İnfluencer Effect

ALPER SARGıN

MEHMET AKIF ALTıNSOY

Main.py

```
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import tkinter as tk
from tkinter import ttk
from veriseti import Veriseti
from kumeleme import Kumeleme
from svm_log_naive import Svm_log_naive
from roc import Roc

class SecimEkrani:
    def __init__(self, master):
        self.master = master
        self.master.title("Yapay Zeka Projesi Seçim Ekranı")
        self.master.geometry("450x250")

        tk.Label(self.master, text="Lütfen Seçim yapınız.").pack()

        tk.Button(self.master, text="Veriseti İşlemleri (Model Eğitimi)", bg="turquoise", height="2", width="50", command=self.handle_veriseti).pack()
        tk.Button(self.master, text="Kümeleme İşlemleri (KMeans)", bg="turquoise", height="2", width="50", command=self.handle_kumeleme).pack()
        tk.Button(self.master, text="SVM,Logistic Regression,Naive Bayes", bg="turquoise", height="2", width="50", command=self.handle_svm_log_naive).pack()
        tk.Button(self.master, text="ROC Grafiği Görüntüle", bg="turquoise", height="2", width="50", command=self.handle_roc).pack()

    def handle_veriseti(self):
        Veriseti()

    def handle_kumeleme(self):
        Kumeleme()

    def handle_svm_log_naive(self):
        Svm_log_naive()

    def handle_roc(self):
        Roc()

def main():
    root = tk.Tk()
    secim_ekrani = SecimEkrani(root)
    root.mainloop()
```

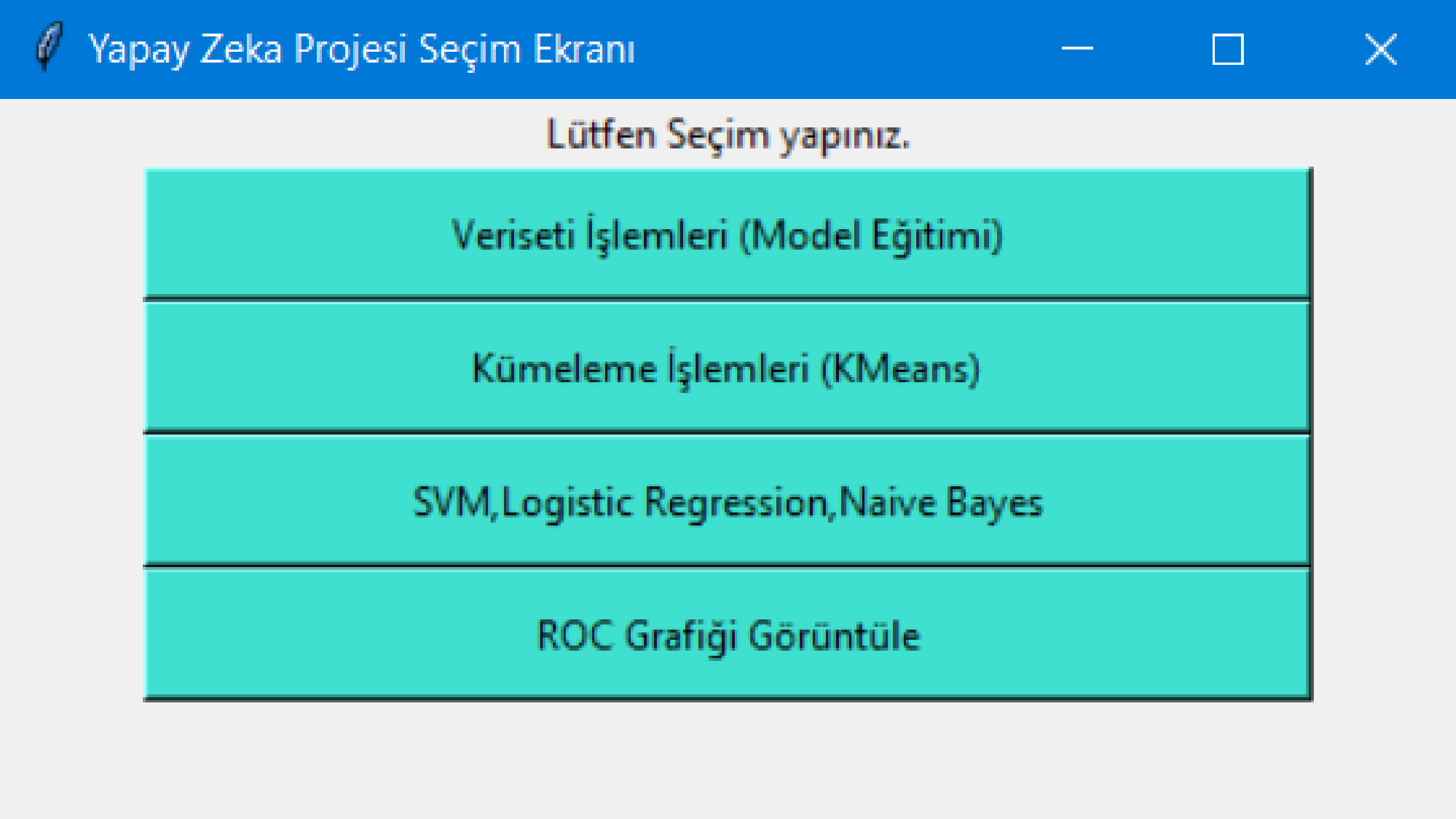
Yapay Zeka Projesi Seçim Ekranı
Lütfen Seçim yapınız.
Veriseti İşlemleri (Model Eğitimi)
Kümeleme İşlemleri (KMeans)
SVM,Logistic Regression,Naive Bayes
ROC Grafiği Görüntüle

Veriseti İşlemleri ve Model Eğitimi

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```python
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score, classification_report

def Veriseti():
    data = pd.read_csv('PeerIndex.csv')

    X = data.drop('Choice', axis=1)
    y = data['Choice']

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

    model = LogisticRegression()
    model.fit(X_train, y_train)

    y_pred = model.predict(X_test)
    print("\n")
    print("Logistic Regression")
    print("Doğruluk Oranı:", accuracy_score(y_test, y_pred))
    print("Sınıflandırma Raporu:\n", classification_report(y_test, y_pred))


    model = RandomForestClassifier()
    model.fit(X_train, y_train)

    y_pred = model.predict(X_test)
    print("\n")
    print("RFC")
    print("Doğruluk Oranı:", accuracy_score(y_test, y_pred))
    print("Sınıflandırma Raporu:\n", classification_report(y_test, y_pred))
```

```
Logistic Regression
Doğruluk Oranı: 0.7427272727272727
Sınıflandırma Raporu:
              precision    recall  f1-score   support

           0       0.73      0.73      0.73       530
           1       0.75      0.75      0.75       570

    accuracy                           0.74      1100
   macro avg       0.74      0.74      0.74      1100
weighted avg       0.74      0.74      0.74      1100



RFC
Doğruluk Oranı: 0.7681818181818182
Sınıflandırma Raporu:
              precision    recall  f1-score   support

           0       0.75      0.78      0.76       530
           1       0.79      0.76      0.77       570

    accuracy                           0.77      1100
   macro avg       0.77      0.77      0.77      1100
weighted avg       0.77      0.77      0.77      1100
```

Kümeleme İşlemleri

```python
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestClassifier
from sklearn.cluster import KMeans
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.model_selection import GridSearchCV


def Kumeleme():
    data = pd.read_csv('PeerIndex.csv')
    X = data.drop('Choice', axis=1)
    y = data['Choice']
    X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

    param_grid = {'n_estimators': [50, 100, 200],
                  'max_depth': [None, 10, 20]}
    grid_search = GridSearchCV(RandomForestClassifier(), param_grid, cv=5)
    grid_search.fit(X_train, y_train)

    X_cluster = X[['A_follower_count', 'A_following_count', 'A_listed_count', 'A_mentions_received', 'A_retweets_received', 'A_mentions_sent',
    'A_retweets_sent', 'A_posts', 'A_network_feature_1', 'A_network_feature_2', 'A_network_feature_3']]

    kmeans = KMeans(n_clusters=2, random_state=42)
    X['cluster'] = kmeans.fit_predict(X_cluster)

    plt.figure(figsize=(12, 8))
    sns.scatterplot(x='A_network_feature_1', y='A_network_feature_2', hue='cluster', data=X, palette='Set1', marker='X', s=150, edgecolor='black', linewidth=0.
    8)
    sns.scatterplot(x='A_network_feature_1', y='A_network_feature_2', hue=y_train, data=X_train, palette='viridis', alpha=0.6, s=80, edgecolor='w', linewidth=0.
    5)
    plt.title('Kümeleme Sonuçları ve Sınıflar')
    plt.show()
```

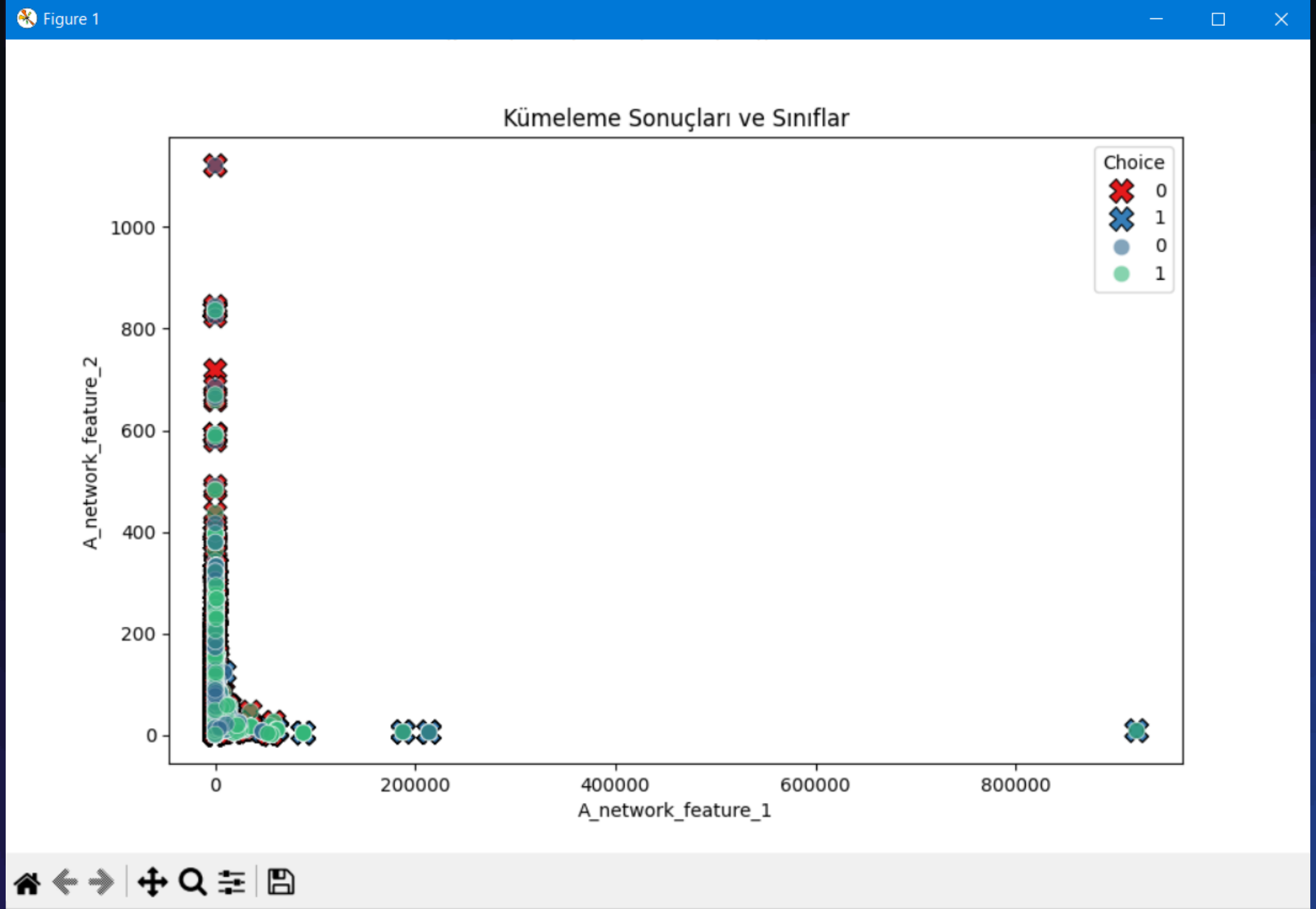
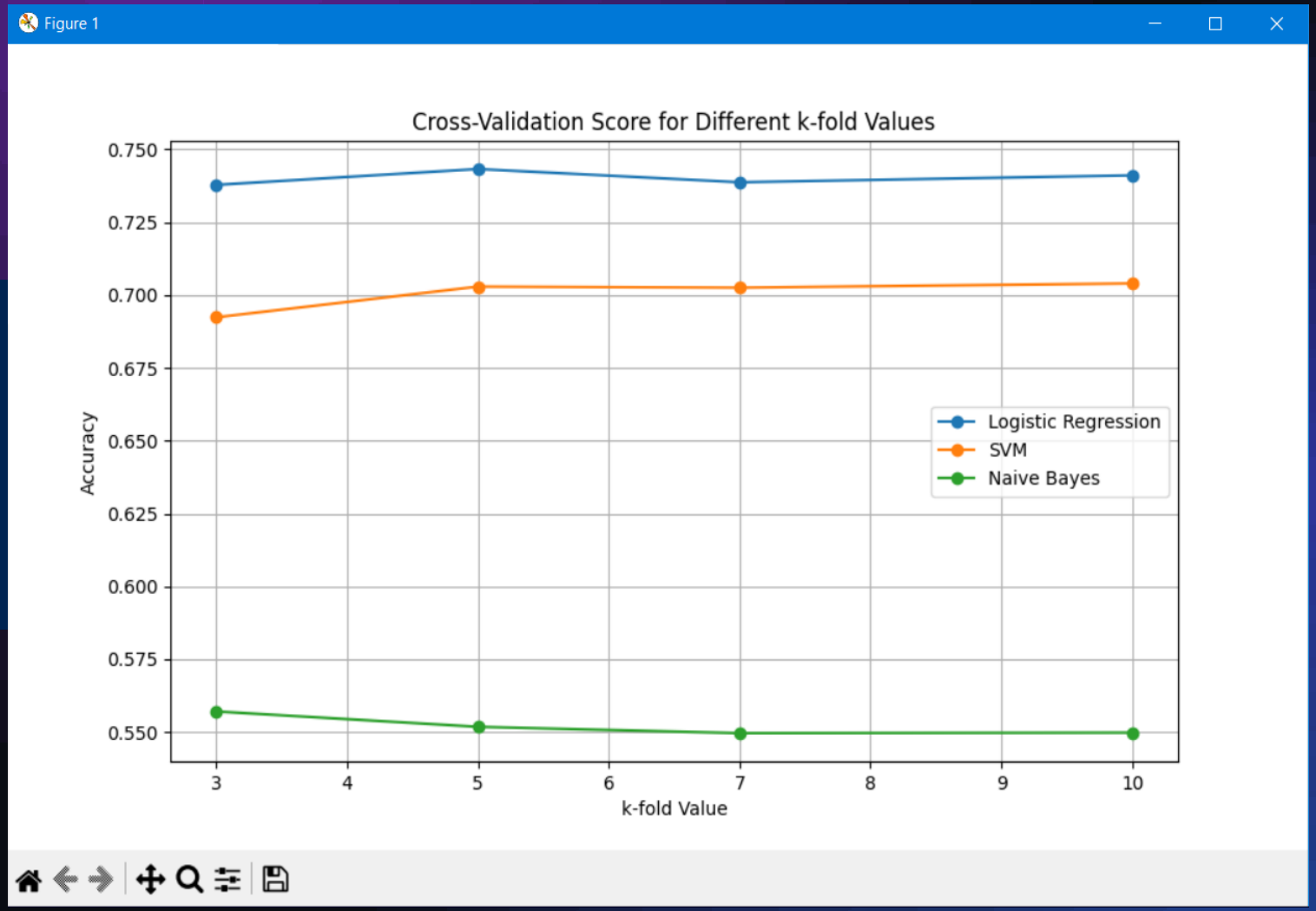


Figure 1
Kümeleme Sonuçları ve Sınıflar
Choice
0
1
0
1
A_network_feature_2
1000
800
600
400
200
0
0
200000
400000
600000
800000
A_network_feature_1

Destek Vektör Makineleri (SVM),Logistic Regresyon,Naive Bayes

```python
import numpy as np
import matplotlib.pyplot as plt
from sklearn.model_selection import cross_val_score, StratifiedKFold
from sklearn.linear_model import LogisticRegression
from sklearn.svm import SVC
from sklearn.naive_bayes import GaussianNB
import pandas as pd

veri = pd.read_csv('PeerIndex.csv')
X = veri.drop('Choice', axis=1)
y = veri['Choice']

kfold_degerleri = [3, 5, 7, 10]

cv_skorlari_lr = []
for kfold in kfold_degerleri:
    lr_modeli = LogisticRegression()
    skorlar = cross_val_score(lr_modeli, X, y, cv=kfold)
    ortalama_skor = np.mean(skorlar)
    cv_skorlari_lr.append(ortalama_skor)
    print(f"Lojistik Regresyon, k-fold={kfold} - Ortalama Doğruluk: {ortalama_skor:.4f}")

cv_skorlari_svm = []
for kfold in kfold_degerleri:
    svm_modeli = SVC()
    skorlar = cross_val_score(svm_modeli, X, y, cv=kfold)
    ortalama_skor = np.mean(skorlar)
    cv_skorlari_svm.append(ortalama_skor)
    print(f"SVM, k-fold={kfold} - Ortalama Doğruluk: {ortalama_skor:.4f}")

cv_skorlari_nb = []
for kfold in kfold_degerleri:
    nb_modeli = GaussianNB()
    skorlar = cross_val_score(nb_modeli, X, y, cv=kfold)
    ortalama_skor = np.mean(skorlar)
    cv_skorlari_nb.append(ortalama_skor)
    print(f"Naive Bayes, k-fold={kfold} - Ortalama Doğruluk: {ortalama_skor:.4f}")

plt.figure(figsize=(10, 6))
plt.plot(kfold_degerleri, cv_skorlari_lr, marker='o', linestyle='-', label='Lojistik Regresyon')
plt.plot(kfold_degerleri, cv_skorlari_svm, marker='o', linestyle='-', label='SVM')
plt.plot(kfold_degerleri, cv_skorlari_nb, marker='o', linestyle='-', label='Naive Bayes')
plt.title('Farklı k-fold Değerleri için Çapraz Doğrulama Skorları')
plt.xlabel('k-fold Değeri')
plt.ylabel('Doğruluk')
plt.legend()
plt.grid(True)
plt.show()
```

```
Lojistik Regresyon, k-fold=10 - Ortalama Doğruluk: 0.7411
SVM, k-fold=3 - Ortalama Doğruluk: 0.6924
SVM, k-fold=5 - Ortalama Doğruluk: 0.7029
SVM, k-fold=7 - Ortalama Doğruluk: 0.7025
SVM, k-fold=10 - Ortalama Doğruluk: 0.7040
Naive Bayes, k-fold=3 - Ortalama Doğruluk: 0.5571
Naive Bayes, k-fold=5 - Ortalama Doğruluk: 0.5518
Naive Bayes, k-fold=7 - Ortalama Doğruluk: 0.5496
Naive Bayes, k-fold=10 - Ortalama Doğruluk: 0.5498
```



ROC GRAFİĞİ

```python
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.linear_model import LogisticRegression
from sklearn.metrics import roc_curve, auc
from sklearn.preprocessing import label_binarize
from sklearn.multiclass import OneVsRestClassifier
import pandas as pd

def Roc():
    veri = pd.read_csv('PeerIndex.csv')
    X = veri.drop('Choice', axis=1)
    y = veri['Choice']

    y_bin = label_binarize(y, classes=[0, 1, 2])
    X_egitim, X_test, y_egitim, y_test = train_test_split(X, y_bin, test_size=0.2, random_state=42)

    lr_model = OneVsRestClassifier(LogisticRegression())
    lr_model.fit(X_egitim, y_egitim)
    y_skor = lr_model.decision_function(X_test)

    plt.figure(figsize=(10, 6))
    for i in range(y_bin.shape[1]):
        fpr, tpr, _ = roc_curve(y_test[:, i], y_skor[:, i])
        roc_auc = auc(fpr, tpr)
        plt.plot(fpr, tpr, label=f'Sınıf {i} (AUC = {roc_auc:.2f})')

    plt.plot([0, 1], [0, 1], linestyle='--', color='gray', label='Rastgele')
    plt.xlabel('False Positive Rate')
    plt.ylabel('True Positive Rate')
    plt.title('Lojistik Regresyon için ROC Eğrisi')
    plt.legend()
    plt.grid(True)
    plt.show()
```

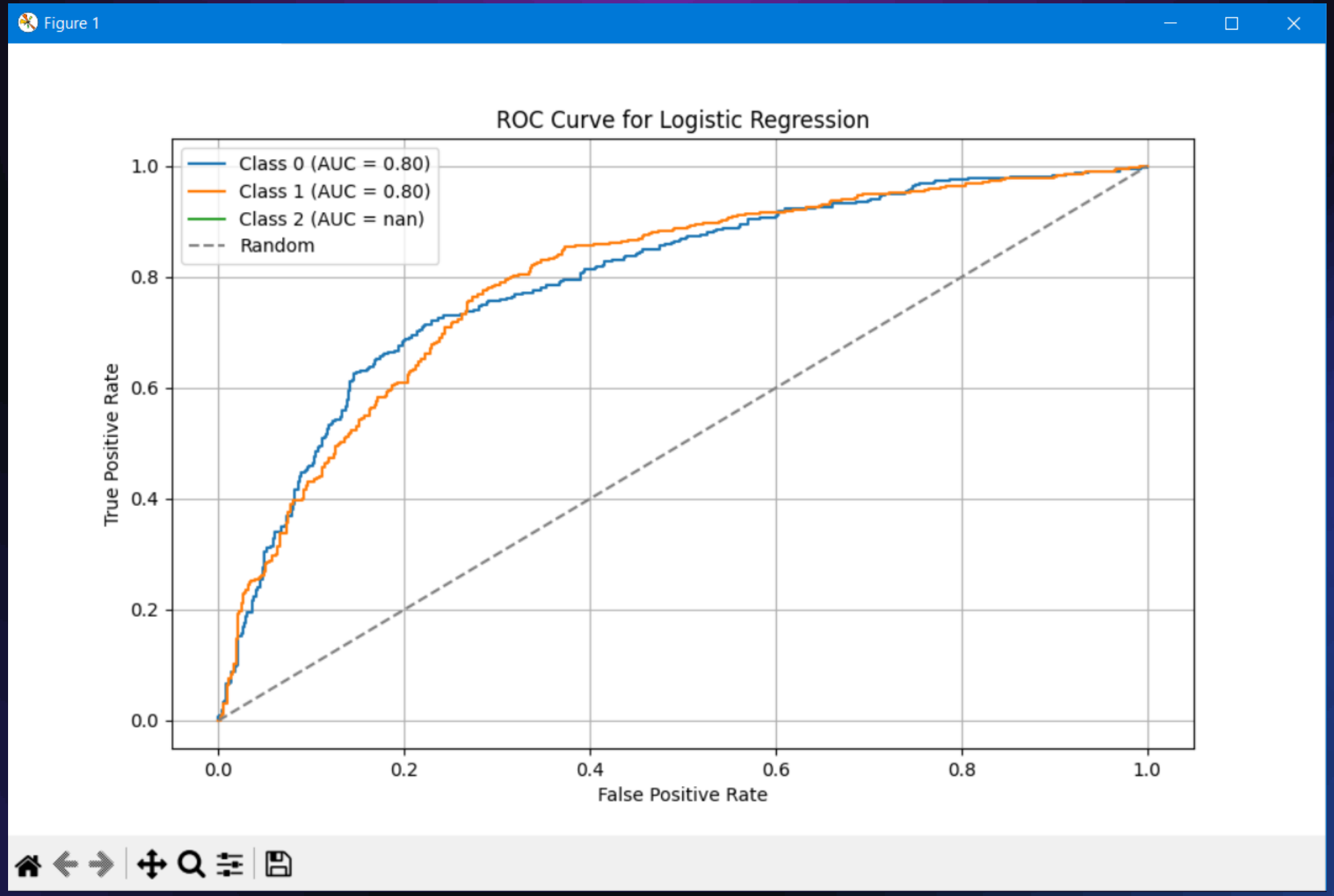


Figure 1
ROC Curve for Logistic Regression
Class 0 (AUC = 0.80)
Class 1 (AUC = 0.80)
Class 2 (AUC = nan)
Random
True Positive Rate
False Positive Rate
0.0
0.2
0.4
0.6
0.8
1.0

Bizi Dinlediğiniz İçin Teşekkürler