP	29940 non-null	float64
9 PAIDUP_CAPITAL	29940 non-null	float64
10 INDUSTRIAL_CLASS	29630 non-null	object
11 PRINCIPAL_BUSINESS_ACTIVITY_AS_PER_CIN	29940 non-null	object
12 REGISTERED_OFFICE_ADDRESS	29918 non-null	object
13 REGISTRAR_OF_COMPANIES	29888 non-null	object
14 EMAIL_ADDR	20765 non-null	object
15 LATEST_YEAR_ANNUAL_RETURN	15278 non-null	object
16 LATEST_YEAR_FINANCIAL_STATEMENT	15321 non-null	object

dtypes: float64(2), object(15)
memory usage: 3.9+ MB

CORPORATE_IDENTIFICATION_NUMBER COMPANY_NAME COMPANY_STATUS COMPANY_CLASS COMPANY_CATEGORY COMPANY_SUB_CATEGORY DATE_OF_REGISTRATION REGISTERED_STATE AUTHORIZED_CAP PAIDUP.

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```
[2] 9 PAIDUP_CAPITAL 29940 non-null float64
10 INDUSTRIAL_CLASS 29630 non-null object
11 PRINCIPAL_BUSINESS_ACTIVITY_AS_PER_CIN 29940 non-null object
12 REGISTERED_OFFICE_ADDRESS 29918 non-null object
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16 LATEST_YEAR_FINANCIAL_STATEMENT 15321 non-null object
dtypes: float64(2), object(15)
memory usage: 3.9+ MB
```

	CORPORATE_IDENTIFICATION_NUMBER	COMPANY_NAME	COMPANY_STATUS	COMPANY_CLASS	COMPANY_CATEGORY	COMPANY_SUB_CATEGORY	DATE_OF_REGISTRATION	REGISTERED_STATE	AUTHORIZED_CAP	PAIDUP.
0	F00643	HOCHTIEFF AG,	NAEF	Nan	Nan	Nan	01-12-1961	Tamil Nadu	0.0	
1	F00721	SUMITOMO CORPORATION (SUMITOMO SHOUJI KAISHA L...	ACTV	Nan	Nan	Nan	Nan	Tamil Nadu	0.0	
2	F00692	SRI LANKAN AIRLINES LIMITED	ACTV	Nan	Nan	Nan	01-03-1982	Tamil Nadu	0.0	
3	F01208	CALTEX INDIA LIMITED	NAEF	Nan	Nan	Nan	Nan	Tamil Nadu	0.0	
4	F01218	GE HEALTHCARE BIO-SCIENCES LIMITED	ACTV	Nan	Nan	Nan	Nan	Tamil Nadu	0.0	

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[2] CORPORATE_IDENTIFICATION_NUMBER COMPANY_NAME COMPANY_STATUS COMPANY_CLASS COMPANY_CATEGORY COMPANY_SUB_CATEGORY DATE_OF_REGISTRATION REGISTERED_STATE AUTHORIZED_CAP PAIDUP.

0	F00643	HOCHTIEFF AG,	NAEF	Nan	Nan	Nan	01-12-1961	Tamil Nadu	0.0
---	--------	---------------	------	-----	-----	-----	------------	------------	-----

1	F00721	SUMITOMO CORPORATION (SUMITOMO SHOJI KAISHA L...	ACTV	Nan	Nan	Nan	Nan	Tamil Nadu	0.0
---	--------	--	------	-----	-----	-----	-----	------------	-----

2	F00892	SRI LANKAN AIRLINES LIMITED	ACTV	Nan	Nan	Nan	01-03-1982	Tamil Nadu	0.0
---	--------	-----------------------------	------	-----	-----	-----	------------	------------	-----

3	F01208	CALTEX INDIA LIMITED	NAEF	Nan	Nan	Nan	Nan	Tamil Nadu	0.0
---	--------	----------------------	------	-----	-----	-----	-----	------------	-----

4	F01218	GE HEALTHCARE BIO-SCIENCES LIMITED	ACTV	Nan	Nan	Nan	Nan	Tamil Nadu	0.0
---	--------	------------------------------------	------	-----	-----	-----	-----	------------	-----

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

```
[ ] scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)
```

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sample_data

Data_Gov_Tamil_Nadu (1).csv

✓

[2]

2

F00892

SKILANKAN
AIRLINES
LIMITED

ACTV

Nan

Nan

Nan

01-03-1982

3

F01208

CALTEX INDIA
LIMITED

NAEF

Nan

Nan

Nan

Nan

4

F01218

GE
HEALTHCARE
BIO-SCIENCES
LIMITED

ACTV

Nan

Nan

Nan

Nan

[]

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

[]

scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)

[]

Select the top k features using chi-squared statistic (replace k with your desired number)
selector = SelectKBest(score_func=chi2, k=10)
X_train = selector.fit_transform(X_train, y_train)
X_test = selector.transform(X_test)



{x}

sample_data
Data_Gov_Tamil_Nadu.csv

```
[ ] # Check the first few rows of the dataset  
print(data.head())
```

```
# Check summary statistics  
print(data.describe())
```

```
# Check data types and missing values  
print(data.info())
```

```
# Visualize data (e.g., histograms, scatter plots, etc.)
```

```
# Example: Histogram of a numerical feature  
plt.hist(data['numerical_feature'], bins=20)  
plt.title('Histogram of Numerical Feature')  
plt.xlabel('Value')  
plt.ylabel('Frequency')  
plt.show()
```

```
[ ] # Step 2: Feature Engineering  
# Feature selection (choose relevant features)  
# Example: Selecting specific columns as features  
selected_features = data[['feature1', 'feature2', 'feature3']]
```

```
# Feature preprocessing (e.g., handling missing values, encoding categorical data)  
# Example: Filling missing values with the mean of the column  
selected_features = selected_features.fillna(selected_features.mean())
```

```
# Split the data into training and testing sets  
X = selected_features
```

```
Y = data['target_variable']
```

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```
[ ] plt.title('Histogram of Numerical Feature')
    plt.xlabel('Value')
    plt.ylabel('Frequency')
    plt.show()
```

```
[ ] # Step 2: Feature Engineering
    # Feature selection (choose relevant features)
    # Example: Selecting specific columns as features
    selected_features = data[['feature1', 'feature2', 'feature3']]

    # Feature preprocessing (e.g., handling missing values, encoding categorical data)
    # Example: Filling missing values with the mean of the column
    selected_features = selected_features.fillna(selected_features.mean())

    # Split the data into training and testing sets
    x = selected_features
    y = data['target variable']
    X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

```
[ ] # Step 3: Predictive Modeling
    # Standardize features (if necessary)
    scaler = StandardScaler()
    X_train = scaler.fit_transform(X_train)
    X_test = scaler.transform(X_test)

    # Train a predictive model (Random Forest classifier as an example)
    model = RandomForestClassifier(n_estimators=100, random_state=42)
    model.fit(X_train, y_train)
```



{x}

..

sample_data

Data_Gov_Tamil_Nadu.csv

[]

```
# Step 3: Predictive Modeling
# Standardize features (if necessary)
scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)

# Train a predictive model (Random Forest Classifier as an example)
model = RandomForestClassifier(n_estimators=100, random_state=42)
model.fit(X_train, y_train)

# Make predictions
y_pred = model.predict(X_test)

# Evaluate the model
accuracy = accuracy_score(y_test, y_pred)
confusion = confusion_matrix(y_test, y_pred)
classification_report_str = classification_report(y_test, y_pred)

print(f'Accuracy: {accuracy}')
print('Confusion Matrix:')
print(confusion)
print('Classification Report:')
print(classification_report_str)

Remember to replace 'your_dataset.csv' with the actual dataset file, and adapt the code to your specific dataset and modeling requirements. Add
```

